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VISUAL *Manufacturing*®

Functional Specification

For Release 6.1.3

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The Virant Group, Inc.
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THIS FUNCTIONAL SPECIFICATION CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION ABOUT THE VISUAL MANUFACTURING® PRODUCT.

Document Revision History

REVISION	DESCRIPTION	DATE	BY
PRE-1	Structural changes preparing for 6.1.3 version. Removed the zillions of styles not currently in use and changed erroneous style usages. Change indenting of certain sections of Trans Level Briefs so that each sub-system has the same document centric focus.	9/13/00	Peter
PRE-2	Add many more Screen Dialogues from previous version. These are still not right. Make sure things are in the correct columns. The first column should be the general theme of the dialogue, the second should be the specific conversation, and the third should be validations. Following the example above this would be: Column #1; The customer wants to make a reservation for future air travel, or The customer wants to check in for a flight, or The customer wants a refund for a ticket never used. Column #2 follows the back and forth conversation. For the reservation it might be the customer making the initial request, system asking for name and destination, customer responding, system presenting flight options, customer selecting one or asking for more information on one of them, system providing information requested, customer makes final selection, system asks for seating preferences, customer responds, system asks for payment, customer provides. Column #3 would validate various information at each step. Such as the validating the destination is a valid city flown to, seat selection is available for flight selected, payment type is valid for customer, etc.		Josh / Colleen
PRE-3	Re-write every report in Transaction Level Briefs, previous version was inadequate. Validate each report against the actual software.		Jay
EXTERNAL SPEC	Revise Virant Style Guide to version 6 to reflect decisions made in capitalization and business terms usage. These changes reflect examining LSA user manuals, online help, and screen text.		Tony / Peter
PRE-4	Proofread and polish sections not finished on previous version. Apply new Virant Style Guide rules of capitalization uniformly throughout document. Change remaining first person references to third person.		Tony
PRE-5	Integrate Hard Allocation Trans Level Briefs and Screen Dialogues into all applicable areas of existing spec.		Peter
PRE-6	Add functionality that is totally new to release 6.x.		Peter

PRE-7	Update existing Trans Level Briefs and Screen Dial's with logic that has changed in release 6.x. Use 'modes' as much as possible for things like AMTS so that logic commonality is exposed regardless of the method of data collection.		Peter
PRE-8	Abstract out all Master Data that can be regarded as Collections and put into their own Trans Level Briefs. These master data were merely implied in the previous spec version by where the data was used.		Jay
PRE-9	Write EDI section.		Peter
PRE-10	Re-write EIS section to reflect the rewriting of this module in CTD.		Peter / Josh
PRE-11	Write a forward to help the reader understand why certain decisions were made in writing and formatting the spec.		Peter
PRE-12	We still have references to the user interface objects and other "real world" wording. These need to be changed to FUNCTIONAL terminology. For example eliminate words such as button, combo box, window, check box, etc. Try to keep the dialogue similar to a conversation between a user and a computer ("the system"). Use the terms "user" and "The System". Think in terms of how you would describe what a system dialogue would be like if the computer were a person. A good example would be like the conversation that would take place at a airline reservation counter or other customer service counter. The dialogue is between the customer (The user) and the person behind the counter running the computer (The System). Like a ping-pong match of info being served from one side of the net to the other.		Tony / Josh / Jay
A	Initial Release to LSA		Peter0

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Forward

Writing a Functional Specification in retrospect for a sophisticated and mature product presents several significant challenges. It is much easier to write such a document when the software is still in the conceptual phase in that the discussion remains on a **functional** level and does not encroach into **design**. This is exacerbated by the fact that VISUAL Manufacturing is in its sixth major revision. I have taken extensive and at times tenacious steps to preserve the original intent of a functional specification, however there are bound to be cases where I have strayed from this intent. Further, the reader may wonder why certain sections of this document read the way they do. I have listed below the areas of concern and the approach I have chosen to address each issue.

Purpose

The purpose of a Functional Specification is to provide a complete and detailed description of the functional capabilities of the software to be developed, from the viewpoint of the users. The Functional Specification has a greater level of detail then the Straw Man, but not as great as the Design Document. It tells the reader **what** the software product will accomplish, but it does not say **how** it will accomplish it.

The Functional Specification is likely the most important part of the design process. It documents the wants and needs of the customer, and then relates these to product specifications (measurable engineering characteristics) that will drive the design of the product. It is a document that becomes the basis for agreement between the customer and those that will be responsible for meeting the customer's needs and wants. If this task is done correctly, it will be the single most important item that will enable the product to delight the customer. The Functional Specification report details the functions of a product independent of any solution and usually is written before concept generation begins.

Audience

While this is a user-oriented document, it addresses other audiences as well. It should be able to adequately serve as training material for new project members, imparting to them enough information and understanding about the project, so that they are able to understand what is being said in design meetings, and won't feel as if they are drowning when they are first asked to create or modify source code. It should serve as "objective evidence" that the designers and/or implementers are following through on their commitment to implement the functionality described.

Constraints

Functional Specifications usually include information that constrains the design of a solution, however this information is not included in this document. Constraints are typically things like expected response time from the user's point of view for various operations, platform (hardware and software) limitations, and reliability (uptime, failures, and recovery).

Abstraction

Since this document describes functionality and not the implementation of the functionality, I have attempted to abstract concepts, terminology, and processes to business requirements as much as possible. For example, I purposefully have not mentioned things like *Manufacturing Window*, *Material Planning Window*, and *Customer Order Entry*. These terms refer to design implementation of functional requirements. This can be a very fine line, however, since we want to capture all the business requirements of each VISUAL window in great detail. We just don't want to specify how it is to be manifested in the delivered product. Since some of the requirements that make VISUAL unique in the marketplace are specific and graphical in nature, such as the *Scheduling Window*, the functional requirements all but describe the actual design. Other areas such as Purchasing leave much more open to design interpretation and are therefore more abstract in nature.

I have also been particularly careful about not mentioning things that imply user interface design such as *button*, *window*, *checkbox*, etc. It is very tempting to make the description of functionality less abstract and easier to read by simply using these terms when it is fairly obvious that they will be used in the

implementation. Despite this temptation, I have attempted to avoid this shortcut and abstract the wording to describe the functionality at the cost of being a bit more difficult to read. This should leave more latitude to the designer to make best use of the GUI objects that are available at the time of each re-write and not be bound to assumptions that are tied to technology.

Categorization

Perhaps one of the more difficult parts for the reader of this document is understanding why I have chosen to categorize functionality the way I have. Certainly the easiest way to write (and read) the document would be to have one section for each major VISUAL window (execuatable). However, this makes the very large assumption that the original categorization and hierarchy of functionality into modules is part of the business requirements and not a design decision. What I have attempted to do is list every functional driver in the entire monolithic program and re-categorize them into approximately one and a half dozen business categories. These categories are centric to a "typical" customers organizational structure and not to the software itself. Therefore, some categories describe only one VISUAL program, while others describe many programs in whole or part. This fragmentation and recategorization of functionality may be confusing to the reader, but it is important to remember that this document is to describe functionality from the customers perspective.

Revealing Design

In performing abstraction and recategorization of the functionality within VISUAL, some interesting results begin to surface. The reader may discover that some of the original implementation no longer makes sense in light of this abstraction particularly since the product has evolved extensively. Perhaps menus need to be changed, window layouts changed, or entire programs merged or split. I believe that this is the true power of a document such as this. By stepping back and looking at the abstracted requirements, real opportunity presents itself to rethink and evolve the product. This should be of particular value when using new technologies to re-write various portions of the system.

Inconsistencies

Writing a Functional Specification in retrospect creates a by-product that would not exist if the specification were written before coding began. When documenting the functionality inconsistencies surface in both logic and in the user interface. These inconsistencies stem from three areas: user documentation (printed and online), the software itself, and what is expected as functionality. This is not surprising given the enormous complexity of the product being described. While it was not a primary goal to identify these inconsistencies, it seemed wasteful to not take advantage of this natural by-product and make note of them whenever possible. To this end a special annotated version of this specification has been produced that identifies when an inconsistency was discovered. Naturally the third inconsistency, expected functionality, is judgement on my part and should be taken as such. When an inconsistency was discovered I made a judgement call as to how to document the functionality choosing among the three options.

Living Document

As any Functional Specification, this is a living document and must be modified as the VISUAL product evolves. However, this is not to be interpreted that the specification is a continuous work in progress and is not solidified. It is important to "draw a line" and preserve the functionality requirements for each release of the software. For this reason this document has been printed into a permanently bound book. Subsequent revisions should take the form of separate delta specifications and periodic compilations of new cumulative books.

1. Introduction

1.1 Scope

This document is the *Functional Specification* for VISUAL *Manufacturing*. VISUAL *Manufacturing* is the flagship product in the fully integrated *Enterprise Resource Planning* (ERP), *Advanced Planning and Scheduling* (APS), and *Manufacturing Execution System* (MES) suite of applications. VISUAL Manufacturing provides an integrated manufacturing solution and all the functionality need to manage and run an entire manufacturing operation and is a component of a broader solution called VISUAL/Supply Chain.

The comprehensive VISUAL/Supply Chain solution includes the following products:

- VISUAL *Manufacturing*®
- VISUAL *Financials*™
- VISUAL *Distribution*™
- VISUAL *Human Resources*™
- VISUAL *Quality*™

The VISUAL *Manufacturing* component of the VISUAL/Supply Chain solution supports the following types of manufacturing activity:

- Engineer-to-order
- Make-to-order
- Assemble-to-order
- Make-to-stock
- Mixed mode

VISUAL *Manufacturing* includes the following functional areas:

- Quoting And Estimating
- Statistical Sales Forecasting
- Customer Order Entry
- Engineering Definition
- Machine Shop Estimating
- Master Production Schedule (MPS)
- Material Requirements Planning (MRP)
- Engineering Change Notice
- Advanced Material Planning
- Part Trace
- Labor Bar Coding
- Remote Labor Collection
- Electronic Data Interchange (EDI)
- Throughput Analysis
- Rules Based Product Configurator
- Parametric Configurator
- AutoCAD™ Interface
- Scheduling
- Shop Floor Control
- Inventory Control
- Dimensional Inventory
- Purchasing
- Enterprise Information System
- Work Flow Messages
- Job Costing
- Report Writer

The above functional areas are packaged into standard and optional modules within VISUAL *Manufacturing* and modules that are external but tightly integrated to VISUAL *Manufacturing*. All standard and optional modules that are internal to VISUAL *Manufacturing* are included in this Functional Specification. External modules are specified only to the extent of functionality that exists in the product to provide connectivity to the aforementioned modules.

The optional internal manufacturing modules included in this specification are:

- Dimensional Inventory
- Part Trace
- Master Production Schedule (MPS)
- Master Requirements Planning (MRP)
- Bar Coding (Wedge/PC Bar Coding)
- Data Collection (Central Labor Bar Coding)
- Engineering Change Notice (ECN)

The following are optional external manufacturing modules not included in this specification, beyond the functionality for interfacing to these modules:

- Machine Shop Estimating
- Statistical Sales Forecasting (Forecast Pro)
- Executive Information System (EIS)
- Product Configurator (rules based and parametric)
- AutoCAD™ Interface
- Report Writer (Centura Report Builder)

1.2 VISUAL *Manufacturing* Product Evolution

Prior to the writing of this *VISUAL Manufacturing Functional Specification*, VISUAL *Manufacturing* went through numerous revisions and is at version 5.2.2 for the purposes of this Functional Specification. The initial versions focused exclusively on VISUAL *Manufacturing* and VISUAL *Financials* with limited supply-chain support. As the product has evolved, it has been placed in the context of a broader solution.

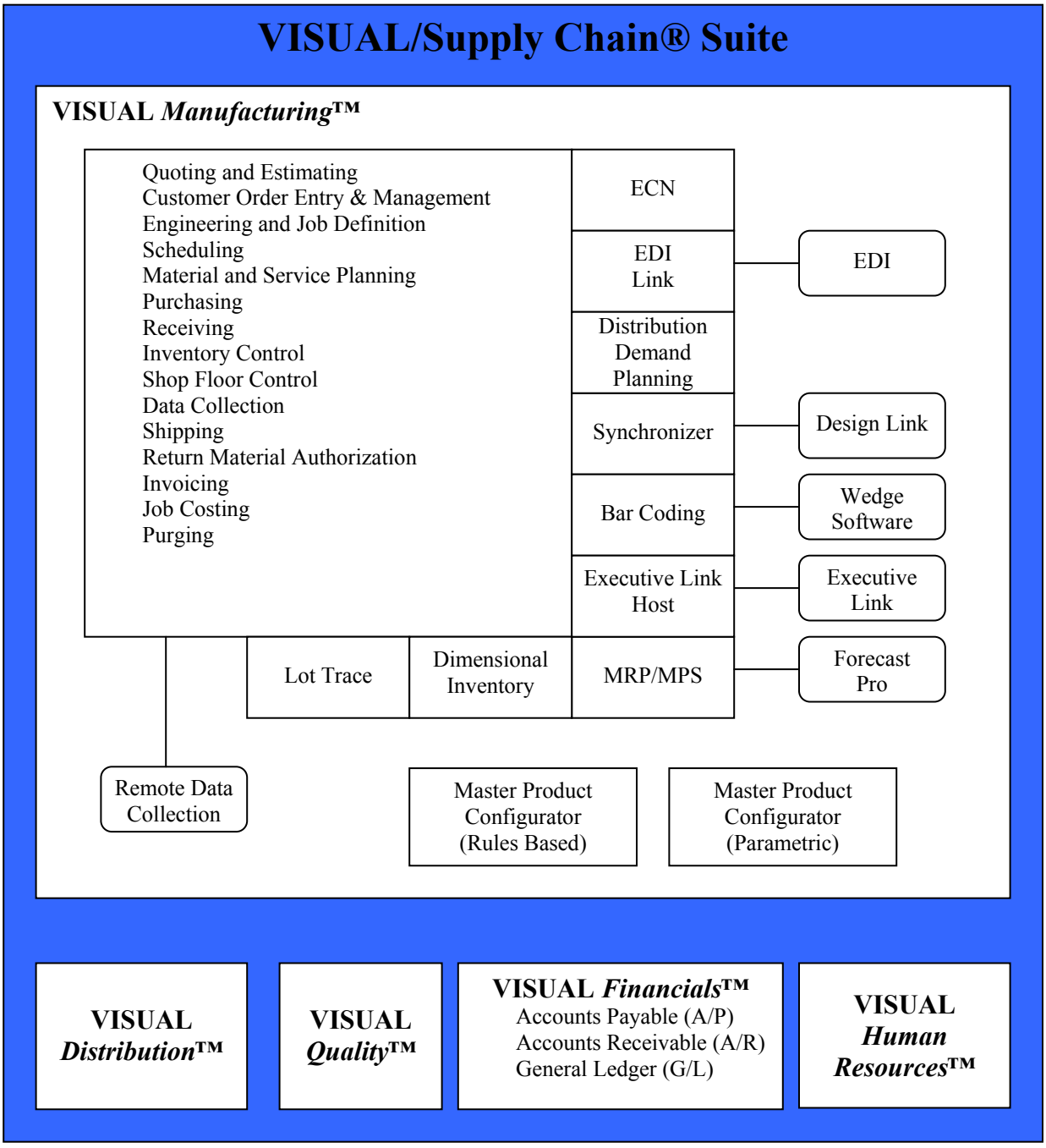
Major versions of the product and key functionality added are summarized below:

VERSION	DATE	KEY FEATURES ADDED
1.0		Initial product release
2.0	4-1-94	Part traceability Multi-currency Bar code Labor Ticket entry
2.5		Support throughout system for multiple entity financials Material Requirements Planning (MRP) Master Production Schedule (MPS) General Ledger allocations Re-write of costing from transactional based to document based Implementation of "notes" throughout system
3.1		Support of report format overrides Multiple graphical and text layouts of engineering definitions Quick Quotes Product codes changed from free-form to definable Value Added Tax support Physical inventory supports trace parts Addition of VISUAL SPC (Quality) to main database
4.0		Implementation of triggers and stored procedures Double blind login to database Total re-write of scheduling supporting auditing and many new parameters Pop-up calendars throughout system

		Selective denormalization of database to create summary columns Support resource substitution Semaphore control for key transactions to prevent deadlocks Vendor Request for Quote support Split Work Orders Engineering Change Control (ECO) Receiving inspection Cycle counting Bills of Lading
5.0		Migration from 16-bit to 32-bit architecture Progress billing Workflow messages user customizable browsers Co-Product support Purging Currency hedging
5.2		Return Material Authorization (RMA) Consumables Outbound Purchase Orders for EDI Service Dispatching Service planning
6.0		
6.1		

1.3 Context of VISUAL *Manufacturing* in the Enterprise

The following is a schematic representing VISUAL *Manufacturing* within the VISUAL/Supply Chain suite:



1.4 Sectional Overview

The following sections describe VISUAL *Manufacturing* in detail:

1.4.1 Overview

This section describes the flow of orders through the enterprise, the information required of the system to support these orders, and the major functional areas in VISUAL *Manufacturing*.

1.4.2 Information Flow Charts

This section contains flow charts showing the information flow through each functional area of VISUAL *Manufacturing*.

1.4.3 Transaction Level Briefs

This section describes the major transactions that take place within each functional area of VISUAL *Manufacturing*.

1.4.4 Screen Dialogues

This section describes the user interaction with VISUAL *Manufacturing* during operations, using screen dialogues for the major transactions in VISUAL *Manufacturing*.

1.4.5 Glossary

This section defines major terms used in the manufacturing operation as well as VISUAL *Manufacturing*.

1.4.6 Appendix

This section contains reference documents that are referred to throughout this document.

2. Systems Overview

VISUAL *Manufacturing* is functionally broken into the following major sub-systems:

1. Quoting and Estimating
2. Sales
3. Engineering and Job Definition
4. Scheduling
5. Material and Service Planning
6. Throughput Analysis
7. Purchasing
8. Receiving
9. Inventory Control
10. Shop Floor Control
11. Shipping
12. Service and Repair
13. Invoicing
14. Manufacturing Costing
15. Work Flow Messages
16. Electronic Data Interchange (EDI)
17. Enterprise Information System (EIS)
18. Operations Parameters
19. Purging

Operations personnel extensively use 1 through 12 above. Accounting personnel use 13 and 14. MIS and technical support concern themselves with transactions 15 through 17.

2.1 Quoting and Estimating Overview

The *Quoting and Estimating* subsystem focuses on the following major functional areas:

- Create, view, and modify quotes
- Copy a quote from another quote, a Work Order, or Bill of Material, then make modifications as necessary
- Separate price markups for material, services, labor, burden, and GSA
- Calculate estimated costs from either a standard pricing, quote, or engineering definitions
- Use a "*what-if*" analysis to verify the availability of material and capacity in order to determine an order's delivery date, then lock it into the shop's schedule
- Print the quote, costing information, revenue proforma, and engineering detail
- Automatically generate the vendor *Request for Quote* (RFQ)

This sub-system provides the functionality to produce quotations for customers and/or prospects. The quotation does not have to be completed in detail to continue the estimating process. Details such as customer, part number, delivery dates, and even costs can be delayed or entirely skipped over to aid in the generation of a quote. Once the basic quote information is entered, a router and Bill of Material is built to support the Work Order that will eventually be used to create the item. This engineering detail can be custom-built for the quote, copied from a previous quote or similar part, or built through an optional product configurator module. The engineering detail is then used to roll up estimated costs for the various quantities quoted. These costs are used to develop a quoted selling price for the customer/prospect. All the quote details are stored separate from any Work Order information ensuring that the original assumptions of the estimating process are preserved.

2.1.1 Quote

All estimating activity is centered on the *Quote*. The quote contains header information about the overall quote, and line information defining the part and quantity information for each line to be processed. Additionally, message information about the quote, at both the header and line level, is available.
Several different types of quotes can take place. Support is provided for the following types:

- Quote of a non part numbered, custom product
- Quote of a part numbered, custom product
- Quote of an assemble to order product
- Quote of a standard product
- Quote of a co-product

2.1.2 Quote Master

The engineering definition for a quote is centered on the *Quote Master*. The Quote Master is a particular type of engineering definition that is used exclusively in the estimating process and is never used for actual production purposes. If a Quote Master is to be used in production, its contents must be copied to a Work Order prior to such processing.

2.2 Sales Overview

The *Sales* subsystem focuses on the following major functional areas:

- Generating Customer Orders from quotes to automatically create order line item details within firmed Work Orders
- Instantly accessing online information including: customer open order balance, open receivable amounts, last payment date, average payment days, last order date, and total payments
- Automatically verifying credit limits and aged receivables when entering Customer Orders
- Quickly accessing information about customers including but not limited to: customer-specific price lists, discounts by part and customer, and online credit checking, as well as customer-specific part numbers, descriptions, and drawing numbers
- Automatically calculating sales tax by order or by individual line item
- Specifying sales commission splits with variable percents
- Supporting multiple delivery schedules and shipping addresses
- Fully supporting *Return Material Authorizations* (RMA's)
- Printing the order confirmation, and sales analysis reports by product code, customer, or sales representative, among others
- Maintaining the Customer Master
- Maintaining the Sales Tax Master

This sub-system provides the functionality to produce Customer Orders for customers. The order can be entered manually or derived from other Customer Orders or quotations. If a Work Order is associated with the one or more of the line items on the Customer Order, then the respective Work Orders may be linked into the Customer Order. This linkage associates the supply with the demand. With the Work Order linkage the product is shipped directly from work-in-process at time of shipment.

2.2.1 Customer Order

All order entry activity is centered on the *Customer Order*. The Customer Order contains header information about the overall order and line information defining the part and quantity information for each line. Additionally, message information about the order, at both the header and line level is available.

2.2.2 Customer Order Types

There are several types of orders that may take place. Support is provided for the following types:

- Order of a non part numbered, custom product
- Order of a part numbered, custom product
- Order of an assemble to order product
- Order of a standard product
- Order of a co-product

2.2.3 Backorder Mode

An option for unshipped Customer Order lines is to copy the remaining quantities to a new Customer Order. The same Customer Order number is used with the addition of a suffix consisting of a dash and a

digit. The digit is incremented for each backorder on the Customer Order. This suffix is intelligible to the system for identification during processing as a *backorder*.

2.2.4 Delivery Schedule/Blanket Orders

Customer Orders can be created with multiple delivery dates for one Customer Order line. When shipping this type of Customer Order, specific information must be entered to correspond with this delivery schedule.

2.2.5 Customer Master

The *Customer Master* contains a list of all customers and related information.

2.2.6 Sales Tax Master

The *Sales Tax Master* contains information about state and local sales taxes.

2.3 Engineering and Job Definition Overview

The *Engineering and Job Definition* subsystem focuses on the following major functional areas:

- Creating, viewing, and modifying engineering plans
- Multiple graphical views of the engineering structure including single and multi-level, hierarchical or split window
- Showing costed Bill of Material with estimated, actual, variance, and projected costs displayed
- Performing "what-if" scheduling, availability checks, and material netting
- Generating Purchase Orders directly from a Work Order
- Revision history of the Bill of Material
- Automatically creating quotes and Work Orders
- Drilling into transactional detail
- Interfacing into AutoCAD® to import bills of material directly into this subsystem
- Providing a dynamic link between the AutoCAD® database and the VISUAL Manufacturing database for parts
- Generating pending change notifications for engineers and production personnel
- Tracking approvals for changes to engineering definitions
- Applying engineering changes to some or all in-process Work Orders for the same manufactured part
- Preventing certain transactions against in-process Work Orders when changes are pending

There are three types of engineering definitions that are constructed almost identically, but have different purposes. These types are:

- *Engineering Master* covered later in this section
- *Work Order* covered later in this section
- *Quote Master* covered in section: 2.1 "Quoting and Estimating Overview"

The Work Order part of the engineering and job definition sub-system provides the functionality to produce Work Orders from an Engineering Master, Quote Master, or another Work Order. The Work Order does not have to be completed in detail to begin the Work Order process.

The Work Order details are stored separate from any quote information, ensuring that the original assumptions of the estimating process have been preserved when a Work Order is created from a quote.

2.3.1 Work Order

All production activity is centered on the Work Order. The Work Order contains header information about the overall Work Order and line information defining the part and quantity information that is relative to the each line processed. Additionally, message information about the Work Order is available at both the header and line level.

Support is provided for the following types of Work Orders:

- Work Order of a non part numbered, custom product
- Work Order of a part numbered, custom or standard product built to stock
- Work Order of a part numbered, custom or standard product built to order (Customer Order)

Additional activities take place for optional modules installed:

- Part trace information assignment
- Dimensional inventory information assignment

2.3.2 Engineering Master

The definition for a manufactured part is centered on the Engineering Master. The Engineering Master is a particular type of engineering definition that is exclusive to the cost rollup process and is used for actual production purposes. If an Engineering Master is to be used in production, its contents must be copied to a Work Order prior to such processing.

2.3.2 Quote Master

The engineering definition for a quote is centered on the *Quote Master*. The Quote Master is a particular type of engineering definition that is used exclusively in the estimating process and is never used for actual production purposes. If a Quote Master is to be used in production, its contents must be copied to a Work Order prior to such processing.

2.4 Scheduling Overview

The *Scheduling* subsystem focuses on the following major functional areas:

- Creating finite and infinite shop floor schedules
- Optionally setting individual work centers to infinite within a finite schedule
- Verifying material availability concurrently with capacity
- Using forward and backward scheduling
- Calculating and displaying critical and determinant path time lines
- Performing capacity analysis
- Performing "what-if" scenarios to determine the effects of changes in capacity, load, or timing
- Graphically altering schedules using "drag and drop"
- Viewing a comprehensive audit trail of every scheduling attempt and result

This sub-system provides the functionality to produce a shop floor schedule. The Scheduler generates a schedule for all firmed and released Work Orders based on due dates, priority, and resource and material availability. The schedule appears in a highly graphical format allowing zoom-in and zoom-out. A "drag and drop" feature allows graphical modifications to the schedule. Numerous parameters control the scheduling of each operation for a Work Order to better approximate the true business conditions of the shop floor.

2.4.1 Finite Schedule

A *Finite Schedule* is one that places load into available capacity. A Finite Schedule will move dates out rather than overload a shop resource beyond its capacity.

Finite indicates that the system will not place more load into a time period than there is capacity in that same time period.

2.4.2 Infinite Schedule

An *Infinite Schedule* is one that essentially ignores capacity. The system actually treats an infinite schedule as one that has the maximum number of supported units of capacity for every shop resource defined.

The calendar that applies to the schedule in question is consulted normally. Thus, work scheduled for the time period prior to the current date is rescheduled in the forward direction and placed in real time. This schedule shows capacity that is needed to achieve the want dates. However, it is still possible to schedule an order late.

2.4.3 Backward Schedule
Backward Schedule indicates that the system initially schedules the final operation then the next to last one and so forth. This type of schedule is used to start the Work Order no earlier than necessary to meet the ship date of the order.

2.4.4 Forward Schedule
Forward Schedule indicates that the system initially schedules the first operation then the next one and so forth. This type of schedule is used to start the order on a certain date without regard to its potential completion earlier than its desired ship date.

2.5 Material and Service Planning Overview
The *Material and Service Planning* subsystem focuses on the following major functional areas:
- Displaying all supplies and demands
- Drilling into the detail behind each supply and demand
- Defining planning bills of material that include either real or planned parts
- Establishing a Master Schedule
- Firming multiple planned orders at a single time based on a date range
- Importing and exporting key data for integration with external sales forecasting tools
- Creating "what-if" master production scheduling scenarios
- Obtaining instant *Available-To-Promise* (ATP) data
- Processing forecasts, Master Schedule items, sales order, and firm-planned orders for MRP processing
- Supporting numerous planning policy options
- Exploding all assembly schedules into component requirements
- Reviewing and implementing rescheduling recommendations based on severity
- Supporting regenerative or net change MRP for level-by-level processing
- Generating material Reports by date required or MRP rules
- Consolidating planned parts within the Master Production Schedule
- Producing Master Schedules and forecasts for any level in the Bill of Material for any kind of part

2.5.1 Material Netting
Material Netting is a process of comparing demand and supply at given points and projecting a net balance and possible exceptions. An exception is a condition that may require an action, such as a stock out, and may also be phrased as a suggestion of action to take.

2.5.2 Master Scheduling
The Master Production Schedule function has two main uses:
- Setting and maintaining a forecast of demand for the current part
- Setting and maintaining the part's Master Production Schedule for MRP to use when generating planned orders

2.5.3 Material Requirements Planning
Material Requirements Planning (MRP) performs a netting and makes recommendations for planned demand and supply orders based on the part's order policy, demand, and Master Production Schedule (for a Master Scheduled part). The planned orders can then be turned into real Purchase Orders and/or Work Orders.

2.6 Throughput Analysis Overview
The *Throughput Management* subsystem focuses on the following major functional areas:
- Viewing an audit trail that reliably identifies potential resource and material bottlenecks; both primary and secondary

- Creating Throughput data for an unlimited number of schedule simulations
- Obtaining accurate measurements of absolute profit contribution
- Graphing Throughput inquiries at a daily, weekly, or monthly level
- Drilling down to view shipment, costing, allocations, or Work Order finish date information
- Comparing and matching Customer Orders with Work Orders
- Choosing to include unavailable or on-hold inventory in inquiries
- Determining the ten most frequently used resources by schedule, load/capacity ratio, incidents or highest severity of contention, or user-defined time span
- Creating trend graphs by shop resource
- Viewing the past orders that have generated maximum Throughput for time spent at bottleneck resources
- Determining the orders in the future that should generate maximum Throughput for time spent at bottleneck resources

2.6.1 Throughput

Throughput = Selling Price – Raw Materials – Purchased Parts – Services

Operating Expense = All of the money that a company spends to be in business. This represents all costs that cannot be tracked to a specific piece with 100% certainty.

Company Profit = Total Throughput - Operating Expense

2.6.2 Bottleneck

Bottlenecks limit Throughput. Bottlenecks are anything that hinders or halts the company's production. Common bottlenecks in manufacturing are shortages of:

- Machines
- Personnel
- Materials
- Purchased parts

2.7 Purchasing Overview

The *Purchasing subsystem* focuses on the following major functional areas:

- Creating Purchase Orders
- Purchasing materials directly to a job without internal part numbers
- Linking a Purchase Order to a specific job requiring the item
- Automatically issuing materials to a Work Order upon receipt of the materials
- Automatically generating Request for Quotes (RFQ)
- Automatic booking of purchase accruals based on goods received from the vendor
- Supporting blanket Purchase Order with multiple delivery dates and shipping addresses
- Maintaining the Vendor Master

2.7.1 Purchase Order

All purchasing activity is centered on the *Purchase Order*. The Purchase Order contains header information about the overall order and line information defining the part and quantity information for each line. Additionally, message information about the order, at both the header and line level, is available.

2.7.2 Request for Quote

All requests for a quote from a vendor activity is centered on the *Request for Quote*. The Request for Quote contains header information about the overall quote and line information defining the part and quantity information relative to the line processed. Additionally, message information about the quote, at both the header and line level, is available.

2.7.3 Vendor Master

The *Vendor Master* contains a list of all vendors and related information.

2.8 Receiving Overview

The *Receiving subsystem* focuses on the following major functional areas:

- Receiving materials into inventory
- Recording the receipt of outside services
- Issuing newly received materials to associated Work Orders
- Handling receipt returns with automatic Purchase Order adjustments

This sub-system provides the functionality for the receipt of goods and/or services into the enterprise. These receipts originate from Purchase Orders or Service Dispatches. The goods and services can collectively be referred to as an item that is *on-order*. Once the item is properly on-order, the item waits for the receiving function to occur.

2.8.1 Receiver

All receiving activity is centered on a *Receiver*. The Receiver contains header information about the overall receipt and line information defining the part and quantity information relative the each line processed. Additionally, message information about the receipt, at both the header and line level, is available.

2.8.2 Service Receipt

A *Service Receipt* is an optional way of indicating to the Scheduler that an outside service is complete when a Purchase Order is not issued for the service. A service receipt is implied when the service is on a Purchase Order and received with a Receiver.

2.8.4 Receipt Processing Methods

[amts or keyboard]

2.8.3 Receipt Processing Modes

There are several different types of receipt activity that may take place. Support is provided for the following types:

- Standard receipts to stock
- Returns from stock
- Issue of material to a Work Order upon receipt
- Reverse issue of material to a Work Order upon return
- Issue to an expense account upon receipt of a consumable part
- Reverse issue of an consumable item upon return

Additional activities take place for optional modules installed:

- Part trace information assignment
- Dimensional inventory information assignment

2.8.4 Automatic Inventory Issue

When a Purchase Order has been established with a link to a specific Work Order and material requirement, a receipt of the material on that Purchase Order automatically triggers the issuance of material to the Work Order. Two inventory transactions are created. The first transaction is the receipt into inventory. The second transaction immediately issues the material to the linked Work Order for the quantity required in the material requirement or for the received quantity. It is dependent on whichever is lower. In the event that multiple links exist to Work Orders, multiple issue transactions will be created in Work Order numbering sequence until: (1) either all requirements have been filled or, (2) all received material has been issued. If a requirement on a Work Order is not assigned a part number or if the part number is not designated as stocked, then the entire receipt is issued to the respective Work Order requirement.

2.8.5 Backorder Mode
An option for un-received purchased order lines is to copy the remaining quantities to a new Purchase Order. The same Purchase Order number is used with the addition of a suffix consisting of a dash and a digit. The digit is incremented for each backorder on the Purchase Order. This suffix is intelligible to the system for identification during processing as a backorder.

2.8.6 Delivery Schedule/Blanket Orders
Purchase Orders can be created with multiple delivery dates for one Purchase Order line. When receiving this type of Purchase Order, specific information must be entered to correspond with this delivery schedule.

2.9 Inventory Control Overview
The *Inventory subsystem* focus on the following major functional areas:
- Assigning comprehensive part definitions including variable length part numbers, extended descriptions, user-definable fields, and supplier information
- Stocking goods in one unit of measure while purchasing, selling, and using in alternate units of measure
- Assigning multiple warehouse locations for a part and/or multiple locations within a single warehouse
- Transferring parts between locations or warehouses
- Automatically issuing materials by Work Order, operation, or sub-assembly
- Automatically issuing floor stock items
- Setting up specialized item pricing such as quantity and discounted pricing, contract pricing, etc.
- Performing automated physical inventories, cycle counting, and ABC analysis
- Printing standard Reports that include a sales and purchase history and costed inventory
- Maintaining Part Master
- Maintaining Warehouse / Location Master
- Maintaining Units of Measure Master

2.9.1 Inventory Transaction
An inventory transaction is created for every movement of inventory throughout the system. Each transaction contains quantity, cost, and warehousing information.

2.9.2 Part Trace
Support is provided for part tracing of material including:
- Customizing part trace requirements and specifying special requirements by part
- Assigning lot numbers for purchased materials at receipt, or for finished product coming from the shop floor
- Tracking raw material lot numbers
- Using the description, expiration date, and user-defined fields to track information for each lot
- Assigning serial numbers to finished products and components used within a Bill of Material
- Tracing a customer shipment back to the raw material lot that was used to produce the finished part
- Performing on-line inquiries by part for lot numbers and serial numbers received or shipped and inventory balances by lot numbers and serial numbers

2.9.3 Dimensional Inventory
Support is provided for dimensional inventory including:
- Defining up to three dimensions and an unlimited number of dimensional records for each part
- Specifying unit of measure conversions for materials
- Automatically calculating purchase costs
- Issuing/returning from WIP (Work in Progress) as well as adjusting in/out for drop management
- Partially receiving pieces that differ in size than those listed on the originating Purchase Order
- Tracking inventory by location of pieces within the plant for managing drops
- Supporting physical inventory counts with dimensions

2.9.4 Inventory Transaction Processing Methods
[amts or keyboard]

2.9.4 Part Master
The *Part Master* contains a list of all parts and related information.

2.9.5 Warehouse / Location Master
The *Warehouse / Location Master* contains a list of all warehouses and the locations within those warehouses.

2.9.6 Units of Measure Master
The *Units of Measure Master* contains a list of all units of measure for the system and conversion factors between them.

2.10 Shop Floor Control
The *Shop Floor Control* subsystem focuses on the following major functional areas:

- Preparing shop paperwork to accompany the job through the shop
- Preparing paper work to manage the work and resource of the shop floor
- Collecting labor and work progress information from the shop floor including:
  - Entering data quickly and accurately using bar-code wand or laser scanner and the keyboard
  - Tracking labor information instantly
  - Choosing between single and multiple job modes, and a time or cost basis for prorating multiple jobs
  - Supporting part trace tracking
  - Tracking clock-in, clock-out, indirect labor, and direct labor, including both setup and run information
- Maintaining Shop Resource Master
- Maintaining Employee Master
- Maintaining Outside Service Master

2.10.1 Traveler
- Work Order *Travelers* are Reports that provide two main functions; each is printed as a separate report.
- Provide Work Order paperwork to shop operators. This report provides a succinct report of pertinent Work Order, customer, and operation information for a Work Order, and is specifically designed to accompany in-process material as it travels through the shop. Thus, it includes all information needed to manufacture the part, including drawing numbers and revisions, specifications, part IDs and quantities. Additionally, the Traveler can be printed with barcodes for labor collection.
- Provide material requirement paperwork to material handling personnel. This report provides a material Picking List for issuing material to a Work Order. All pertinent part information is included in the report, including part ID, unit of measure, specifications, and warehouse locations. Additionally, the Picking List can be printed with barcodes for material issues.

This sub-system provides the functionality for the automated entry of labor transactions into the system. Two methods of bar code tracking are supported: bar coding and central labor bar coding.

2.10.2 Bar Coding
Bar Coding uses a standard workstation attached to a wedge and requires one workstation for each wedge bar code input device. Data is entered via a bar code wand or laser gun and the workstation keyboard. Entries display directly on the workstation screen allowing extensive display capabilities.

2.10.3 Central Labor Bar Coding
Central Labor Bar Coding functionality is similar to that of Bar Coding but allows for dynamic entry of data within the system. It allows this through the use of a shop-hardened device with its own keypad that functions as a remote unit. Data is entered via a bar code wand, laser gun, or the unit's keypad. Entries display in a small LCD within the unit. Central Labor Bar Coding requires only one workstation which acts as the master to collect data from each remote coding station.

2.10.4 Shop Resource Master
The *Shop Resource Master* contains a list of all shop resources and related information.

2.10.5 Employee Master
The *Employee Master* contains a list of all Employees and related information.

2.10.6 Outside Service Master
The *Outside Service Master* contains a list of all outside services and related information.

2.11 Shipping Overview
The *Shipping* subsystem focuses on the following major functional areas:
- Recording shipment of Customer Orders
- Processing returns of previously shipped materials
- Printing shipping paperwork
- Performing automatic inventory transactions to issue material to orders, or return material to stock

In performing these functions, this sub-system creates a Shipper (a.k.a. - Packing List). A Shipper is an object that is linked to a Customer Order.

2.11.1 Shipper (Packing List)
All Shipping activity is centered on a *Shipper*. The Shipper contains header information about the overall shipment and line information defining the part information relative to each line processed. Additionally, message information about the shipment, at both the header and line level, is available. A report version of the Shipper, known as a *Packing List*, is used to physically accompany the parts.

2.11.2 Shipment Processing Methods
[amts or keyboard]

2.12 Service and Repair Overview
The *Service and Repair* subsystem focuses on the following major functional areas:
- Creating of an *Return Material Authorization* (RMA) document to record an authorized customer return
- Visibility of the RMA in the material planning process
- Receipt of the material
- Processing of the material by repair or replacement
- Preparing any necessary adjustments to the customer billings

2.12.1 Return Material Authorization
All customer return activity is centered on a Return Material Authorization. The RMA contains header information about the original order and line information defining the parts being returned. Additionally, message information about the RMA, at both the header and line level, is available. A report version of the RMA is used to physically deliver to the customer.

2.13 Invoicing Overview

The *Invoicing* subsystem focuses on the following major functional areas:

- Creating an Invoice for shipped orders
- Creating a Credit Memorandum for returned orders
- Adjusting Invoices as the result of a Return Material Authorization
- Creating progress billing Invoices

2.13.1 Invoice

As product is manufactured and shipped an *Invoice* is created to bill the customer for moneys owed. The actual creation of the Invoice is done in this subsystem. Subsequent processing of the Invoice is done outside of this subsystem.

2.13.2 Credit Memorandum

A *Credit Memorandum* is issued when a customer returns a product that has been previously shipped and Invoiced or when there has been a price adjustment on an Invoice already in the system. These Credit Memos represent moneys owed to the customer so they work opposite of an Invoice.

2.14 Manufacturing Costing Overview

The *Manufacturing Costing* subsystem focuses on the following major functional areas:

- Supporting both standard and actual inventory costing
- Automatically updating stockroom and WIP inventory records in real-time
- Linking Purchase Orders to Work Order to capture specific costs to a job
- Linking Work Orders to Customer Orders to measure true profit margins
- Calculating actual costs for a one-time or limited run production without having to add part numbers to the system
- Directly charging jobs for expense items not listed on a Purchase Order
- Creating and preparing manufacturing journals for posting to VISUAL Financials or a third party financial package

2.14.1 Standard Cost

A *Standard Cost System* is the method where predetermined estimates of cost are compared to the actual expenditures for building a product. Any difference between the standard and actual is a *variance*. With standard costing, every part, component, operation and assembly has a standard cost. Standard costs are derived annually usually in conjunction with the annual physical inventory.

For purchased parts (raw materials), the standard would be the cost to buy the part from a supplier.

Labor operations, or routings, are steps performed to convert raw materials to assembled or finished goods. These operations are classified as direct labor operations. These labor operations are the function of two variables: (1) the time it takes to perform the operation and (2) the labor rate paid the worker.

Overhead expense, or *Burden,* is expense created by the manufacturing organization that cannot be classified as direct material or direct labor. It would include items such as indirect payroll, rent, utilities, depreciation, non-inventoried supplies, etc. The expenses are then allocated to the cost of the product.

Service expense occurs as the result of having an outside agency perform an operation to a part.

For a manufactured part, the standard cost would be a combination of the material, labor, burden and service expenditures required to produce the part. The Bill of Material for that part would define the total cost of the manufactured part. This is a document that lists what is required to build a product. It includes all the purchased parts, sub-assemblies, labor operations or routings and outside services required. The summation of the components is the standard cost of the manufactured product.

With a standard cost System, all raw materials, whether in stock or in Work in Process, will be valued at the standard established for that part. Fabricated parts that are in process will be valued based on the raw

materials issued and the amount of labor incurred to date. Both are valued at standard cost. Fabricated products that are in *Finished Goods Inventory* will be valued at their standard cost based on the Bill of Material.

2.14.2 Actual Cost

The elements of cost in an *Actual Costing System* are the same as outlined for a standard cost except that they will be the actual costs incurred - not a predetermined standard. With an actual cost System, there is no variance Reporting. The costs incurred when purchasing material, processing Labor Tickets, purchasing outside services, etc. are what will be charged to the job. When the finished product is shipped or moved to inventory, all the accumulated costs will be charged to Cost of Goods Sold or will be the inventory value for that product.

2.15 Work Flow Messages Overview

The *Manufacturing Costing* subsystem focuses on the following major functional areas:

- Generating and routing automatic messages to one or more recipients based on events that occur within the system
- Specifying standard messages or defining custom variable content messages
- Optionally including binary data, pictures, bitmaps, and text documents with the message
- Directing messages to company e-mail, Internet e-mail, a user workstation, a printer, or a fax machine
- Choosing between multiple event types including user-defined queries
- Setting up automatic database queries
- Requesting status information on messages

2.16 Electronic Data Interchange (EDI)

2.17 Enterprise Information System (EIS)

2.18 Operations Parameters Overview

The *Operations Parameters* subsystem focuses on the following major functional areas:

- Setting of company name and address
- Establishing system wide settings to determine internal behavior of the overall system
- Managing of user profiles and security settings
- Defining of customized Reports
- user specific customizing of logic and display options

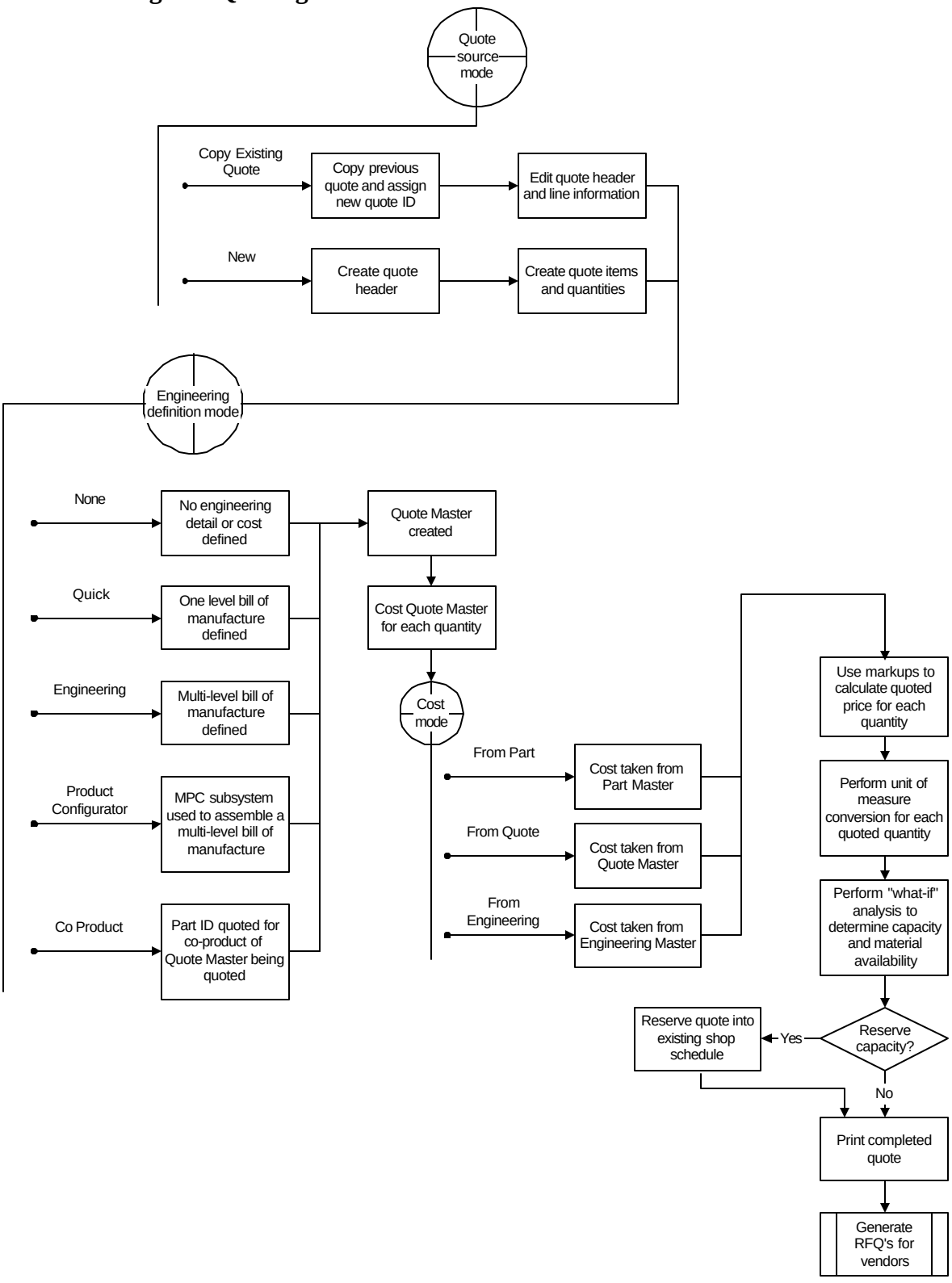
2.19 Purging Overview

The *Purging* subsystem focuses on the following major functional areas:

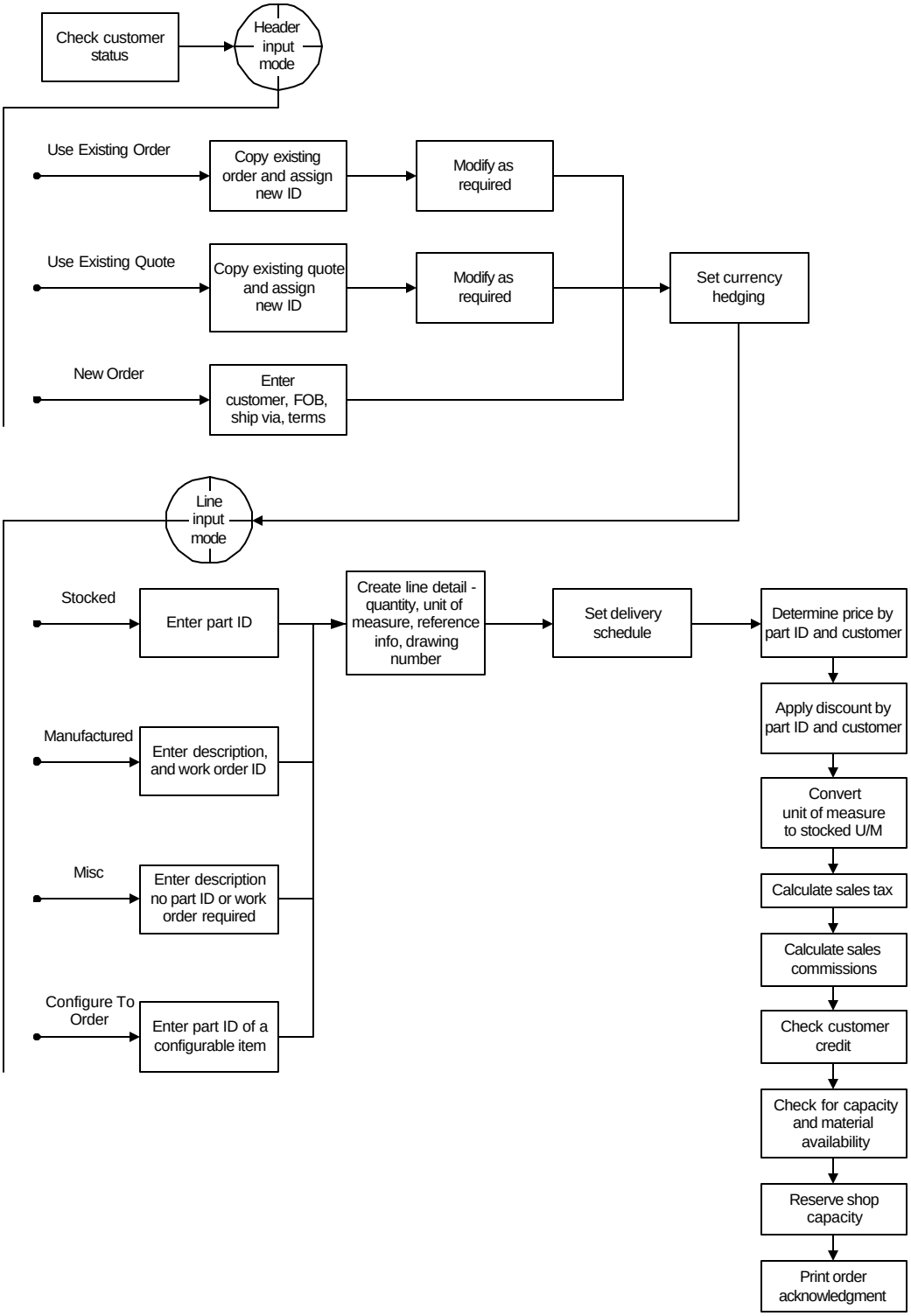
- Purging inactive information
- Purging information that is no longer connected to other information
- Archiving purged information
- Testing purge information
- Processing the following types of information:
  - Receivers
  - Shippers
  - Customer Orders
  - Purchase Orders
  - Work Orders
  - Labor tickets
  - Inventory transactions

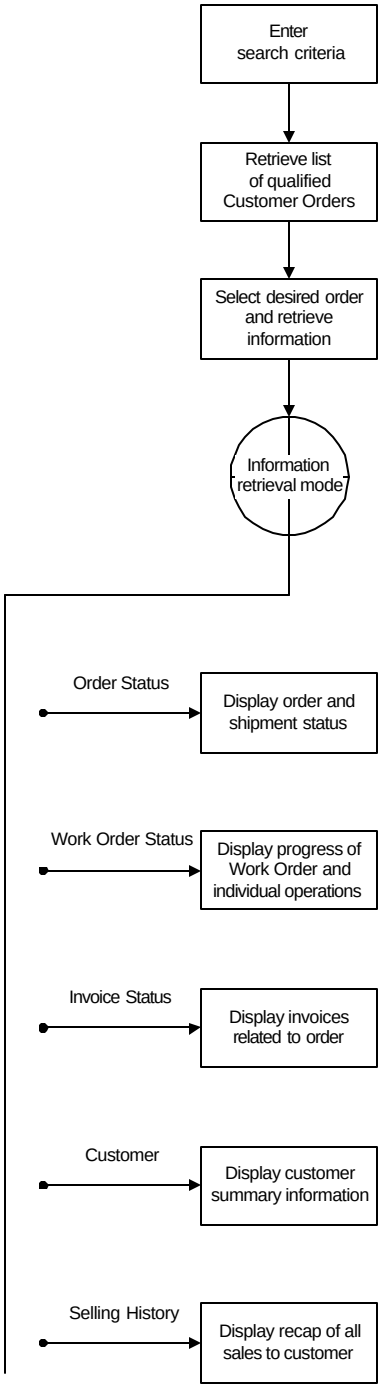
3. Information Flow Charts

3.1 Estimating and Quoting Flow

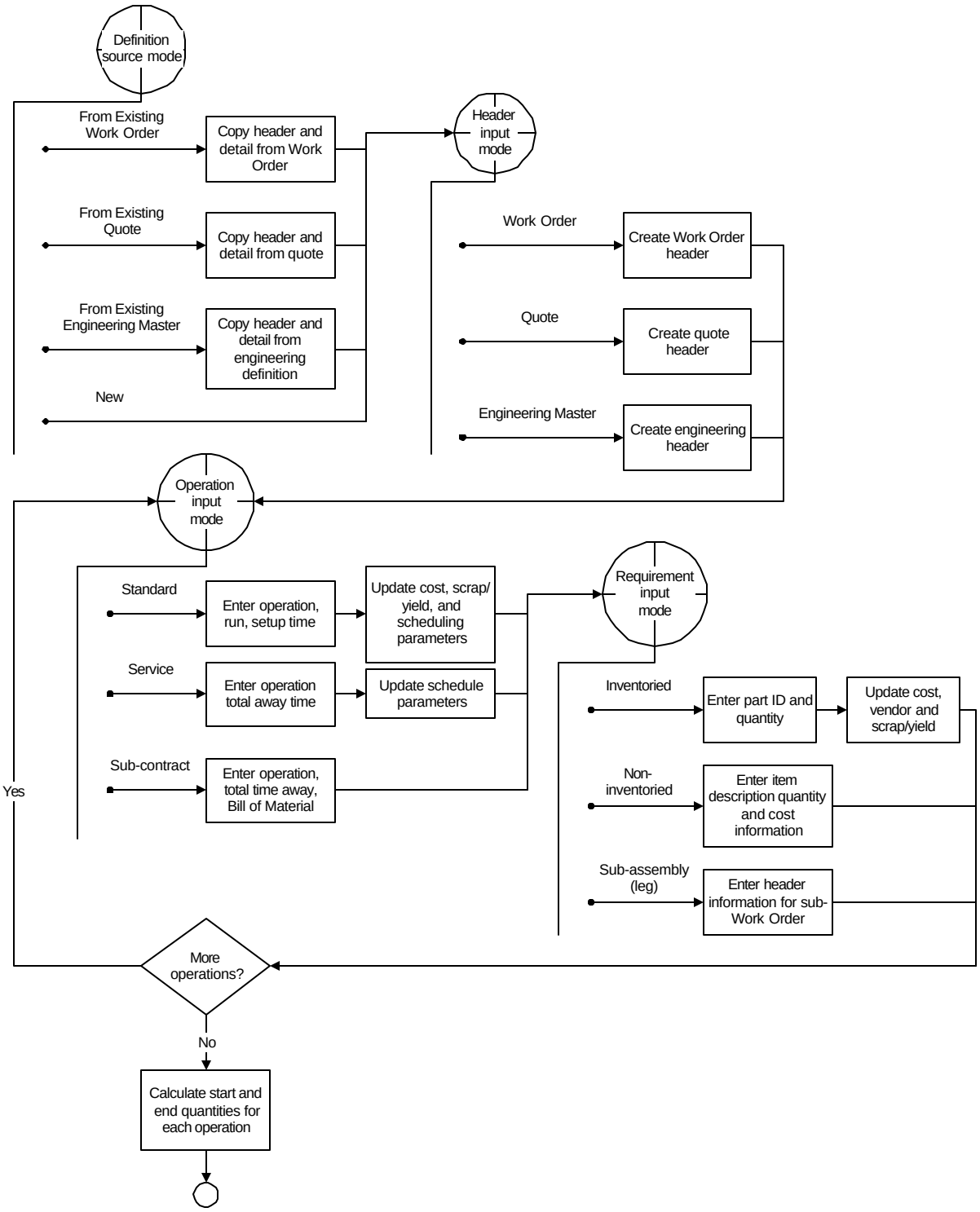


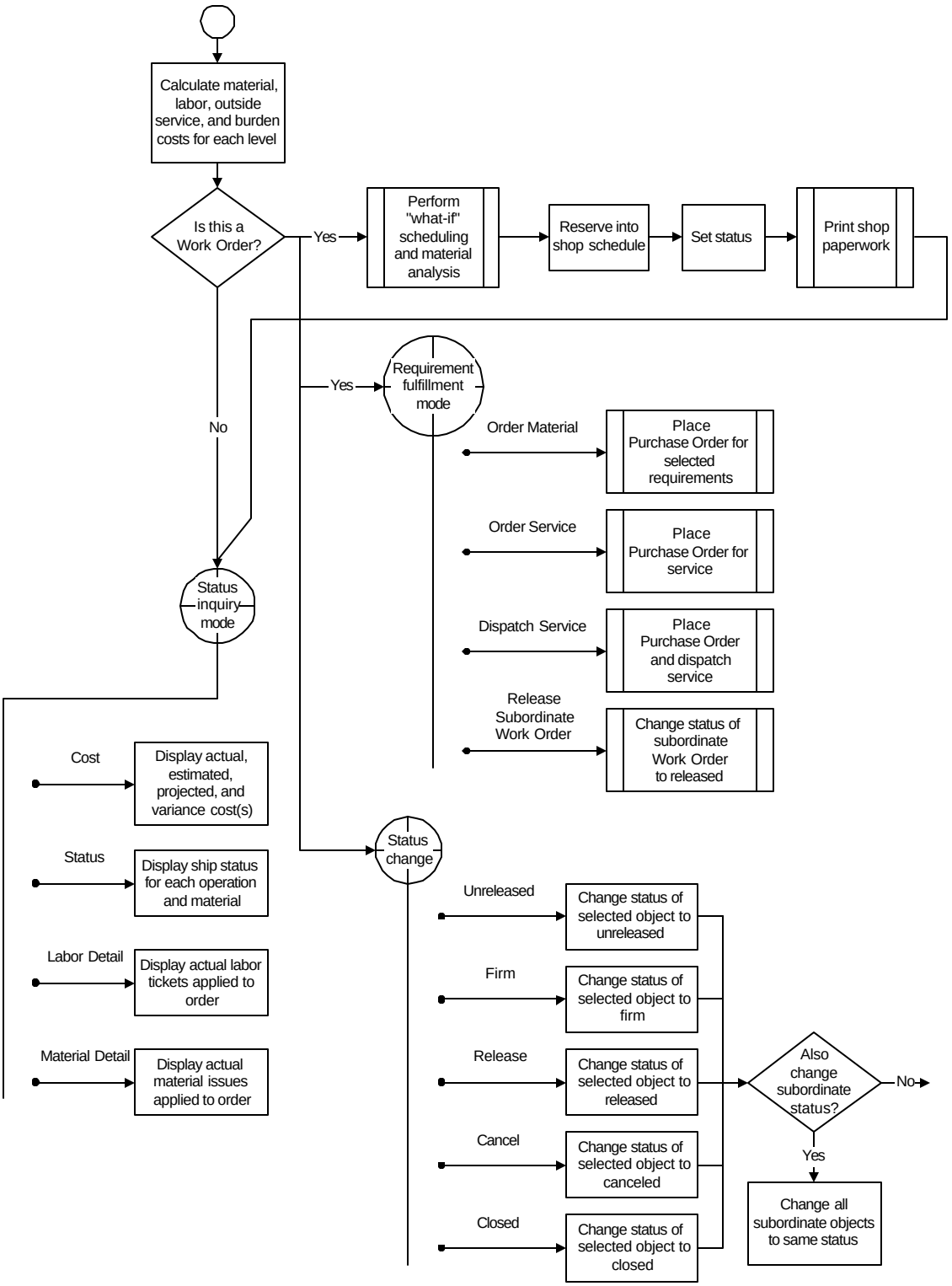
3.2 Sales Flow



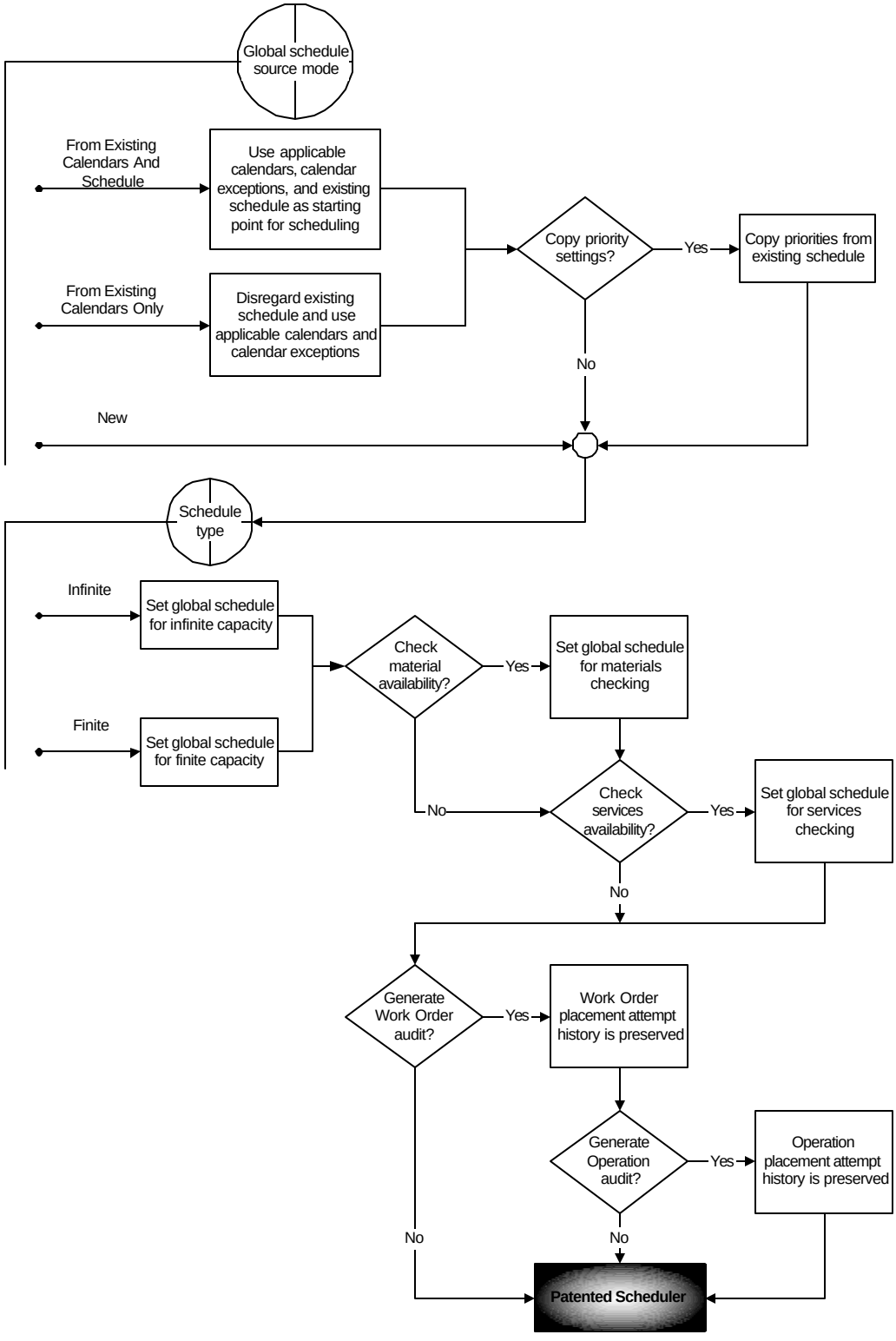

Enter search criteria
Retrieve list of qualified Customer Orders
Select desired order and retrieve information
Information retrieval mode
Order Status
Display order and shipment status
Work Order Status
Display progress of Work Order and individual operations
Invoice Status
Display invoices related to order
Customer
Display customer summary information
Selling History
Display recap of all sales to customer

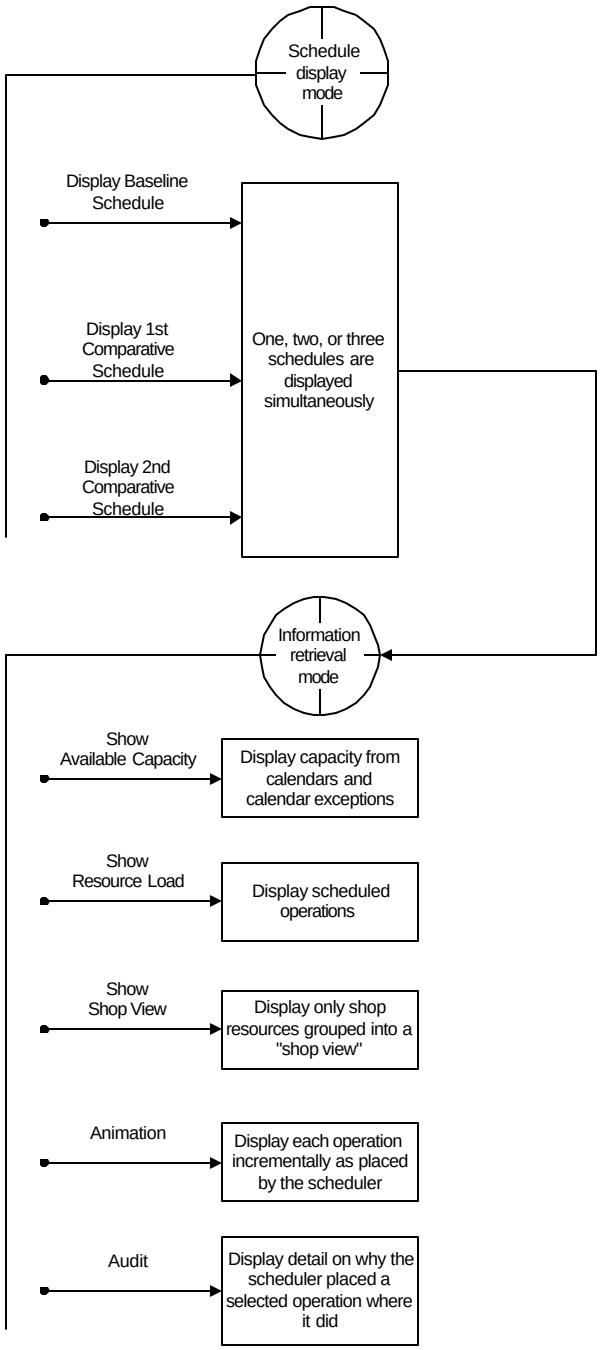
3.3 Engineering and Job Definition Flow



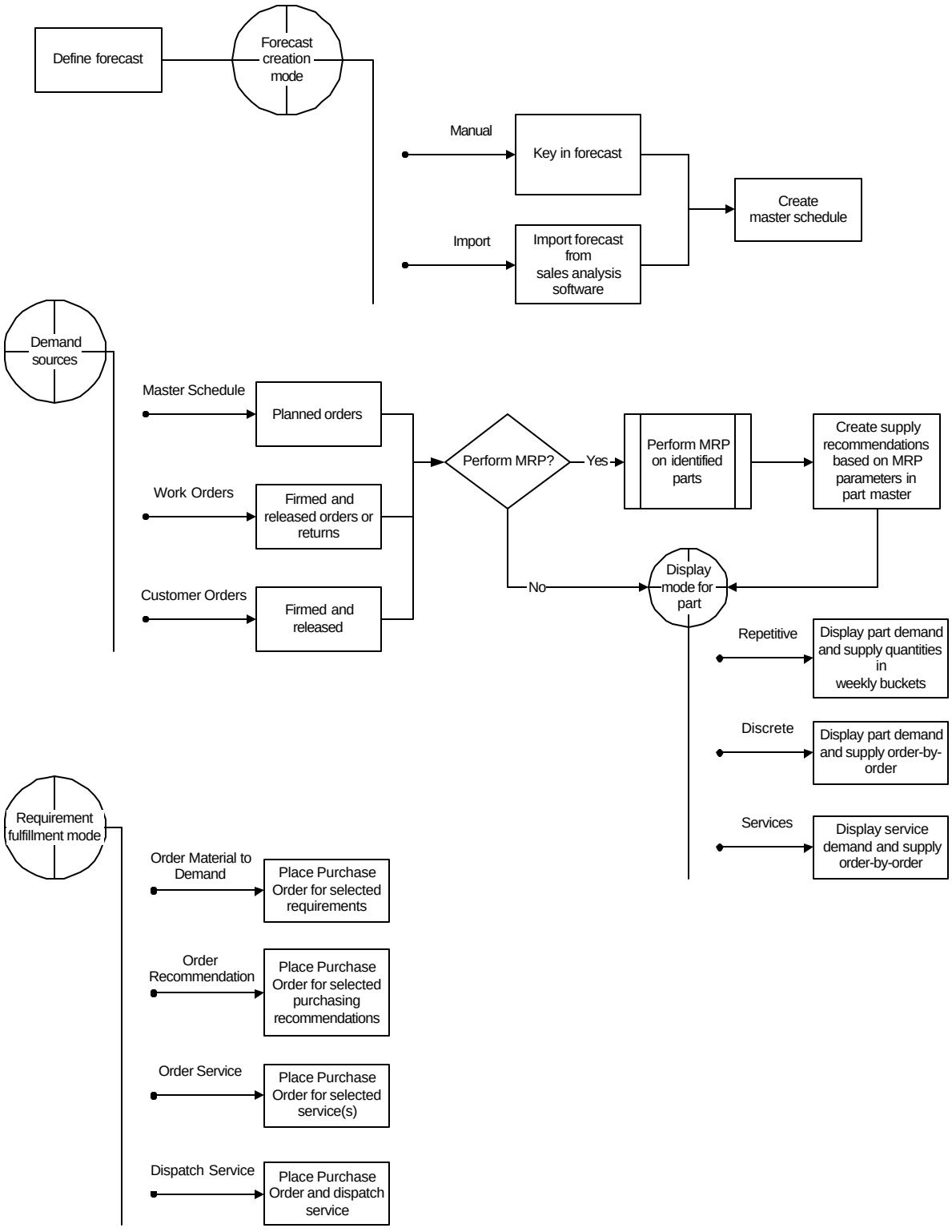

Calculate material, labor, outside service, and burden costs for each level
Is this a Work Order?
Yes
Perform "what-if" scheduling and material analysis
Reserve into shop schedule
Set status
Print shop paperwork
No
Yes
Requirement fulfillment mode
Order Material
Place Purchase Order for selected requirements
Order Service
Place Purchase Order for service
Dispatch Service
Place Purchase Order and dispatch service
Release Subordinate Work Order
Change status of subordinate Work Order to released
Status inquiry mode
Cost
Display actual, estimated, projected, and variance cost(s)
Status
Display ship status for each operation and material
Labor Detail
Display actual labor tickets applied to order
Material Detail
Display actual material issues applied to order
Status change
Unreleased
Change status of selected object to unreleased
Firm
Change status of selected object to firm
Release
Change status of selected object to released
Cancel
Change status of selected object to canceled
Closed
Change status of selected object to closed
Also change subordinate status?
No
Yes
Change all subordinate objects to same status

3.4 Scheduling Flow

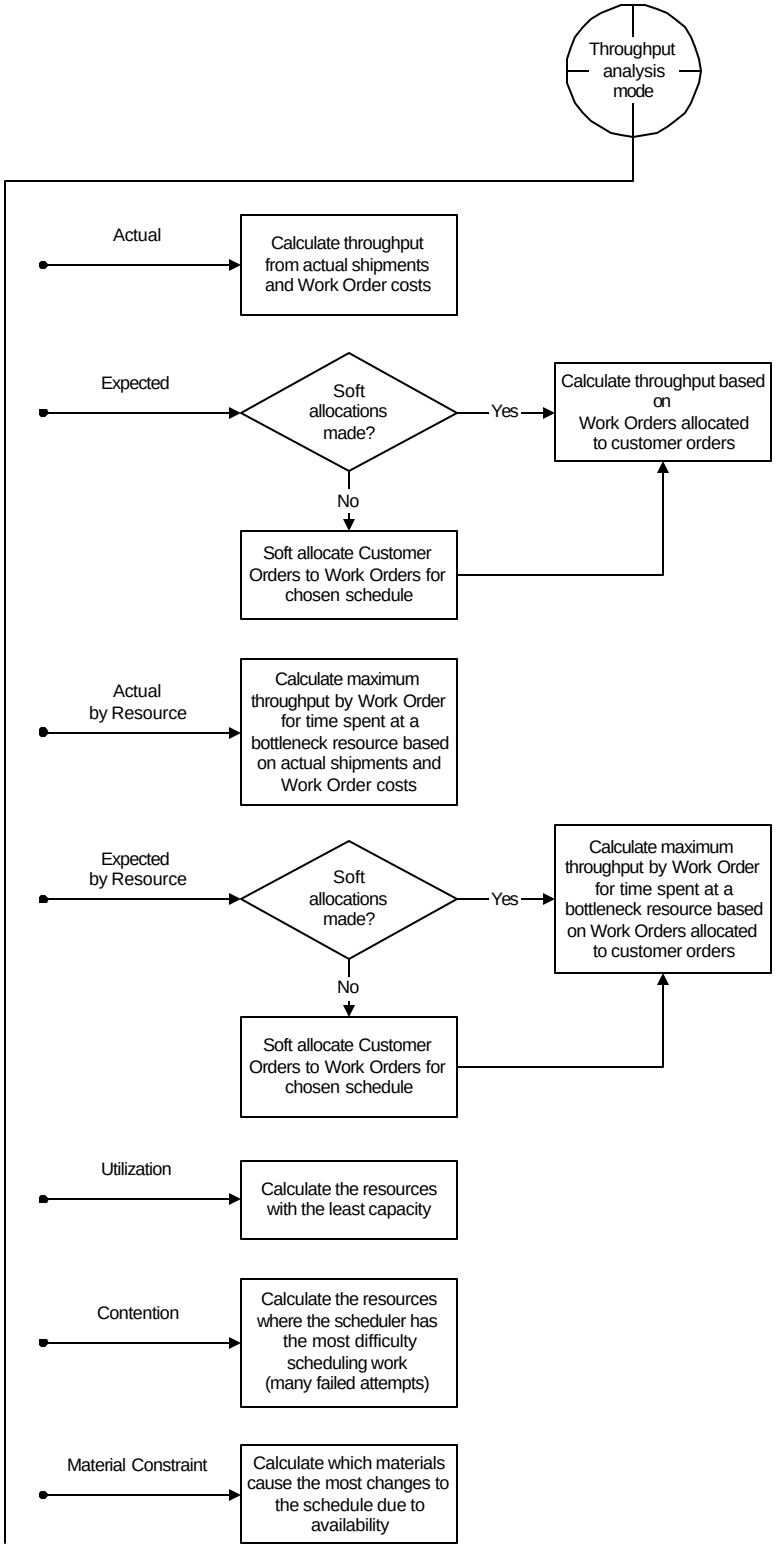



Schedule display mode
Display Baseline Schedule
Display 1st Comparative Schedule
Display 2nd Comparative Schedule
One, two, or three schedules are displayed simultaneously
Information retrieval mode
Show Available Capacity
Display capacity from calendars and calendar exceptions
Show Resource Load
Display scheduled operations
Show Shop View
Display only shop resources grouped into a "shop view"
Animation
Display each operation incrementally as placed by the scheduler
Audit
Display detail on why the scheduler placed a selected operation where it did

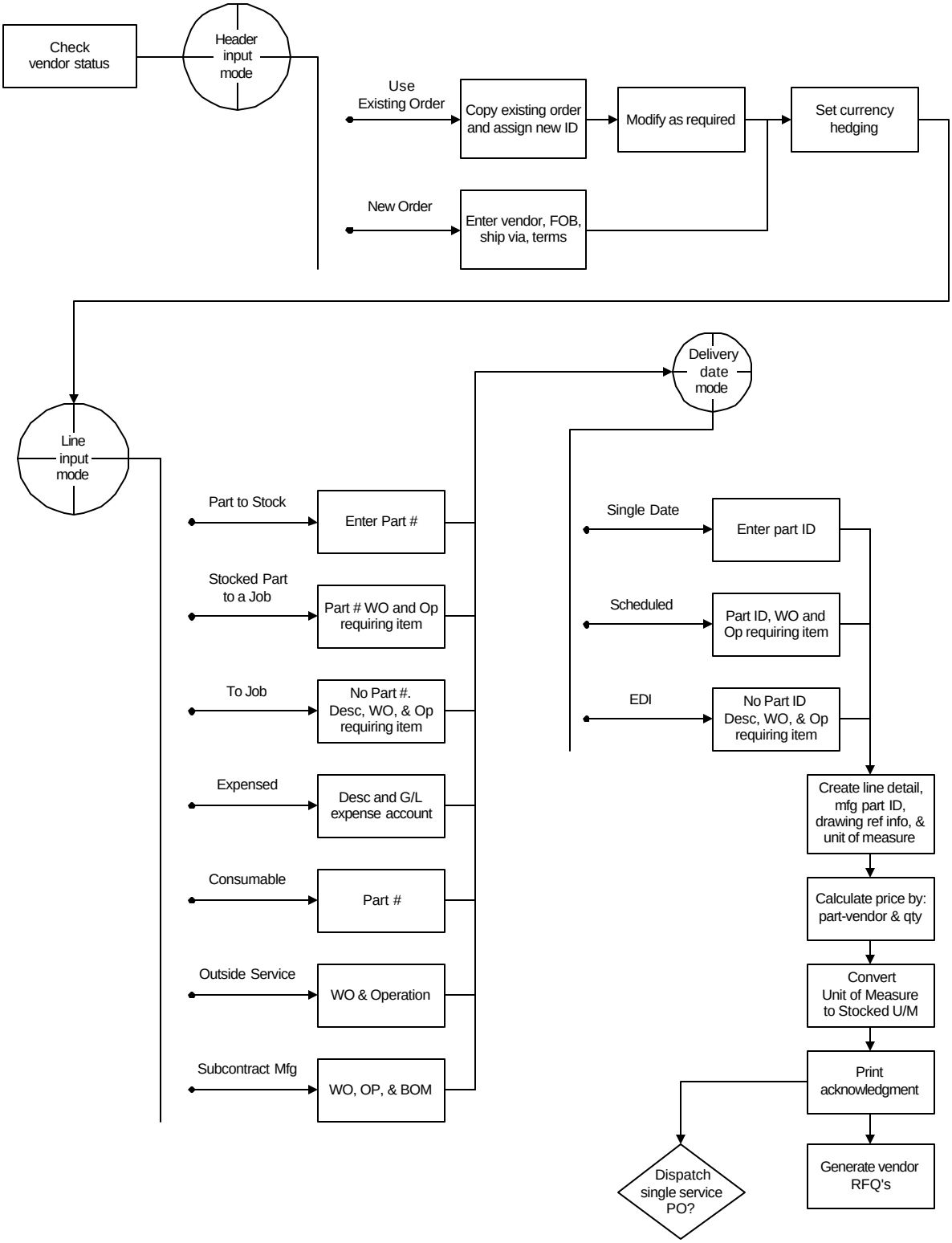
3.5 Material and Service Planning Flow



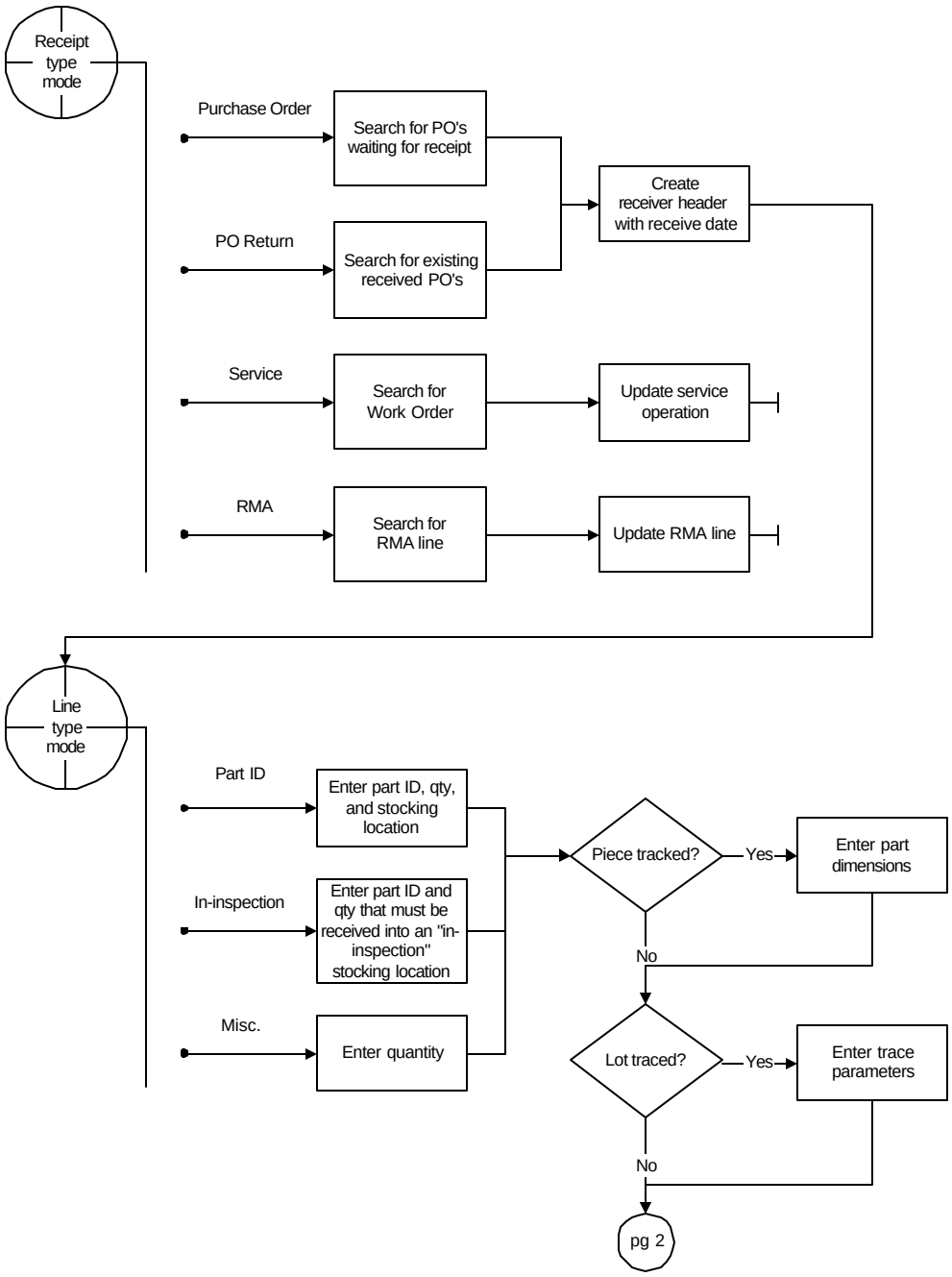
3.6 Throughput Analysis Flow

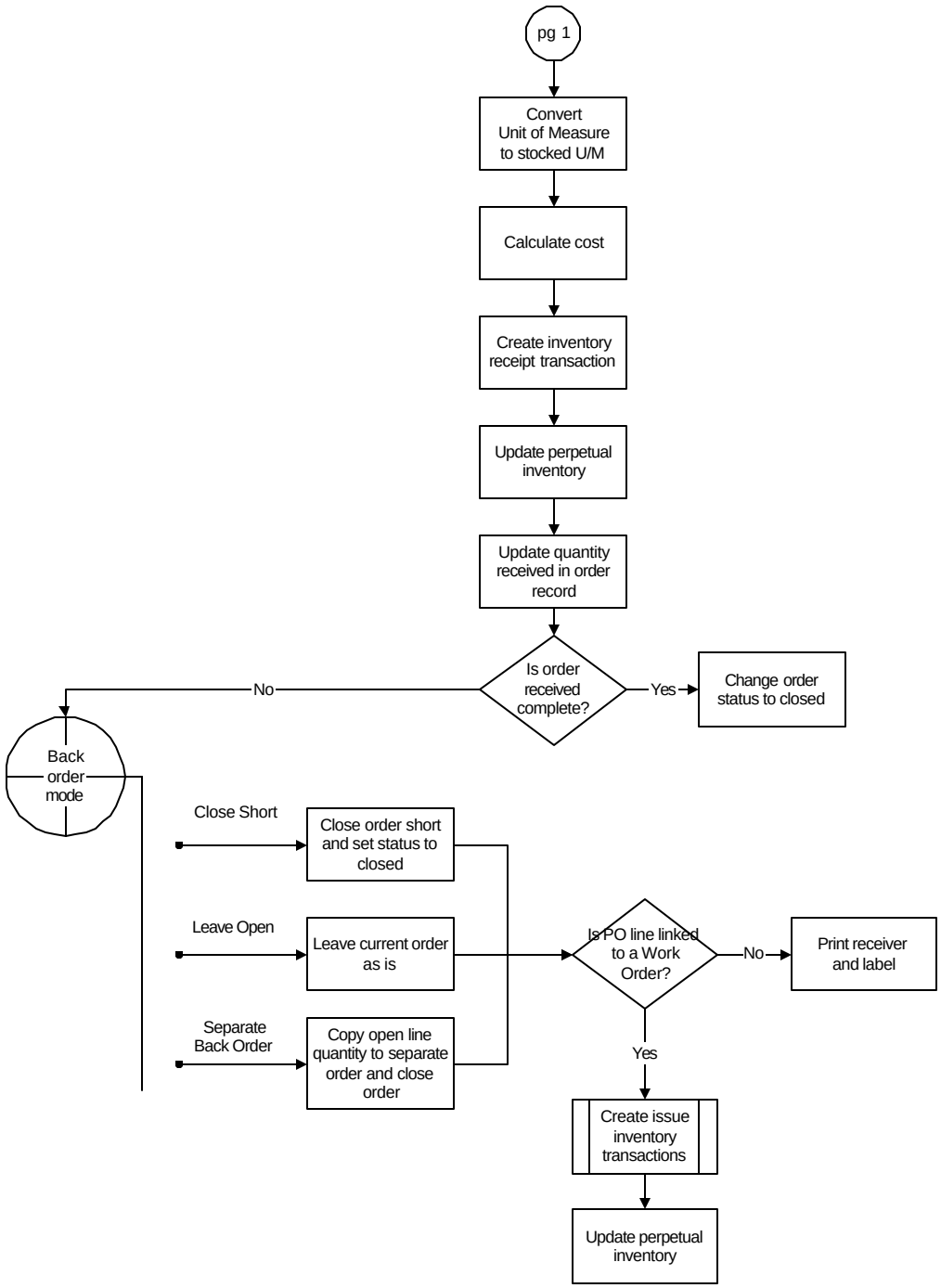


3.7 Purchasing Flow

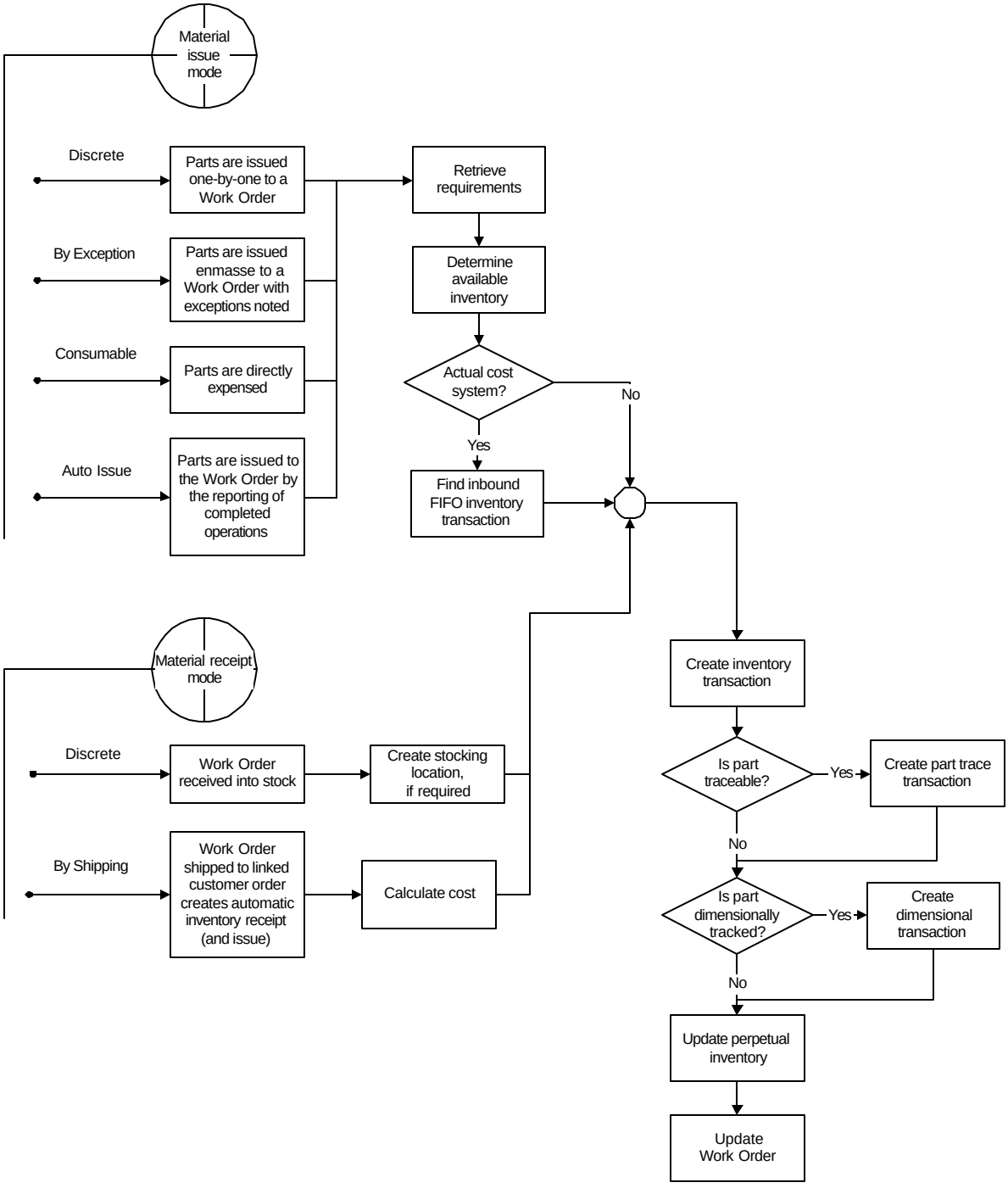


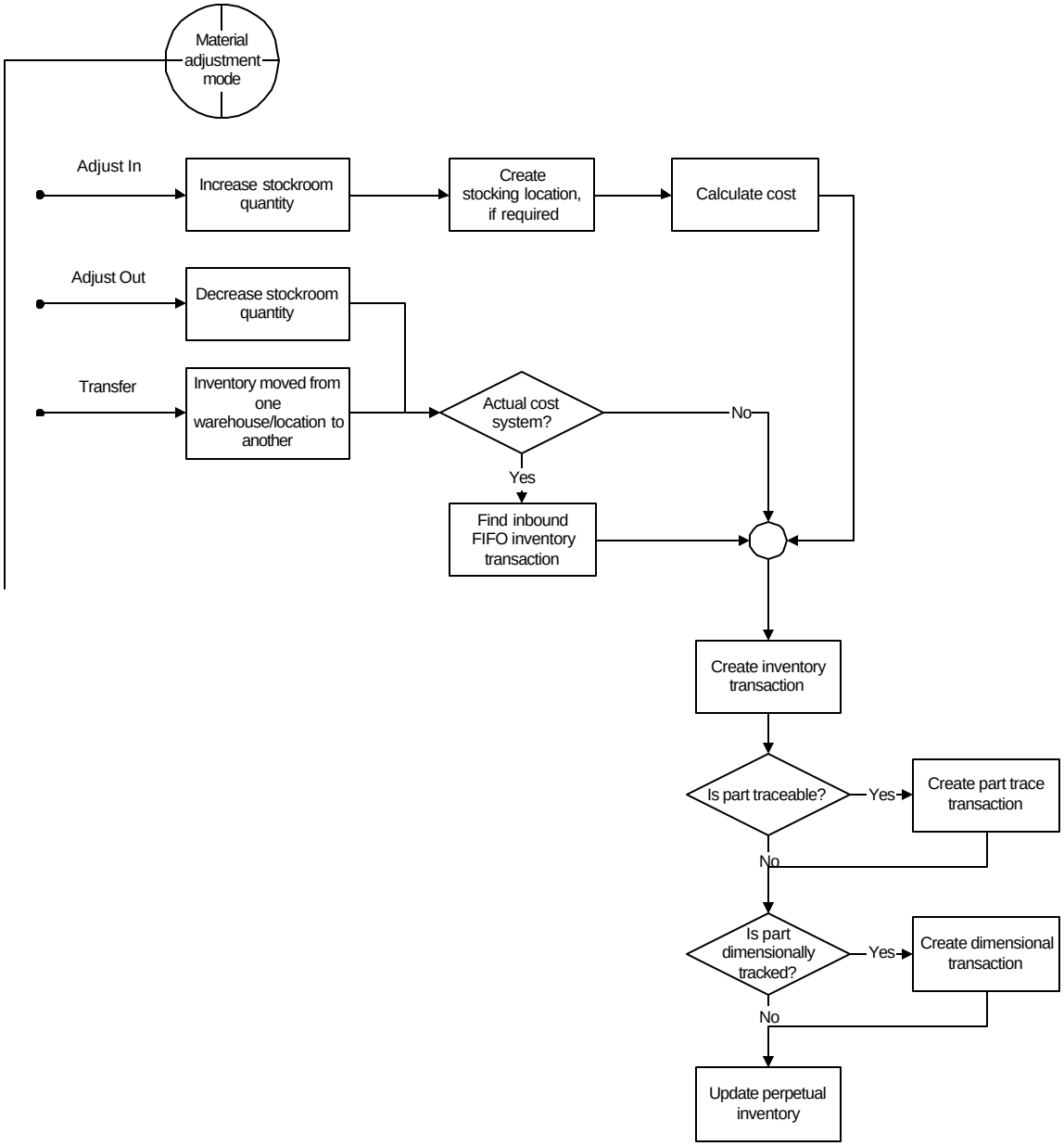
3.8 Receiving Flow



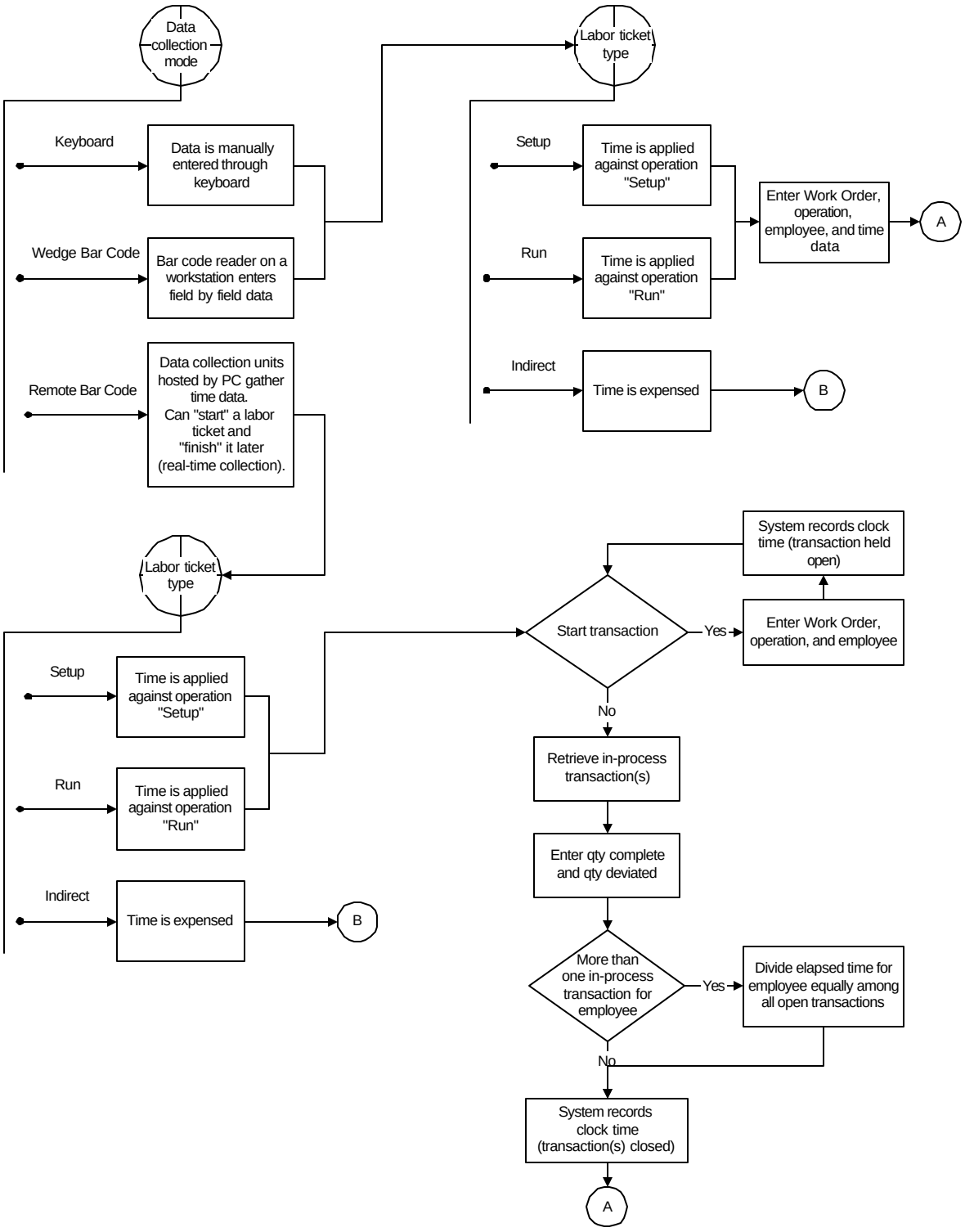

pg 1
Convert Unit of Measure to stocked U/M
Calculate cost
Create inventory receipt transaction
Update perpetual inventory
Update quantity received in order record
Is order received complete?
Yes
Change order status to closed
No
Back order mode
Close Short
Close order short and set status to closed
Leave Open
Leave current order as is
Separate Back Order
Copy open line quantity to separate order and close order
Is PO line linked to a Work Order?
No
Print receiver and label
Yes
Create issue inventory transactions
Update perpetual inventory

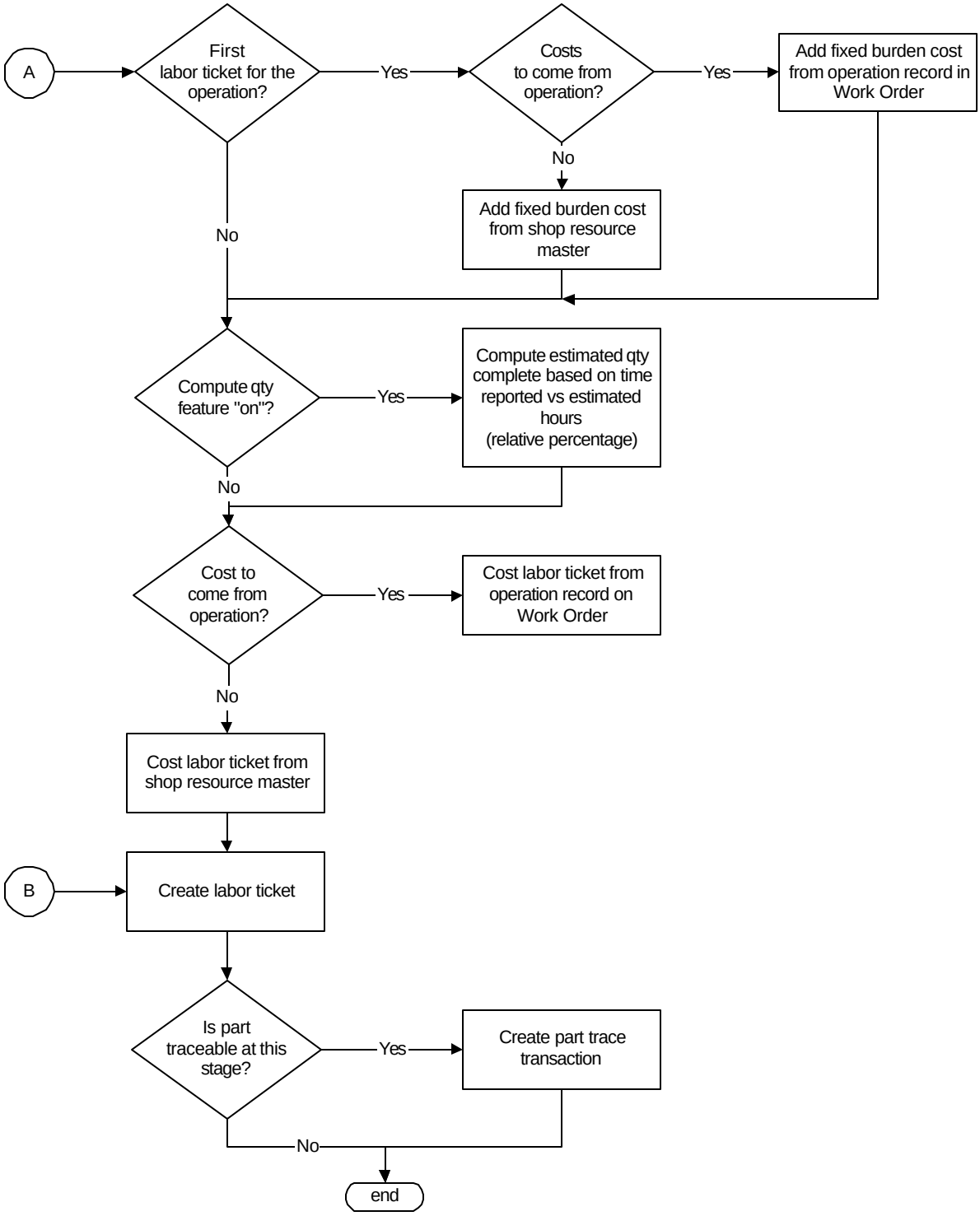
3.9 Inventory Control Flow



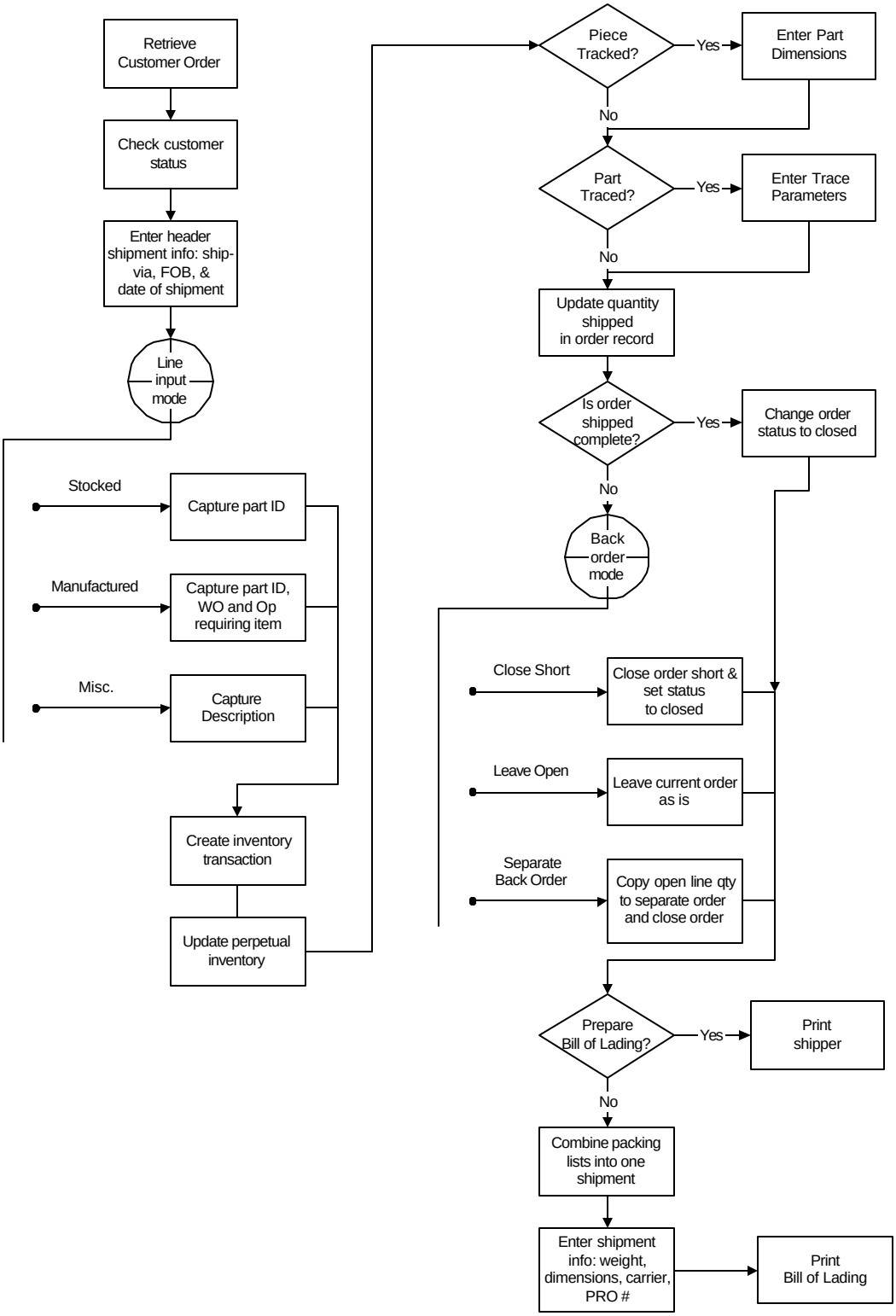

Material adjustment mode
Adjust In
Increase stockroom quantity
Create stocking location, if required
Calculate cost
Adjust Out
Decrease stockroom quantity
Transfer
Inventory moved from one warehouse/location to another
Actual cost system?
No
Yes
Find inbound FIFO inventory transaction
Create inventory transaction
Is part traceable?
Yes
Create part trace transaction
No
Is part dimensionally tracked?
Yes
Create dimensional transaction
No
Update perpetual inventory

3.10 Shop Floor Control Flow




A
First labor ticket for the operation?
Yes
Costs to come from operation?
Yes
Add fixed burden cost from operation record in Work Order
No
Add fixed burden cost from shop resource master
No
Compute qty feature "on"?
Yes
Compute estimated qty complete based on time reported vs estimated hours (relative percentage)
No
Cost to come from operation?
Yes
Cost labor ticket from operation record on Work Order
No
Cost labor ticket from shop resource master
B
Create labor ticket
Is part traceable at this stage?
Yes
Create part trace transaction
No
end

3.11 Shipping Flow



3.12 Service and Repair Flow

3.13 Invoicing Flow

3.14 Manufacturing Costing Flow

3.15 Work Flow Messages Flow

3.16 Electronic Data Interchange (EDI) Flow

3.17 Enterprise Information System (EIS) Flow

3.18 Operations Parameters Flow

3.19 Purging Flow

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4. Transaction Level Briefs

This section reviews the parameters and the transactions of VISUAL Manufacturing grouped into logical units of functionality. While these transaction level briefs do not detail the systems screens and user interaction, they do specify the behavior of the transaction functions.

4.1 Quoting and Estimating	*Quoting and Estimating* is defined as the collection of application tools used for developing an estimate and quotation. Quoting and Estimating is intensive in the following forms: ❑ Creating an engineering definition of the proposed job ❑ Costing the engineering definition ❑ Marking up the cost to determine selling price ❑ Converting the costs and prices to the customers unit of measure ❑ Maintaining the quote ❑ Scheduling the quote for availability
4.1.1 General Quoting and Estimating Reports	
4.1.1.1 Proforma Report	The *Proforma Report* projects the kind of revenue that will given for a user selected entity, date range, and all quotes above a user given win probability percent. The report can be sequenced as shown below. This report lists all quotes in process and can be printed, e-mailed, viewed, or sent to a file. user selections for report to be based on are: ❑ Entity ID ❑ Date range ❑ Probability of winning percent (greater then value given) Sequence selections for the reports are by: ❑ Month ❑ Sales representative ❑ Territory ❑ Customer and then month
4.1.1.1.1 Proforma (by: Month)	This is the *Month Sorted* version of the Proforma Report. Header:: ❑ Company name ❑ Report title ❑ Run comments (entity, date range, probability percent range) Year header: ❑ Year quoted Month header: ❑ Month quoted ❑ Expected win date Quote header: ❑ Quote ID Quote footer: ❑ Customer name ❑ Entity ID

	❑ Sales representative ❑ Territory ❑ Win probability ❑ Quotation amount Month footer: ❑ Quotation amount total per month Report footer: ❑ Quotation amount grand total
4.1.1.1.2 Proforma (by: Sales Representative)	This is the *Sales Representative Sorted* version of the Proforma Report. Header:: ❑ Company name ❑ Report title ❑ Run comments (entity, date range, probability percent range) Sales representative header: ❑ Sales representative Quote header: ❑ Quote ID Quote footer: ❑ Customer name ❑ Entity ID ❑ Territory ❑ Quote date ❑ Quotation amount Sales representative footer: ❑ Quotation amount total Report footer: ❑ Quotation amount grand total
4.1.1.1.3 Proforma (by: Territory)	This is the *Territory Sorted* version of the Proforma Report. Header:: ❑ Company name ❑ Report title ❑ Run comments (entity, date range, probability percent range) Territory header: ❑ Territory Quote header: ❑ Quote ID Quote footer: ❑ Customer name ❑ Entity ID ❑ Sales representative ❑ Quote date ❑ Quotation amount

	Territory footer: ❑ Quotation amount total Report footer: ❑ Quotation amount grand total
4.1.1.1.4 Proforma (by: Customer Name)	This is the *Customer Name & Quote Date Sorted* version of the Proforma Report. Header:: ❑ Company name ❑ Report title ❑ Run comments (entity, date range, probability percent range) Customer name header: ❑ Customer name Year header: ❑ Year quoted Month header: ❑ Month quoted ❑ Expected win date Line items: ❑ Quote ID ❑ Quote date ❑ Entity ID ❑ Sales representative ❑ Territory ❑ Win probability ❑ Quotation amount Month footer: ❑ Quotation amount total per month per customer Year footer: ❑ Quotation amount total per year per customer Report footer: ❑ Quotation amount grand total
4.1.1.2 Quote Acknowledgement	The *Quote Acknowledgement* Report is the Quote Acknowledgment that is sent to the customer or prospect to confirm a quote. Also, provided are three user defined alternate layouts of the acknowledgment form. The Reports can be printed individually or in batches based on a date range of quotes not previously printed. When printed, the system changes the status of the quote to printed. Additionally, in batch mode, an entity can be selected. Once printed, the system flags the order(s) printed by a date/time stamp unless a draft-print mode is selected. Quote Acknowledgments can only be printed and not be viewed on the screen. Report information as follows: Header: ❑ Quote ID ❑ Quote customer ID ❑ Customer sold to address or prospects address ❑ Contact information ❑ Quote date ❑ Quote ship-via

	❑ Quote sale rep ❑ Quote terms Quote header: ❑ Quote ID ❑ Quote long description Quote Line Number header: ❑ Quote line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Manual line description ❑ Line specification Quote Line Quantity header: ❑ Quantity Line items: ❑ Quantity long description ❑ Line quantity ❑ Quantity discounted unit price ❑ Extended price ❑ Options ❑ Option Prices Report footer: ❑ Draft stamp, if optional draft print mode selected
4.1.1.3 Quote Cost Detail Report	The *Quote Cost Detail Report* lists the cost breakdown for each item's information relevant to the estimated costs, calculated prices, quoted prices, and quantities quoted. The report can be run for an individual line on the quote or all lines on the quote. Quantity breaks on purchased material can be used in the cost calculation based on user input. Additionally, pricing information is to be included on the report if chosen by the user. The choice is also given to override the various markups assigned to the quote for purposes of the cost detail report. Markup overrides are given for purchased material, fabricated material, labor cost, burned cost, and service cost. These reports can be printed, e-mailed, viewed, or sent to a file. Report setup/run options are: ❑ Print selected line(s) only ❑ Use quantity breaks on purchased material ❑ Print pricing information ❑ Override markups Markup Override options allowed for: ❑ Purchased material ❑ Fabricated material ❑ Labor cost ❑ Burned cost ❑ Service cost
4.1.1.3.1 Cost Detail Report (standard version)	This is the *Standard Version* of the quote cost detail report. Header: ❑ Company name ❑ Report title

	❑ Run comments ❑ Customer ID ❑ Customer name ❑ Quote ID ❑ Quote line number ❑ Quote quantity ❑ Part ID ❑ Customer part ID ❑ Part description ❑ Product code Quote ID header: (for sorting) Quote Line Number header: (for sorting) Quote Quantity header: (for sorting) Line items: ❑ Description ❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Service cost ❑ Quantity ❑ Setup hours ❑ Run hours Quote Quantity footer: ❑ Material cost total ❑ Labor cost total ❑ Burden cost total ❑ Service cost total ❑ Setup hours total ❑ Run hours total ❑ Total quote cost ❑ Unit quote value (= total quote cost / quantity quoted)
4.1.1.3.2 Cost Detail Report (w/ Pricing Info)	This is the *Pricing Information Included Version* of the quote cost detail report. Header: ❑ Company name ❑ Report title ❑ Run comments ❑ Customer ID ❑ Customer name ❑ Quote ID ❑ Quote line number ❑ Quote quantity ❑ Part ID ❑ Customer part ID ❑ Part description ❑ Product code Quote ID header: (for sorting) Quote Line Number header: (for sorting) Quote Quantity header: (for sorting) Line items: ❑ Description

	❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Service cost ❑ Quantity ❑ Setup hours ❑ Run hours Quote Quantity footer: ❑ Setup hours total ❑ Run hours total ❑ Pre-GS&A cost (material, labor, burden, service, total, unit) ❑ GS&A (material, labor, burden, service) ❑ Total cost (material, labor, burden, service, total, unit) ❑ Markup (material, labor, burden, service, total, unit) ❑ Calculated price (material, labor, burden, service, total, unit) ❑ Percent profit total ❑ Percent markup total ❑ Quoted price (total, unit) ❑ Percent profit total ❑ Percent markup total
4.1.1.4 Quote Log Report	The *Quote Log Report* lists quotes in process based on various selection criteria giving the user the ability to analyze quotes that have been entered. It can be printed, e-mailed, viewed, or sent to a file. The selection criteria include: ❑ Entity ID ❑ Date range ❑ Quote Status selection options ❑ Sequence selection options Sequence selection options are: (one only) ❑ Quote ID ❑ Quote date ❑ Expected date ❑ Follow-up date ❑ Expiration date Quote Status selection options are: (any or all) ❑ In-house ❑ Ready ❑ Printed ❑ Won ❑ Lost ❑ Cancelled
4.1.1.4.1 Quote Log (Standard Version)	This is the *Standard Version* of the quote log report. Header: ❑ Company name ❑ Run comments ❑ Entity ID Quote header: ❑ Quote ID

	Quote footer: ❑ Quote ID ❑ Customer/prospect name ❑ Quote entity ID ❑ Quoted date ❑ Expected win date ❑ Follow-up date ❑ Win/loss date ❑ Expiration date ❑ Status
4.1.1.4.2 Quote Log (by: Customer ID)	This is the *Customer ID Sorted* version of the quote log report. Header: ❑ Company name ❑ Run comments ❑ Entity ID Customer header: ❑ Customer ID ❑ Customer/prospect name Quote header: ❑ Quote ID Quote footer: ❑ Quote ID ❑ Quote entity ID ❑ Quoted date ❑ Expected win date ❑ Follow-up date ❑ Win/loss date ❑ Expiration date ❑ Status
4.1.1.5 Engineering Report	The *Engineering Report* lists the engineering detail (router and Bill of Material) for a selected line on the quote. It can be printed, viewed, or sent to a file. There are two versions of the report: ❑ Detailed or long version ❑ Summary or short
4.1.1.5.1 Detail Version	This is the *Detailed Version* of the engineering report. The report prints the detail of each material or operation step from the Quote Master as follows. Header: ❑ Company name ❑ Work Order ID Work Order ID header: ❑ Work Order detail ❑ Work Order desired quantity ❑ Work Order engineered by ❑ Work Order drawing ID ❑ Work Order drawing revision ❑ Work Order long description Operation of Work Order header: ❑ Operation type

	❑ Operation scrap yield percent ❑ Operation drawing ID ❑ Operation drawing revision ❑ Operation calculation end quantity ❑ Operation calculation start quantity ❑ Operation resource ID ❑ Operation setup hours ❑ Operation fixed scrap units ❑ Operation resource setup ID ❑ Operation run ❑ Operation run type ❑ Operation minimum move quantity ❑ Operation run resource ID ❑ Operation move hours ❑ Operation capacity usage maximum ❑ Operation service ID ❑ Operation transit days ❑ Operation capacity usage minimum Line items: ❑ Requirement detail ❑ Requirement calculation quantity ❑ Requirement drawing ID ❑ Requirement drawing revision ❑ Requirement quantity per ❑ Requirement usage unit of measure ❑ Requirement fixed quantity ❑ Requirement dimensions ❑ Requirement long description
4.1.1.5.2 Summary Version	This is the *Summary Version* of the engineering report. The report prints one line for each bill of manufacture line as follows. Header: ❑ Company name ❑ Work Order ID Work Order ID header: ❑ Work Order detail ❑ Work Order desired quantity ❑ Work Order engineered by ❑ Work Order drawing ID ❑ Work Order drawing revision Operation of Work Order header: ❑ Operation detail ❑ Operation calculation end quantity ❑ Operation setup hours ❑ Operation run ❑ Operation run type ❑ Operation service ID ❑ Operation drawing ID ❑ Operation drawing revision Requirement of operation header: ❑ Requirement detail ❑ Requirement piece number

	❑ Requirement calculation quantity ❑ Requirement drawing ID ❑ Requirement drawing revision
4.1.2 Quote and Estimate Source	The creation a *Quote* and *Estimate* can originate from two sources: ❑ Copy an existing quote/Estimate ❑ Create a new quote
4.1.2.1 Copy Existing Quote/Estimate	If the new quote is to be based upon an existing quote, that quote is chosen and copied into a new quote. The new quote number can either be manually keyed or auto-numbered using the next available quote number. The quote header, at a minimum, is copied with the choice of copying the individual lines. If the quote lines are copied, then the pre-existing prices may be alternatively copied. The Quote Master detail can also be copied for each line. All information can be edited after the copying process.
4.1.2.2 Create a New Quote/Estimate	In this mode, all detail of the quote is entered manually.
4.1.3 Create Quote Header	The quote header is created with minimal required information. The following are required: ❑ Quote ID ❑ Quote Date ❑ Status ❑ Quote total ❑ Freight total The following are optional: ❑ Customer ID ❑ Contact information ❑ Terms ❑ Won/Lost date ❑ Expiration date ❑ Follow-up date ❑ Expect date ❑ Printed date ❑ Win probability percent ❑ Quoted lead time ❑ Win/lost reason ❑ Sales representative ❑ Territory ❑ FOB point ❑ Ship Via ❑ Discount ❑ Currency Code ❑ Entity
4.1.3.1 Capture Printed Date	Upon printing of the estimate the current date is stored with the estimate header record indicating the date of the printing. A provision is provided to clear this date, which allows reprinting.
4.1.3.2 Quote Date	The *Quote Date* is the date of the quote. The default date is the current date and can be changed at any time.
4.1.3.3 Status	Each quote has a *Status* to indicate the progression through the quoting cycle. These statuses are: ❑ In-house ❑ Ready ❑ Printed ❑ Won ❑ Lost ❑ Cancelled
4.1.3.3.1 In House	*In-house* status means the quote is still being processed internally and is not ready for

	printing and delivery to the customer or prospect.
4.1.3.3.2 Ready	*Ready* status means that quote is ready for presentation to the customer or prospect.
4.1.3.3.3 Printed	*Printed* status means the quote has been transmitted to the customer or prospect. The first time a quote is printed the system automatically sets the status to Printed.
4.1.3.3.4 Won	*Won* status means the quote has been won and has been turned into a Customer Order. If a Customer Order is created from the quote directly, then this status is automatically set.
4.1.3.3.5 Lost	*Lost* status means an order will not be placed for this quotation.
4.1.3.3.6 Cancelled	*Cancelled* status means the quote was cancelled before a win/loss decision was made.
4.1.3.4 Contact Information	*Contact Information* is the primary contact person with the customer or prospect for this quote. The following information is included: ❑ Title ❑ First name ❑ Middle initial ❑ Last name ❑ Salutation ❑ Position ❑ Phone number ❑ Fax number
4.1.3.5 Won/Lost Date	The *Won/Lost Date* indicates the date that the quote was either won or lost. If the status is changed to a Won status, this date is automatically filled in with the current date. The user can change the date at any time. Quoting history Reports uses the date. Once the quote has been printed this date cannot be changed.
4.1.3.6 Expiration Date	The *Expiration Date* indicates when the parts, jobs, or prices quoted to the customer or prospect are no longer valid. If the quote is expired, it still can be printed. Once the quote has been printed this date cannot be changed.
4.1.3.7 Follow Up Date	The *Follow Up Date* is used to indicate when a follow up call is appropriate for the customer or prospect. The date is used in Reports but has no further logic in the system.
4.1.3.8 Expect Date	The *Expect Date* is the date that an order is expected from the customer or prospect. The default date is the create date of the quote. This date is used as the basis of the Revenue Proforma report.
4.1.3.9 Printed Date	The *Printed Date* is the date that the quote was printed. The system automatically fills in the date upon the first printing of the quote.
4.1.3.10 Win Probability Percent	The *Win Probability Percent* is a percent that reflects the probability of the customer or prospect placing an order. The Proforma report uses this percent to present a revenue forecast. The default is 100% and can be over-ridden at any time.
4.1.3.11 Quoted Lead Time	The *Quoted Lead Time* is the number of days promised to the customer or prospect for delivery from the time of order placement.
4.1.3.12 Won/Lost Reason	*Won/Lost Reason* is a free form text string for indicating the reason why the quote was either won or lost.
4.1.3.13 Sales Representative ID	A *Sales Representative* is optionally associated with each Estimate. The sales representative is intended for use in calculation of commissions by the system and for general sales analysis purposes. If a customer is selected for the Estimate and default sales representative has been associated with that customer, that particular sales representative is automatically entered into the Estimate. This default sales representative can be over-ridden. However, doing so will not change any records other than the Estimate. The sales representative is chosen from a pre-defined list of sales representatives that is maintained by the user.
4.1.3.14 Territory	A *Territory* is optionally associated with each Estimate. The Territory is intended for use in sales analysis and can be a geographical region or some other distinguishable boundary. If a customer is selected for the Estimate and a default Territory has been associated with customer, then that particular Territory is automatically entered into the Estimate. This default Territory can be over-ridden. However, doing so will not change any records other than the Estimate. The Territory can be chosen from a pre-defined list of Territories that is maintained by the user. However, freeform text can be stored as the Territory. The Territory Master contains the following:

	❑ ID
4.1.3.15 Free on Board	A *Free on Board* (FOB) Point is optionally associated with each Estimate. The FOB Point is intended as reference information for the customer and for internal use. There is no functionality behind this FOB Point association. If a customer is selected for the Estimate and a default FOB Point has been associated with that customer, then that particular FOB Point is automatically entered into the Estimate. This default FOB Point can be over-ridden. However, doing so will not change any records other than the Estimate. The FOB Point can be chosen from a pre-defined list of FOB Points that is maintained by the user. However, free form text can be stored as the FOB Point. The FOB Point Master contains the following: ❑ ID
4.1.3.16 Ship Via	A *Ship Via* is optionally associated with each Estimate. The Ship Via is intended as a reference for the customer and for internal use. There is no functionality behind this Ship Via association. Generally, the Ship Via is for a method of shipment while a specific carrier will be defined upon the preparation of a Bill of Lading. If a customer is selected for the Estimate and default Ship Via has been associated with that customer, then that particular Ship Via is automatically entered into the Estimate. This default Ship Via can be over-ridden. However, doing so will not change any records other than the Estimate. The Ship Via can be chosen from a pre-defined list of Ship Via's that is maintained by the user. However, freeform text can be stored as the Ship Via. The Ship Via Master contains the following: ❑ ID
4.1.3.17 Discount	❑ A *Discount Code* is optionally associated with each Estimate. The Discount is a standard percent that is discounted for an order, item, and/or a customer. If a customer is selected for the Estimate and default Discount has been associated with that customer, then that particular Discount is automatically entered into the Estimate. This default Discount can be over-ridden. However, doing so will not change any records other than the Estimate. The Discount is chosen from a pre-defined list of Discounts that is maintained by the user.
4.1.3.18 Currency Code	A *Currency Code* must be associated with each Estimate. The Currency Code defines the monetary currency that the Estimate is based upon. If a customer is selected from the Estimate and default Currency Code has been associated with that customer, then that particular Currency Code is automatically entered into the Estimate. This default Currency Code can be over-ridden. However, doing so will not change any records other than the Estimate. The Currency Code is chosen form a pre-defined list of Currencies that is maintained by the user.
4.1.3.19 Entity	An *Entity* is associated with each Estimate. The entity defines which financial entity the Estimate is to eventually post to. If there is only one entity defined in the system, then that default is defaulted so that no user entry is required.
4.1.3.20 Terms	Each Estimate is assigned *Terms* that are printed as part of the customer quote and are used as the default for the Customer Order if the quote is won. There are several components to the terms: ❑ Net due days/date ❑ Discount available days/date ❑ user defined terms ❑ Freight terms The terms are defaulted from the Customer Master if they are defined there. There are 4 types of net terms: ❑ Age of Invoice, defined by the number of calendar days ❑ Day of month, specified by the day of the month (31 is used to indicate the last day of the month) ❑ Specified date, specified by the exact date payment is due ❑ Invoice age then day of month, specified by the number of months and the day of

	the month (31 is used to indicate the last day of the month) The discount is expressed as a percent and is available for taking by the customer based on the following: ❑ Age of Invoice, defined by the number of calendar days ❑ Day of month, specified by the day of the month (31 is used to indicate the last day of the month) ❑ Specified date, specified by the exact date payment is due ❑ Invoice age then day of month, specified by the number of months and the day of the month (31 is used to indicate the last day of the month) A text string can be entered as user specific terms when the predefined terms are not sufficient to define the situation. There is no logic behind this text string throughout the software other than referencing the text string. The freight terms are specified as one of the following: ❑ Prepaid (not on Invoice) ❑ Billed (on Invoice) ❑ Collect by carrier (not on Invoice)
4.1.4 Create Quoted Line Items and Quantities	One line for each quoted item is created. Multiple quoted quantities for an identical item can be handled on one quote line. The following are required: ❑ Description ❑ Quantity ❑ Unit of measure The following are optional: ❑ Part ID ❑ Customer part ID ❑ Customer part description ❑ Drawing ID ❑ Drawing revision ❑ Service charge ❑ Product Code ❑ Commodity Code ❑ Specifications ❑ Notes Any number of quantities can be entered for each line item. Multiple quantities will be individually priced.
4.1.4.1 Customer Part ID	The customer's part ID can be entered to correspond to the internal part ID for the quoted line. If a relationship has been pre-defined between the internal part ID, customer part ID, and customer ID, then either the internal part ID or the customer part ID can be entered on the line and the other ID will be filled-in automatically.
4.1.4.2 Customer Part Description	The *Customer Part Description* defaults to the description for the part ID as defined in Part Master and can be over-ridden by the user. This override is specific to this quote only.
4.1.4.3 Drawing ID	The *Drawing* ID is for reference only and is not pre-filled from the Part Master.
4.1.4.4 Drawing Revision	The *Drawing Revision* is for reference only and is not pre-filled from the Part Master.
4.1.4.5 Service Charge	A predefined *Service Charge* may be referenced on a line that does not contain a part. This charge will pass through to the Customer Order and eventually the Invoice. The Service Charge contains the following: ❑ Service charge ID ❑ Description ❑ Unit price ❑ Trade discount percent ❑ Commission percent

	❑ Product code ❑ Commodity Code ❑ Sales tax group ❑ Revenue General Ledger account ❑ Specification ❑ Picture
4.1.4.6 Product Code	A *Product Code* can be assigned to each quote line. If a part ID is specified for the line and a product code is associated with the part in the Part Master, then the product code is filled in automatically upon entry of the part ID. The product code can be over-ridden. However, doing so will not change the product code association in the Part Master. The product code can be chosen from a pre-defined list of product codes that is maintained by the user. However, freeform text can be stored as the product code. A product code is used to classify part ID's and allows easy assignment of General Ledger account numbers to a specific line of product. Because several account numbers are assigned to the product code, a singular assignment of a product code to a part in effect assigns numerous General Ledger account numbers.
4.1.4.7 Commodity Code	A *Commodity Code* can be assigned to each quote line. If a part ID is specified for the line and a Commodity Code is associated with the part in the Part Master, then the product code is filled in automatically upon entry of the part ID. The product code can be over-ridden. However, doing so will not change the product code association in the Part Master. A Commodity Code is used to classify parts generally for material management purposes and has no logic in the system. The Commodity Code can be chosen from a pre-defined list of Commodity Codes that is maintained by the user. However, freeform text can be stored as the Commodity Code.
4.1.4.8 Costing Source	Each quoted line can have its cost taken from one of three sources. The *Costing Source's* are: ❑ Part Master ❑ Quote Master ❑ Engineering Master
4.1.4.8.1 Part Master	The cost for the quoted line comes directly from the cost in the *Part Master*. This cost may be broken into material, labor, outside service, burden, and fixed cost.
4.1.4.8.2 Quote Master	Rolling up the routing and Bill of Material derives the cost. This is to be created as part of the estimating process. The routing and Bill of Material may only include the level of detail necessary to create the estimate.
4.1.4.8.3 Engineering Master	Rolling up the routing and Bill of Material in the *Engineering Master* for the part being quoted derives the cost. Because there can be any number of revisions of Engineering Masters for a part, the specific version number must also be specified.
4.1.5 Source of Engineering Definition	The engineering detail needs to be created for each quoted line item. This detail includes a router and Bill of Material. This following can be used to define this detail: ❑ Engineering Master ❑ Quote Master ❑ None
4.1.5.1 Engineering Master	If the costing source is chosen as *Engineering Master,* then it is the Engineering Master that is then used to eventually create the Work Order detail. It is possible to modify the Engineering Master for this quote. However, doing so changes the structure for future use with the associated part as well.
4.1.5.2 Quote Master	If the costing source is chosen as *Quote Master,* then a Quote Master defines the engineering detail. Depending upon the needs of the quote, the Quote Master may only be an approximation of the final router and Bill of Material, or may be detailed sufficiently enough to directly use as a Work Order when the order is won.

4.1.5.3 None	If the costing source is chosen as Part Master, then no definition is created. It will become necessary to create Work Order detail using some other method when the quote becomes a real order.
4.1.6 Create Quote Master For Each Quoted Line	There are several modes of entering the Quote Master: ❑ No definition wanted ❑ Quick ❑ Regular ❑ Product configurator ❑ Co-product ❑ Paste from another definition Regardless of the mode for creating the Quote Master, both operations and materials copy cost (material, labor, outside service, burden), and default scheduling parameters from their respective masters. These data are stored privately in the Quote Master because they can be over-ridden for each instance.
4.1.6.1 None	If cost and scheduling information is not wanted, the Quote Master can be skipped entirely. Pricing will need to be entered manually because there is no rolled up cost to base the price on.
4.1.6.2 Quick	The *Quick Quote Mode* can be used to enter a single level router and Bill of Material. Sub Work Orders (legs) are not allowed in this mode. Data entry is streamlined to make simple engineering definitions quick to enter. One or more routing steps are entered. Each routing step captures: ❑ Resource ID ❑ Setup time ❑ Run time ❑ Yield percent ❑ Advanced scheduling parameters One or more materials may be attached to each routing step. These materials can be part numbered or merely described. The following information is captured for each material: ❑ Quantity ❑ Scrap/yield percent ❑ Advanced scheduling parameters Upon completion of the Quote Master, each operation's start and end quantities are calculated based on the scrap and yield percents. The material requirements are adjusted to reflect these adjusted quantities.
4.1.6.3 Standard	*Standard Mode* is for the most sophisticated Quote Masters. It performs much like the Quick Quote Mode with the added support to embed subordinate Work Orders (legs) inside the main router. These legs can be nested inside one another to an unlimited depth. The costing of each of these legs is independent. The parallel paths of the routers perform the scheduling. The Quote Master is designed using the same mechanism as used to define Work Orders.
4.1.6.4 Product Configurator	*Product Configurator Mode* makes use of another sub-system to automate the process of constructing Quote Masters for assemble-to-order products. The product must have a part ID and be previously defined in the product configurator sub-system. The system uses menus allowing the user logically construct a custom configuration from standard options. Each of these standard options is predefined in the engineering area of the system. The pre-defined engineering definitions are pasted together, based on the instructions from the product configurator, to create a final assemble-to-order engineering definition for quoting purposes.
4.1.6.5 Copy and Paste	If existing engineering definitions already exist, in whole or part, then these can be used to paste into the Quote Master. Pieces may be copied from other Quote Masters, Work Orders, or Engineering Masters. These pieces may be assembled in any fashion wanted starting with a blank Quote Master or working from the result of any of the other Quote

	Master creation modes. Routing steps and materials may be added, deleted, and altered as required.
4.1.6.6 Co-Product	This is a special mode, when defining a Quote Master, which permits more than one product to be made simultaneously. The co-product list specifies the additional parts that are made with the main part. All co-products must have part IDs. Co-products are costed directly from Work Order details and calculated based on a percent of the entire order cost. Values can be assigned to co-products much like materials are assigned values. The following are used to define each co-product: ❑ Part ID ❑ Material percent ❑ Labor percent ❑ Burden percent ❑ Service percent ❑ Quantity per ❑ Desired quantity In addition the following are displayed by the system: ❑ Part description ❑ Received quantity to date The system calculates the total percent for each of material, labor, burden, and service. It is not required that they total 100%. The quantity per for each co-product can be expressed as either a static value or as a ratio to the header quantity.
4.1.7 Cost Master For Each Quoted Quantity	The Quote Master or Engineering Master is costed level-by-level through each operation and material. Costs are totaled for each of the categories - material, labor, outside service, and burden - for each individual leg throughout the Master. Because material requirement quantities are adjusted during the construction of the Master to compensate for scrap and yield, the cost effectively reflects scrap and yield as well. The costing process is repeated for each quantity to be quoted to the customer or prospect. The piece price will change based on the amount of fixed costs established in the Master (such as setup). The cost may also be affected by quantity discounts previously defined for any part ID'd materials. The cost should calculated both with and without this vendor quantity discount. The total cost for each subordinate leg is folded into its parent and presented as a material requirement. This cost can be represented in one of two ways based on a global setup: ❑ Present the cost as a single total ❑ Present the cost as four separate costs
4.1.7.1 Total Rolled Cost	*Total Rolled Cost* is calculated when all the material, labor, outside service, and burden costs for the subordinate leg are added together into **one** number and passed to the parent operation. The parent operation will then use this sub-assembly. The total cost will appear in the parent leg as a single material cost.
4.1.7.2 Separate Rolled Costs	The cost for material, labor, outside service, and burden are totaled but **not** added together. The cost (*Separate Rolled Costs*) will be presented to the parent leg as four separate costs: (1) total material, (2) total labor, (3) total outside service, and (4) total burden. As the costs are rolled up for multiple indented legs, the four separate categories are maintained.
4.1.8 Calculate Quoted Price For Each Quoted	Percents are used to calculate the markup on the cost to establish a quoted price. These percents are applied to each of the quoted quantities and their respective rolled costs. The percents are defined specifically for the quote and can be saved as default for future quoting activity (standard company markups). Different percent markups can be applied

Quantity	for each of the following cost categories: ❑ Supplied material ❑ Manufactured material ❑ Labor ❑ Outside service ❑ Burden In addition to this standard markup, another markup may be applied to cover General and Administrative (G&A) costs of the company. This G&A markup may be expressed as both a percent and as a fixed currency amount. Each of the two percent markups (standard and G&A) are added together and added to the fixed currency amount. The totals for each of the above five categories constitute the markup of the quoted item. The quoted price is finally calculated by adding all five cost categories together and applied to each of the quoted quantities. If the quoted line item is part ID'd and the unit of measure is different from the stocked unit of measure, the price for each quoted quantity is adjusted to reflect the customers unit of measure. There is an option to use purchasing quantity costs breaks when doing the calculations. Another feature allows the system to calculate the best quantities to quote to the customer based on the supplier cost breaks. The following information is presented for each quoted quantity: ❑ Quantity quoted ❑ Calculated unit cost ❑ Calculated unit price ❑ Quoted unit price ❑ Trade discount percent ❑ Unit of measure ❑ In proforma
4.1.8.1 Quantity Quoted	This is taken from the quantities specified on the quote line.
4.1.8.2 Calculated Unit Cost	This is the total cost per unit previously calculated.
4.1.8.3 Calculated Unit Price	This is the price calculated from the various markup fields. All Prices (not costs) are in terms of the currency defined for the customer or prospect. The currency in use is displayed with this data.
4.1.8.4 Quoted Unit Price	The quoted unit price is the price that will actually appear on the quote to the customer or prospect. Any time that quoted unit price is zero, the system fills it in automatically after recalculating the unit price. The amount can be manually overridden at anytime.
4.1.8.5 Trade Discount Percent	The system uses this value to set the discount percent for a generated Customer Order. This discount is **not** immediately applied to the quoted unit price.
4.1.8.6 Unit of Measure	This is used to specify which unit of measure will print on the quote and be carried to the Customer Order.
4.1.8.7 In Proforma	This flag determines whether this quantity is included in the Proforma Report. Generally, only one quantity line is flagged which best predicts the quantity that will be ordered so that revenue will not be overestimated.
4.1.9 Schedule Quote for Availability	If the resource Scheduler is in use, the quote can be checked for *Schedule Availability*. The quote can be fit into the standard schedule and any of the "what-if" schedules established in global scheduling.
4.1.9.1 Input Parameters	The following parameters are all taken directly from the quote: ❑ Release date ❑ Quantity An option to force forward scheduling (the Scheduler normally performs backward

	scheduling) is available. The following parameters are supplied at the time of scheduling: ❑ Schedule ID ❑ Want date ❑ Check material availability ❑ Check service availability ❑ Freeze started operations All other scheduling parameters come from the selected schedule definition. The schedule must be previously defined in the Global Scheduler sub-system.
4.1.9.1.1 Release Date	A release date (start) may be manually entered. The release date is initially set to the expected date of the order.
4.1.9.1.2 Quantity	The quantity is set to the largest quantity quoted for the line. However, it may be manually overridden.
4.1.9.1.3 Want Date	The desired want date can be manually entered.
4.1.9.1.4 Check Material Availability	The Scheduler checks to make sure that all materials required by the final operation are available on the scheduled start date of the operation. If a Purchase Order line is linked to the material, then the due date of that line item must be before the proposed scheduled start date for the operation. If there is no linking and the material has a part ID, then the Scheduler checks to see if a sufficient quantity of the material is available on the proposed start date of the operation. The Scheduler considers the quantity currently on hand, adding in all supply orders, (including planned orders, Purchase Orders and Work Orders for fabricated components), that are due on or before the proposed start date. It then subtracts the quantities needed by all other Work Orders that have been scheduled prior to this one that need the material on or before the proposed start date. The Scheduler uses the line item due date as the "due in" date for incoming Purchase Orders and the want date for incoming Work Orders that make fabricated components. It also accounts for demand caused by planned orders. If insufficient quantity of material will be available, the system checks to see if there is enough time to initiate a new order by examining the part's lead-time. If material is not available, the Scheduler stops scheduling in the backward direction and begins a forward finite schedule.
4.1.9.1.5 Check Service Availability	Those operations defined as outside services are normally planned with infinite capacity. An option is available to ascertain whether a service is available prior to its scheduling.
4.1.9.2 Output Parameters	The following parameters are returned by the Scheduler: ❑ Scheduled start date ❑ Scheduled finish date ❑ Determinant path days delay ❑ Total days delay
4.1.9.2.1 Scheduled Start Date	This is the date on which the first operation of the quote will start.
4.1.9.2.2 Scheduled Finish Date	This is the date on which the quote is scheduled to be completed.
4.1.9.2.3 Determinant Path Days Delay	This is the total time between the start and finish dates of the determinant path that is not occupied by actual scheduled production. This provides a measure of how much earlier the want date could be if no other Work Orders were scheduled to interfere with this quote. Visually, this is the sum of the horizontal gaps between successive operations of the determinant path that are not caused by weekends or other non production time.
4.1.9.2.4 Total Days Delay	Similar to Determinant Path Days Delay, this is the days delay for all operations in the estimate, not just the determinant path.
4.1.9.3 Display Audit	Audit information can be displayed on how the quote was placed into the chosen

Trail	schedule. The following information is provided: ❑ Attempt number ❑ Sub ID ❑ Sequence ❑ Resource ❑ Unit number ❑ Work Order pass number ❑ Direction ❑ Result ❑ Result detail ❑ Start date ❑ Finish date
4.1.9.3.1 Attempt Number	
4.1.9.3.2 Sub ID	
4.1.9.3.3 Sequence	
4.1.9.3.4 Resource	
4.1.9.3.5 Unit Number	
4.1.9.3.6 Work Order Pass Number	
4.1.9.3.7 Direction	
4.1.9.3.8 Result	
4.1.9.3.9 Result Detail	
4.1.9.3.10 Start Date	
4.1.9.3.11 Finish Date	
4.1.9.4 Reserve Capacity	Once an adequate number of "what-if" scenarios have been run to determine the required dates and lead-time, the quote may be saved into the schedule. If it is not wanted to reserve capacity, then the quote can be removed from the schedule. If satisfactory scheduling results are not achieved using the existing schedules, then the quote can be saved into the schedule for analysis in context of other competing Work Orders. By reviewing the complete schedule, it may be possible to remove one or more constraints thus allowing the quote to schedule satisfactorily.
4.1.10 Print Quote	The quote acknowledgement is printed for delivery to the customer or prospect. Additional supporting documents may be required such as engineering Reports and cost detail Reports. The system flags the quote as printed with a date.
4.1.11 Manage Quote	
4.1.11.1 Find Part ID	
4.1.11.2 Find Part Description	
4.1.11.3 Find Co-Products	
4.1.11.4 Renumber Line Items	
4.1.12 Delete Quote and Estimate	This is used to permanently remove part or all of a quote or estimate from the system. Each type of component can be deleted: ❑ Header

	❑ Line ❑ Quote Master header ❑ Quote Master operation ❑ Quote Master requirement ❑ Quote Master leg There is no checking for dependent records before deleting a quote or Quote Master from the system.
4.1.12.1 Header	This deletes the entire quote from the system including all lines. Quote Masters associated with individual lines are not automatically deleted.
4.1.12.2 Line	This deletes individually selected lines from the system. Associated Quote Masters are not automatically deleted.
4.1.12.3 Quote Master Header	This deletes the entire engineering structure from the system.
4.1.12.4 Quote Master Operation	This deletes the selected operation from the system. Since requirements are associated with operations, any such associated requirements will also be deleted.
4.1.12.5 Quote Master Requirement	This deletes the selected material requirement.
4.1.12.6 Quote Master Log	This deletes the selected leg header and all subordinate operations, requirements, and subordinate legs.
4.1.13 Generate Vendor RFQ	This is used to automatically generate a Request for Quote for vendors from the detail already established in the Quote Master. Generation of an RFQ depends on the following: ❑ One or more purchased material requirements ❑ The requirements must have a vendor specified either directly in the Quote Master or the part must have one or more vendors which supply the part ❑ A quantity required greater than zero for the part The following detail is taken from the quote and Quote Master to the vendor RFQ for further processing: ❑ Customer quote ID ❑ Vendor ❑ Part ID ❑ Vendor part ID ❑ Unit of measure ❑ Quantities (for each quoted quantity)

4.2 Sales	*Sales* is the sub-system used for entering and maintaining Customer Orders. Sales is intensive in the following forms: ❑ Creating a Customer Order from a variety of sources ❑ Creating and/or linking Work Orders to Customer Orders ❑ Establishing progress billing including cost and revenue recognition ❑ Supporting mixed-mode order fulfillment ❑ Pricing and discounting based on customer and part ID ❑ Customer credit checking ❑ Capacity and material availability analysis ❑ Flexible order lookup and status checking
4.2.1 General Sales Reports	
4.2.1.1 Customer Order Acknowledgement	The *Customer Order Acknowledgement Report* is the Customer Order acknowledgment that is sent to the customer to confirm an order. Also provided are three user defined alternate layouts of the acknowledgment form. The Reports can be printed individually or in batches of firm status orders based on a date range of orders not previously printed. A printing option is provided to change the status of the order from Firm to Released after printed. Additionally, in batch mode, an entity and/or sales representative can be selected. Once printed, the system flags the order(s) printed by a date/time stamp, unless a draft-print mode is selected. Customer Order acknowledgments can only be printed and not be viewed on the screen. Header: ❑ Customer Order ID (optional bar code) ❑ Customer ID ❑ Sold-to address ❑ Ship-To address ❑ Freight terms ❑ Ship Via ❑ Free on Board ❑ Terms ❑ Customer's Purchase Order number ❑ Desired ship date ❑ Customer contract information Customer Order header: ❑ Customer Order ID Line items: ❑ Order quantity (optional bar code) ❑ Shipped quantity ❑ Backorder quantity ❑ Part ID ❑ Description ❑ Is this line taxable? ❑ Discounted unit price ❑ Extended price ❑ Customer part ID ❑ Line options ❑ Line option prices ❑ Line HTS code ❑ Line origin country ❑ Line material code ❑ Line delivery scheduled quantity

	❑ Line delivery scheduled date ❑ Line delivery scheduled Ship To ID Customer Order footer: ❑ Sub Total ❑ Line tax1, 2, 3, 4, 5, description / amount ❑ Freight charges total ❑ Grand total Footer: ❑ Draft optional print setting / marking
4.2.1.2 Value Added Tax Customer Order Acknowledgement	The *Value Added Tax Customer Order Acknowledgement Report* is the Value Added Tax (VAT) version of the Customer Order acknowledgment report. This report is used as the default acknowledgment report for customers using Value Added Tax reporting. Report functions as shown above with report information as shown below. Header: ❑ Customer Order ID (optional bar code) ❑ Customer Order customer ID ❑ Customer Sold To address ❑ Customer Ship To address ❑ Customer Order freight terms ❑ Customer Value Added Tax (VAT) registration number ❑ Customer Order ship-via ❑ Customer Order Free on Board ❑ Customer Order terms ❑ Customer Order customer Purchase Order reference number ❑ Customer Order wanted ❑ Customer Order sales representative name Customer Order header: ❑ Customer Order long description Line items: ❑ Order quantity (optional bar code) ❑ Shipped quantity ❑ Backorder quantity ❑ Part ID ❑ Part description ❑ Discount price unit ❑ Value Added Tax percent ❑ Value Added Tax amount ❑ Extended cost ❑ Customer part ID ❑ Long description ❑ Options ❑ Option prices ❑ Delivery scheduled quantity ❑ Delivery scheduled date ❑ Deliver scheduled Ship-To ID Customer Order ID footer: ❑ Subtotal ❑ Freight ❑ Value Added Tax subtotal ❑ Grand total

4.2.1.3 Customer Order List Report	The *Customer Order List Report* lists all Customer Orders and can be printed, viewed, or sent to a file. Orders can be selected individually or printed by batch. Batch printing is based on a date range of order entry, entity ID, and the order status. Order or customer can sort batch printing. When sorted by customer, the batch report can be further narrowed by a customer-range, if entered. Output can be summary, detailed, or with a detailed delivery schedule.
4.2.1.3.1 Summary Version	This is the *Summary Version* of the Customer Order List report contains a single line for each order. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID (optional bar code) Customer Order footer: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Customer Purchase Order number ❑ Order date ❑ Desired ship date ❑ Order status ❑ Amount Report footer: ❑ Report total amount
4.2.1.3.2 Detail Version	This is the *Detail Version* of the Customer Order List Report contains the following additional information: Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID (optional bar code) ❑ Customer ID ❑ Customer Purchase Order reference ❑ Order date ❑ Desired ship date ❑ Status ❑ Customer name ❑ Customer sold to address ❑ Customer Ship To address ❑ Contact name ❑ Phone number ❑ Fax number ❑ Ship Via ❑ Free on Board ❑ Sales representative ❑ Territory

	Line items: ❑ Line number (optional bar code) ❑ Order quantity ❑ Shipped quantity ❑ Part ID ❑ Unit price ❑ Trade discount percent ❑ Order amount ❑ Shipped amount ❑ Customer part ID ❑ Miscellaneous reference ❑ Line HTS code ❑ Line origin country ❑ Line material code Customer Order footer: ❑ Order amount total ❑ Shipped amount total Report footer: ❑ Order amount total ❑ Shipped amount total
4.2.1.3.3 Detail Delivery Schedule Version	This is the *Detailed Delivery Schedule Version* of the Customer Order List Report contains the following additional information: ❑ Delivery schedule for each order line
4.2.1.4 Customer List Report	The *Customer List Report* is generated for a given customer ID range. This report can be viewed, printed, or sent to a file. Barcodes can be included in this report for systems using barcode. This customer report outputs information for about a customer, like name, address(s), and contact(s). Customer ID sorted by default. Header: ❑ Company name ❑ Customer ID range Line items: ❑ Customer ID ❑ Customer sold to name ❑ Customer sold to address ❑ Customer bill to name ❑ Customer sold to address ❑ Contact name ❑ Contact phone ❑ Contact fax Report footer: ❑ Number of customers printed
4.2.1.5 Customer Order Bookings Detail Reports	The *Customer Order Bookings Detail Reports* print information for all Firm, Released, and Closed Customer Orders in a specified date range. This report can be further limited for a user given sequence range. Order amounts are totaled for each group in the sorting sequence. These reports can be printed, viewed, e-mailed, or sent to a file. The detail report can be sequencing and each can specify a range as follows: ❑ Customer Order ID ❑ Customer ID

	❑ Customer name ❑ Part/Job ID ❑ Product code ❑ Commodity Code ❑ Sales representative ❑ Territory ❑ General Ledger account ID ❑ SIC code ❑ Discount Code
4.2.1.5.1 Bookings Detail Report (Sort by: Order)	This is the *Customer Order ID Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order ID header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Customer Purchase Order ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order ID ❑ Description reference ❑ Product code ❑ Commodity code ❑ Selling unit of measure ❑ Amount Customer Order footer: ❑ Order amount total Report footer: ❑ Report amount grand total
4.2.1.5.2 Bookings Detail Report (Sort by: Customer ID)	This is the *Customer ID Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer ID header: ❑ Customer ID ❑ Customer name Customer Order ID header: ❑ Customer Order ID ❑ Customer Purchase Order ❑ Sales representative ❑ Territory

	Line items: ❑ Part ID ❑ Work Order ID ❑ Description reference ❑ Product code ❑ Commodity code ❑ Selling unit of measure ❑ Amount Customer ID footer: ❑ Customer amount total Report footer: ❑ Report amount grand total
4.2.1.5.3 Bookings Detail Report (Sort by: Customer Name)	This is the *Customer Name Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Name header: ❑ Customer name ❑ Customer ID Customer Order ID header: ❑ Customer Order ID ❑ Customer Purchase Order ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order ID ❑ Description reference ❑ Product code ❑ Commodity code ❑ Selling unit of measure ❑ Amount Customer Name footer: ❑ Customer amount total Report footer: ❑ Report amount grand total
4.2.1.5.4 Bookings Detail Report (Sort by: Part)	This is the *Part ID Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Work Order header: ❑ Work Order ID

	Part header: ❑ Part ID Description Reference header: ❑ Description Reference (for on the fly jobs w/o an ID) Line items: ❑ Customer Order ID ❑ Customer ID ❑ Product code ❑ Sales representative ❑ Territory ❑ Amount Description Reference footer: ❑ Part / Job / Misc. amount total Report footer: ❑ Report amount grand total
4.2.1.5.5 Bookings Detail Report (Sort by: Product Code)	This is the *Product Code Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Product code header: ❑ Product code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Work Order ID (if it exists) ❑ Part ID (if it exists) ❑ Description reference (for WO or Part) ❑ Commodity code ❑ Sales representative ❑ Territory ❑ Amount Product code footer: ❑ Product code amount total Report footer: ❑ Report amount grand total
4.2.1.5.6 Bookings Detail Report (Sort by: Commodity Code)	This is the *Commodity Code Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity code

	Line items: ❑ Customer Order ID ❑ Customer ID ❑ Work Order ID (if it exists) ❑ Part ID (if it exists) ❑ Description reference (for WO or Part) ❑ Product code ❑ Sales representative ❑ Territory ❑ Amount Commodity Code footer: ❑ Commodity code amount total Report footer: ❑ Report amount grand total
4.2.1.5.7 Bookings Detail Report (Sort by: Sales Representative)	This is the *Sales Representative Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Sales representative header: ❑ Sales representative Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Territory ❑ Amount Sales representative footer: ❑ Sales representative amount total Report footer: ❑ Report amount grand total
4.2.1.5.8 Bookings Detail Report (Sort by: Territory)	This is the *Territory Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Territory header: ❑ Territory Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code

	❑ Commodity code ❑ Sales representative ❑ Amount Territory footer: ❑ Territory amount total Report footer: ❑ Report amount grand total
4.2.1.5.9 Bookings Detail Report (Sort by: G/L Account ID)	This is the *General Ledger (G/L) Account ID Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments General Ledger Revenue Account header: ❑ General Ledger revenue account ID Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Sales representative ❑ Amount *General Ledger Revenue Account* footer: ❑ General Ledger revenue account ID amount total Report footer: ❑ Report amount grand total
4.2.1.5.10 Bookings Detail Report (Sort by: SIC Code)	This is the *SIC Code Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments SIC Code header: ❑ SIC code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Territory ❑ Amount Report footer: ❑ Report amount grand total

4.2.1.5.11 Bookings Detail Report (Sort by: Discount Code)	This is the *Discount Code Sorted* version of the customer bookings detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Discount Code header: ❑ Discount code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Territory ❑ Amount Report footer: ❑ Report amount grand total
4.2.1.6 Customer Bookings Summary Reports	The *Customer Bookings Summary Reports* print information for all Firm, Released, and Closed Customer Orders in a specified date range. The MTD/YTD and MTD summary report types can be further limited for a user given sequence range shown below. The MTD/YTD and MTD can also be printed with no sequence. Order amounts are totaled for each group in the sorting sequence. These reports can be printed, viewed, e-mailed, or sent to a file. The summary report types are: ❑ Month to Date / Year to Date summary ❑ Month to Date summary ❑ Month to Date / Year to Date summary - non-sequenced The summary reports can be sequencing and each can specify a range as follows: ❑ Customer ID ❑ Customer name ❑ Part/Job ID ❑ Product Code ❑ Commodity Code ❑ Sales representative ❑ Territory ❑ General Ledger account ID ❑ SIC code ❑ Discount Code ❑ None
4.2.1.5.1 Bookings Summary Report (By: MTD/YTD, all Sequencing)	This is the *Month-to-Date and Year-to-Date Summary Report* for customer bookings summary report. This summary report can be sequenced by the list given above. Header: ❑ Company name ❑ Report name ❑ Run comments Sequencing header: ❑ Sequencing ID

	❑ Sequencing information Customer ID header: (for sorting) Order Year header: (for sorting) Order Month header: (for sorting) Order Month footer: ❑ Order month ❑ Amount MTD Order Year footer: (for sorting) Customer ID ❑ Customer amount total Report footer: ❑ Report amount total
4.2.1.5.2 Bookings Summary Report (By: MTD, all Sequencing)	This for the *Month-to-Date Summary Report* for customer bookings summary report. This summary report can be sequenced by the list given above. Header: ❑ Company name ❑ Report name ❑ Run comments Sequencing header: ❑ Sequencing ID ❑ Sequencing information Order Year header: (for sorting) Order Month header: (for sorting) Order Month footer: ❑ Order month ❑ Amount MTD
4.2.1.5.3 Bookings Summary Report (By: MTD/YTD, and MTD, with out Sequencing)	This is the ***Non*** *Sequenced Summary Report* for Month-to-Date and Year-to-Date customer bookings summary report. Header: ❑ Company name ❑ Report name ❑ Run comments Order Year header: (for sorting) Order Month header: (for sorting) Order Month footer: ❑ Order month ❑ Order year ❑ Amount MTD

	Report footer: ❑ Report amount total
4.2.1.6 Customer Backlog Report	The *Customer Backlog Report* prints information on all partially or totally unshipped orders with status of Firm, Released, or On Hold. The total revenue value of the unshipped portion of each order is shown, along with totals for each sequence group. The report is printed based on the user given Desired Ship Date (i.e., the due date) range. If the line item has a desired ship date, it will be used. Otherwise, the ship date for the whole order will be used. A user given sequence range can further limit the report output. An additional option is to suppress the order amounts and totals so that they will not be printed. The report can be printed, e-mailed, viewed, or sent to a file. The report can be sequenced and each can specify a report filter range as follows: ❑ Customer Order ID ❑ Customer ID ❑ Customer Name ❑ Part/Job ID ❑ Product Code ❑ Commodity Code ❑ Sales representative ❑ Territory ❑ Due Date
4.2.1.6.1 Backlog (Sort by: Customer Order)	This is the *Customer Order ID Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Due Date ❑ Order amount Customer Order footer: ❑ Order amount total Report footer ❑ Amount grand total
4.2.1.6.2 Backlog (Sort by: Customer ID)	This is the *Customer ID Sorted* version of the customer backlog report. Header: ❑ Company name

	❑ Report title ❑ Run comments Customer ID header: ❑ Customer ID ❑ Customer name Customer Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Due Date ❑ Order amount ❑ EDI Release number (Optional) Customer ID footer: ❑ Customer amount total Report footer ❑ Amount grand total
4.2.1.6.3 Backlog (Sort by: Customer Name)	This is the *Customer Name Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Name header: ❑ Customer name ❑ Customer ID Customer Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Due Date ❑ Order amount ❑ EDI Release number (Optional) Customer Name footer:

	❑ Customer amount total Report footer ❑ Amount grand total
4.2.1.6.4 Backlog (Sort by: Part/Job ID)	This is the *Part / Job ID Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Work Order header: ❑ Work Order ID Part header ❑ Part ID Reference description header: ❑ Reference description Line items: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Sales representative ❑ Territory ❑ Order amount ❑ EDI Release number (Optional) Reference description footer: ❑ Part / Work Order (Job) / Reference backorder amount total Report footer ❑ Backorder amount grand total
4.2.1.6.5 Backlog (Sort by: Product Code)	This is the *Product Code Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Product code header: ❑ Product code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Part ID (if it exists) ❑ Work Order / Job ID (if it exist) ❑ Reference description ❑ Sales representative ❑ Territory ❑ Order amount ❑ EDI Release number (Optional)

	Product code footer: ❑ Product code backorder amount total Report footer ❑ Backorder amount grand total
4.2.1.6.6 Backlog (Sort by: Commodity Code)	This is the *Commodity Code Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Part ID (if it exists) ❑ Work Order / Job ID (if it exist) ❑ Reference description ❑ Sales representative ❑ Territory ❑ Order amount ❑ EDI Release number (Optional) Commodity Code footer: ❑ Commodity code backorder amount total Report footer ❑ Backorder amount grand total
4.2.1.6.7 Backlog (Sort by: Sales Representative)	This is the *Sales Representative Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Sales representative header: ❑ Sales representative Line items: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Part ID ❑ Product code ❑ Territory ❑ Order amount ❑ EDI Release number (Optional) Sales representative footer: ❑ Sales representative backorder amount total

	Report footer ❑ Backorder amount grand total
4.2.1.6.8 Backlog (Sort by: Territory)	This is the *Territory Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Territory header: ❑ Territory Line items: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Part ID ❑ Product code ❑ Sales representative ❑ Order amount ❑ EDI Release number (Optional) Territory footer: ❑ Territory backorder amount total Report footer ❑ Backorder amount grand total
4.2.1.6.9 Backlog (Sort by: Due Date)	This is the *Due Date Sorted* version of the customer backlog report. Header: ❑ Company name ❑ Report title ❑ Run comments Due Year header: ❑ Due year Due Month header: ❑ Due month Line items: ❑ Customer Order ID ❑ Customer name ❑ Description ❑ Customer part ID ❑ Due date ❑ Quantity ❑ Order amount ❑ EDI Release number (Optional) Due Month footer: ❑ Month backorder amount total Report footer

	❑ Backorder amount grand total
4.2.1.7 Sales Journal Detail Reports	The *Sales Journal Detail Reports* are much like the customer bookings report, but shows Invoiced amounts instead of order amounts, along with totals for each sequence group. The report is printed based on the user given Invoice date range and a user given sequence range can further limit the report output. An additional option is provided to print uninvoiced values. The summary report summarizes Invoiced amount totals for each separate Tax Group ID and each General Ledger Revenue Account ID. The report can be printed, e-mailed, viewed, or sent to a file. The report can be sequenced and each can specify a report filter range as follows: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Part/Job ID ❑ Product Code ❑ Commodity Code ❑ Sales representative ❑ Territory ❑ Invoice ID ❑ General Ledger account ID
4.2.1.7.1 Journal (Sort by: Customer Order)	This is the *Customer Order ID Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Order amount Customer Order footer: ❑ Order amount total Report footer ❑ Amount grand total
4.2.1.7.2 Journal (Sort by: Customer ID)	This is the *Customer ID Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments

	Customer ID header: ❑ Customer ID ❑ Customer name Customer Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory ❑ Invoice ID Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Order amount Customer ID footer: ❑ Customer amount total Report footer ❑ Amount grand total
4.2.1.7.3 Journal (Sort by: Customer Name)	This is the *Customer Name Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Name header: ❑ Customer name ❑ Customer ID Customer Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory ❑ Invoice ID Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Order amount Customer Name footer: ❑ Customer amount total Report footer ❑ Amount grand total

4.2.1.7.4 Journal (Sort by: Part/Job ID)	This is the *Part / Job ID Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Work Order header: ❑ Work Order ID Part header ❑ Part ID Reference description header: ❑ Reference description Line items: ❑ Customer Order ID ❑ Customer ID ❑ Product code ❑ Commodity code ❑ Sales representative ❑ Territory ❑ Order amount Reference description footer: ❑ Part / Work Order (Job) / Reference amount total Report footer ❑ Amount grand total
4.2.1.7.5 Journal (Sort by: Product Code)	This is the *Product Code Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Product code header: ❑ Product code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID (if it exists) ❑ Work Order / Job ID (if it exist) ❑ Reference description ❑ Commodity code ❑ Sales representative ❑ Territory ❑ Order amount Product code footer: ❑ Product code amount total Report footer ❑ Amount grand total

4.2.1.7.6 Journal (Sort by: Commodity Code)	This is the *Commodity Code Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity code Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID (if it exists) ❑ Work Order / Job ID (if it exist) ❑ Reference description ❑ Product code ❑ Sales representative ❑ Territory ❑ Order amount Commodity Code footer: ❑ Commodity code amount total Report footer ❑ Amount grand total
4.2.1.7.7 Journal (Sort by: Sales Representative)	This is the *Sales Representative Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Sales representative header: ❑ Sales representative Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Territory ❑ Order amount sales representative footer: ❑ Sales representative amount total Report footer ❑ Amount grand total
4.2.1.7.8 Journal (Sort by: Territory)	This is the *Territory Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title

	❑ Run comments Territory header: ❑ Territory Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Sales representative ❑ Order amount Territory footer: ❑ Territory amount total Report footer ❑ Amount grand total
4.2.1.7.9 Journal (Sort by: Invoice)	This is the *Invoice ID Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Invoice header: ❑ Invoice ID ❑ Customer ID ❑ Customer name ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Sales representative ❑ Territory Line items: ❑ Part ID ❑ Work Order / Job ID ❑ Reference description ❑ Product code ❑ Commodity code ❑ Order amount Invoice footer: ❑ Invoice amount total Report footer ❑ Amount grand total
4.2.1.7.10 Journal (Sort by: G/L Account)	This is the *General Ledger (G/L) Account ID Sorted* version of the customer sales journal detail report. Header: ❑ Company name ❑ Report title ❑ Run comments

	G/L Revenue Account header: ❑ General Ledger Revenue Account ID Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Product code ❑ Commodity code ❑ Sales representative ❑ Order amount G/L Revenue Account footer: ❑ General Ledger Revenue Account amount total Report footer ❑ Amount grand total
4.2.1.8 Sales Journal Summary Report	The *Sales Journal Summary Report* prints a single line for each order. The report can be printed, e-mailed, viewed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Run comments Summary Sequence header: ❑ Summary type Summary Account or Tax header: ❑ Summary Account or Tax ID Summary Account or Tax footer: ❑ Summary Account or Tax ID ❑ Extended amount total ❑ Freight amount total ❑ Tax amount total Report footer: ❑ Extended amount grand total ❑ Freight amount grand total ❑ Tax amount grand total

4.2.1.9 Sales Commission Detailed Reports	The *Sales Commissions Report* prints commissions information for all Firm, Released, and Closed Customer Orders. The reports are printed based on the user given date range and a user given sequence range can further limit the report output. The summary report summarizes month to date and year to date information. The reports can be printed, e-mailed, viewed, or sent to a file. The reports can be sequenced and each can specify a report filter range as follows: ❑ Customer Order ID ❑ Customer ID ❑ Customer Name ❑ Part/Job ID ❑ Product Code

	❑ Commodity Code ❑ Sales representative ❑ Territory
4.2.1.9.1 Commissions (Sort by: Order)	This is the *Customer Order ID Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Territory ❑ Sales representative ❑ Share sale representatives Line items: ❑ Part ID ❑ Customer part ID ❑ Description ❑ Commission percent ❑ Order amount ❑ Commission amount Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.2 Commissions (Sort by: Customer ID)	This is the *Customer ID Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer ID header: ❑ Customer ID ❑ Customer name Customer Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Territory ❑ Sales representative ❑ Share sale representatives Line items: ❑ Part ID ❑ Customer part ID ❑ Description ❑ Commission percent ❑ Order amount ❑ Commission amount

	Customer ID footer: ❑ Order amount total ❑ Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.3 Commissions (Sort by: Customer Name)	This is the *Customer Name Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Name header: ❑ Customer name ❑ Customer ID Customer Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Territory ❑ Sales representative ❑ Share sale representatives Line items: ❑ Part ID ❑ Customer part ID ❑ Description ❑ Commission percent ❑ Order amount ❑ Commission amount Customer Name footer: ❑ Order amount total ❑ Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.4 Commissions (Sort by: Part/Job)	This is the *Part / Job ID Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Work Order header: ❑ Work Order ID Part header: ❑ Part ID Reference Description header: ❑ Reference description

	Line items: ❑ Customer Order ID ❑ Customer ID ❑ Territory ❑ Sales representative ❑ Commission percent ❑ Order amount ❑ Commission amount Reference Description footer: ❑ Part / Job / Reference description Order amount total ❑ Part / Job / Reference description Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.5 Commissions (Sort by: Product Code)	This is the *Product Code Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Product code header: ❑ Product code Line items: ❑ Customer Order ID ❑ Part / Job / Reference ID and Description ❑ Territory ❑ Sales representative ❑ Share sale representatives ❑ Commission percent ❑ Order amount ❑ Commission amount Product code footer: ❑ Order amount total ❑ Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.6 Commissions (Sort by: Commodity Code)	This is the *Commodity Code Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity code Line items:

	❑ Customer Order ID ❑ Part / Job / Reference ID and Description ❑ Territory ❑ Sales representative ❑ Share sale representatives ❑ Commission percent ❑ Order amount ❑ Commission amount Commodity Code footer: ❑ Order amount total ❑ Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.7 Commissions (Sort by: Sales Representative)	This is the *Sales Representative Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Sales representative header: ❑ Sales representative Line items: ❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Territory ❑ Share sale representatives ❑ Commission percent ❑ Order amount ❑ Commission amount Sales representative footer: ❑ Order amount total ❑ Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.9.8 Commissions (Sort by: Territory)	This is the *Territory Version* of the sales commission detail report. Header: ❑ Company name ❑ Report title ❑ Run comments Territory header: ❑ Territory Line items:

	❑ Customer Order ID ❑ Customer ID ❑ Part ID ❑ Sale representative ❑ Share sale representatives ❑ Commission percent ❑ Order amount ❑ Commission amount Territory footer: ❑ Order amount total ❑ Commission amount total Report footer: ❑ Order amount grand total ❑ Commission amount grand total
4.2.1.10 Sales Commission Summary Report	The *Sales Commission Summary Report* prints commissions information for all Firm, Released, and Closed Customer Orders for the current month and can be further limited by a given customer ID or Name range. This report can be printed, e-mailed, viewed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Run comments Customer ID header: ❑ Customer ID ❑ Customer name Order Year header: ❑ Order year Order Month header: ❑ Order month Order Month footer: ❑ Order month ❑ Sales amount Month-to-Date total ❑ Commission amount Month-to-Date total Customer ID footer: ❑ Sales amount Year-to-Date total ❑ Commission amount Year-to-Date total Report footer: ❑ Sales amount grand total ❑ Commission amount grand total
4.2.1.11 Commissions Distribution Report	The *Commissions Distribution Report* shows actual commissions for each sales representative based on shipped orders. If the order has been Invoiced, the commission and sales amount is referenced from the Invoice. Otherwise, the amounts are taken from the shipped order. These reports can be printed, e-mailed, viewed, or sent to a file. The reports can be sequenced and each can specify a report filter range as follows: ❑ Customer Order ID

	❑ Sale representative
4.2.1.11.1 Distribution (sort by: Customer Order)	This is the *Customer Order Sorted* version of the commissions distribution report. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID ❑ Customer name ❑ Order amount Line items: ❑ Sales representative ID ❑ Sales representative name ❑ Commission amount Customer Order footer: ❑ Commission amount total Report footer: ❑ Commission amount grand total
4.2.1.11.2 Distribution (sort by: Sales Representative)	This is the *Sales Representative Sorted* version of the commissions distribution report. Header: ❑ Company name ❑ Report title ❑ Run comments Sales representative header: ❑ Sales representative ID ❑ Sales representative name Line items: ❑ Customer Order ID ❑ Customer name ❑ Order amount ❑ Commission amount Sales representative footer: ❑ Commission amount total Report footer: ❑ Commission amount grand total
4.2.1.12 Actual Commissions Report from Shipments	The *Actual Commissions Report from Shipments* shows actual commissions for each sales representative based on shipped orders. If the order has been Invoiced, the commission and sales amount is referenced from the Invoice. Otherwise, the amounts are taken from the shipped order. This report can be printed, e-mailed, viewed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Run comments

	Sales representative header: ❑ Sales representative ID ❑ Sales representative name Product code header: ❑ Produce code Customer ID header: ❑ Customer ID ❑ Customer name Line items: ❑ Customer Order ID ❑ Line number ❑ Part ID ❑ Part description ❑ Sales amount ❑ Commission amount Customer ID footer: ❑ Sales amount total ❑ Commission amount total Product code footer: ❑ Sales amount total ❑ Commission amount total Sales representative footer: ❑ Sales amount total ❑ Commission amount total Report footer: ❑ Commission amount grand total
4.2.1.13 Gross Profit Reports	The *Gross Profit Reports* is a manufacturing report that does not include General Ledger transactions. These reports list orders shipped for a user given date range and a user given sequence range can further limit the report output. The summary version of each report is the same as the detailed version only with out the "Line Items" being displayed. These reports can be printed, e-mailed, viewed, or sent to a file The reports can be sequenced and each can specify a report filter range as follows: ❑ Customer Order ID ❑ Customer ID ❑ Customer Name ❑ Part ID ❑ Product code ❑ Commodity code Each report can optionally include the following: (any or all) ❑ Open orders ❑ Closed orders ❑ Estimates
4.2.1.13.1 Gross Profit Report (by: Order)	This is the *Customer Order ID Sorted* version of the gross profit reports. Header: ❑ Company name

	❑ Report title ❑ Run comments Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name Line items: (do not display for summary version) ❑ Packing list ID ❑ Customer Order line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Shipped quantity ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost (= labor + burden + material + service) ❑ Gross profit (sales amount - total cost) ❑ Gross profit percent (100 x gross profit / sales amount) Customer Order footer: (total per order) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Report footer: (total per report) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent
4.2.1.13.2 Gross Profit Report (by: Customer ID)	This is the *Customer ID Sorted* version of the gross profit reports. Header: ❑ Company name ❑ Report title ❑ Run comments Customer ID header: ❑ Customer ID ❑ Customer name Customer Order header: ❑ Customer Order ID

	Line items: (do not display for summary version) ❑ Packing list ID ❑ Customer Order line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Shipped quantity ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost (= labor + burden + material + service) ❑ Gross profit (sales amount - total cost) ❑ Gross profit percentage (100 x gross profit / sales amount) Customer Order footer: (total per order) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Customer ID footer: (total per customer) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Report footer: (total per report) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent
4.2.1.13.3 Gross Profit Report (by: Customer Name)	This is the *Customer Name Sorted* version of the gross profit reports. Header: ❑ Company name ❑ Report title ❑ Run comments Customer Name header: ❑ Customer name ❑ Customer ID

	Customer Order header: ❑ Customer Order ID Line items: (do not display for summary version) ❑ Packing List ID ❑ Customer Order line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Shipped quantity ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost (= labor + burden + material + service) ❑ Gross profit (sales amount - total cost) ❑ Gross profit percentage (100 x gross profit / sales amount) Customer Order footer: (total per order) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Customer Name footer: (total per customer) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Report footer: (total per report) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent
4.2.1.13.4 Gross Profit Report (by: Part)	This is the *Part ID Sorted* version of the gross profit reports. Header: ❑ Company name ❑ Report title ❑ Run comments

	Part header: ❑ Part ID Customer Order header: ❑ Customer Order ID Line items: (do not display for summary version) ❑ Packing List ID ❑ Customer Order line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Shipped quantity ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost (= labor + burden + material + service) ❑ Gross profit (sales amount - total cost) ❑ Gross profit percentage (100 x gross profit / sales amount) Customer Order footer: (total per order) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Part ID footer: (total per part) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Report footer: (total per report) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent
4.2.1.13.5 Gross Profit Report (by: Product Code)	This is the *Product Code Sorted* version of the gross profit reports. Header: ❑ Company name ❑ Report title

	❑ Run comments Product code header: ❑ Product code Customer Order header: ❑ Customer Order ID Line items: (do not display for summary version) ❑ Packing List ID ❑ Customer Order line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Shipped quantity ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost (= labor + burden + material + service) ❑ Gross profit (sales amount - total cost) ❑ Gross profit percentage (100 x gross profit / sales amount) Customer Order footer: (total per order) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Product code footer: (total per product code) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Report footer: (total per report) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent
4.2.1.13.6 Gross Profit Report (by: Commodity	This is the *Commodity Code Sorted* version of the gross profit reports. Header:

Code)	❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity Code Customer Order header: ❑ Customer Order ID Line items: (do not display for summary version) ❑ Packing List ID ❑ Customer Order line number ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Shipped quantity ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost (= labor + burden + material + service) ❑ Gross profit (sales amount - total cost) ❑ Gross profit percentage (100 x gross profit / sales amount) Customer Order footer: (total per order) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Commodity Code footer: (total per commodity code) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent Report footer: (total per report) ❑ Sales amount ❑ Labor cost ❑ Burden cost ❑ Material cost ❑ Service cost ❑ Total cost ❑ Gross profit ❑ Gross profit percent

4.2.2 Retrieve History	
4.2.2.1 Customer Status	The following information is retrieved: ❑ Open orders ❑ Last order date ❑ Credit status ❑ Open receivables ❑ Last payment date ❑ Average days to pay ❑ Number of paid Invoices ❑ Native currency name
4.2.2.2 Selling History	This retrieves the following information on all Purchase Orders for one selected part: The following information is retrieved for each ❑ Order date ❑ Desired ship date ❑ Last actual ship date ❑ Order quantity ❑ Shipped quantity ❑ Currency name ❑ Unit price ❑ Discount percent ❑ Standard unit price These records can be sorted in one of the following ways: ❑ Order date ❑ Desired ship date ❑ Customer Order ID The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending There is an option to transport the user to the Purchase Order editor pre-filled with the data from a selected line.
4.2.3 Check Customer Status	The status of the customer is checked to determine how to proceed with the order entry process. Each customer is assigned, in the Customer Master, one of the following statuses: ❑ On hold ❑ Orders on hold ❑ Shipments on hold ❑ Credit OK The customer's credit is also checked at the time the order is created. The total credit is based on the following parameters: ❑ Total Customer Orders released ❑ Total outstanding Invoices ❑ Total payments ❑ Invoice age The total credit exposure is calculated and compared to the credit limit and aging limit defined in the Customer Master. If either the credit limit or aging exceeds the Customer Master, then the order taking process is halted unless the customer has been established to allow manual over riding of credit check.
4.2.3.1 On Hold	Do not allow creation of Customer Orders for this customer.
4.2.3.2 Order on Hold	Allow creation of a Customer Order but set the order status to "On Hold.".

4.2.3.3 Shipments on Hold	Allow creation of a Customer Order but prevent the shipment of the order.
4.2.3.4 Credit OK	Allow full order entry processing for the customer.
4.2.4 Customer Order Source	The creation of a *Customer Order* can originate from three sources: ❑ Copy an existing Customer Order ❑ Use an existing quote ❑ Create a new Customer Order
4.2.4.1 Existing Customer Order	If the new order is to be based upon an *Existing Order*, then that order is chosen and copied into a new order. The new order ID can either be manually keyed or auto-IDed using the next available order ID. The order header and lines are copied. All information can be edited as wanted after the copying process.
4.2.4.2 Existing Quote	Much of the detail in the quote preparation process is provided allowing for rapid generation of a Customer Order from a won quotation. The Customer Order and, alternatively, the Work Order, may be created. The creation of the order from a quote follows the following procedure: ❑ Selecting the quote ❑ Notifying the user if the quote has expired ❑ Creating a Work Order if wanted using the quote's engineering definition ❑ Entering customer Purchase Order promise date ❑ Setting order status to either firm or released ❑ Selecting which lines and quoted quantities are to be copied into the order ❑ Setting the quote to "won" and set the won/lost date to the current date
4.2.4.3 New Customer Order	For the new Customer Order mode, all detail of the Customer Order is entered manually.
4.2.5 Create Customer Order Header	The *Customer Order Header* is created with the following required information: ❑ Order ID ❑ Order date ❑ Status ❑ Customer ID ❑ Desired ship date ❑ Order total ❑ Freight total The following are optional: ❑ Customer's Sold-To address ❑ Customer's Ship-To address ❑ Customer Purchase Order ID ❑ Original promise date ❑ Free on Board (FOB) ❑ Ship Via ❑ Terms ❑ Contact information ❑ Sales representative ❑ Commission sharing ❑ Territory ❑ Discount code ❑ Entity ❑ Has this order been printed? ❑ Printed date ❑ Will the customer accept shipments early? ❑ How many days will the customer accept an early shipment? ❑ Is this order a separate backorder? ❑ Is this order an EDI blanket order? ❑ IS this order an EDI release? ❑ EDI blanket number

	❑ Contract ID ❑ EDI release number ❑ Currency hedging ❑ Ship-To ID ❑ Sales tax ID ❑ Is this a new Work Order? ❑ Warehouse ID ❑ Shipped quantity ❑ Is there a specification associated with this line?
4.2.5.1 Order Date	The date of the Customer Order. Default is the current date.
4.2.5.2 Status	Each Customer Order has a *Status* to indicate the progression through the order entry cycle. These statuses are: ❑ Firm ❑ Released ❑ Closed ❑ Cancelled/Void ❑ On Hold The order status can be changed from any status to another at any time. The system can be configured to automatically set the status of a newly saved Purchase Order to Firmed, Released, or On-Hold.
4.2.5.2.1 Firm	*Firm* status means that the order may not have been printed and can be used to select which orders need printing in batch mode. Firm status orders cannot be shipped. However, they have full visibility in material plans and in the shop schedule.
4.2.5.2.2 Released	*Released* status means that the order is ready for release to manufacturing or to be filled from inventory.
4.2.5.2.3 Closed	*Closed* status means that the order processing has been completed and no longer has any visibility in the material plan and in the shop schedule.
4.2.5.2.4 Cancelled/Void	*Cancelled/Void* status means that the order has been cancelled or voided and is no longer visible in the material plan and in the shop schedule.
4.2.5.2.4 On Hold	*On Hold* status means that the order is on hold waiting or resolution of a problem such as credit problems, or a design change. The order continues to be seen in the material plan and the shop schedule.
4.2.5.3 Desired Ship Date	This is the default ship date to be used for those line that do not explicitly specify a desired ship date.
4.2.5.4 Freight Total	*Order Total* is the total of all extended line item amounts.
4.2.5.5 Freight Total	*Freight Total* is the total of all line item freight amounts.
4.2.5.6 Customer's Sold-To Address	*Customer's Sold-To Address* is the address that is defined with in the Customer Master and is the main company address. This address is only maintained in the Customer Master.
4.2.5.7 Customer's Ship-To Address	*Customer's Ship-To Address* is the address that the shipment is to be made to as default for all lines and deliveries on the Customer Order. If no Ship-To Address is specified, then the Sold-To Address is used. Each customer in the Customer Master can have an unlimited number of Ship-To Addresses associated with it. These addresses can be selected from during Customer Order entry. A new address can also be established during order entry. The new address is added to the Customer Master so that it is available for future activity with that customer. One-time Ship-To's are not supported. The Ship-To address contains the following information: ❑ Ship-To ID ❑ Name ❑ Street address #1 ❑ Street address #2 ❑ Street address #3

	❑ City ❑ State ❑ Zip ❑ Country
4.2.5.8 Customer Purchase Order ID	This is the customer's Purchase Order ID and permits this order to be looked up based on the Purchase Order ID.
4.2.5.9 Original Promise Date	The date the order is promised to the customer.
4.2.5.10 Free on Board	A Free on Board (FOB) point is optionally associated with each Customer Order. The FOB Point is intended as reference information for the customer and for internal use. There is no functionality behind this FOB Point association. If a customer is selected for the Customer Order and default FOB Point has been associated with that customer, then that particular FOB Point is automatically entered into the Customer Order. This default FOB Point can be over-ridden. However, doing so will not change any records other than the Customer Order. The FOB Point can be chosen from a pre-defined list of FOB Points that is maintained by the user. However, free-form text can be stored as the FOB Point. The FOB Point Master contains the following: ❑ ID
4.2.5.11 Ship Via	A Ship Via is optionally associated with each Customer Order. Ship Via is intended as reference information for the Customer and for internal use. There is no functionality behind this Ship Via association. If a Customer is selected for the Customer Order and default Ship Via has been associated with that Customer, then that particular Ship Via is automatically entered into the Customer Order. This default Ship Via can be over-ridden. However, doing so will not change any records other than the Customer Order. The Ship Via can be chosen from a pre-defined list of Ship Via's that is maintained by the user. However, free-form text can be stored as the Ship Via. The Ship Via Master contains the following: ❑ ID
4.2.5.12 Terms	Each Customer Order is assigned terms that are used for the subsequent Invoice(s) from shipments. The terms are defaulted from the Customer Master if they are defined there. There are several components to the terms: ❑ Net due days/date ❑ Discount available days/date ❑ user defined terms ❑ Freight terms There are four types of net terms: ❑ Age of Invoice, defined by the number of calendar days ❑ Day of month, specified by the day of the month (31 is used to indicate the last day of the month) ❑ Specified date, specified by the exact date payment is due ❑ Invoice age then day of month, specified by the number of months and the day of the month (31 is used to indicate the last day of the month) The discount is expressed as a percent and is available for taking by the Customer based on the following: ❑ Age of Invoice, defined by the number of calendar days ❑ Day of month, specified by the day of the month (31 is used to indicate the last day of the month) ❑ Specified date, specified by the exact date payment is due ❑ Invoice age then day of month, specified by the number of months and the day of the month (31 is used to indicate the last day of the month) A text string can be entered as user specific terms when the predefined terms are not sufficient to define the situation. There is no logic behind this text string throughout the

	software other than referencing the text string. The freight terms are specified as one of the following: ❑ Prepaid (not on Invoice) ❑ Billed (on Invoice) ❑ Collect by carrier (not on Invoice)
4.2.5.13 Contact Information	*Contact Information* is the name and pertinent information associated with the Customer Order. If a primary contact is defined in the Customer Master, then that information
4.2.5.14 Sales Representative	A *Sales Representative* is optionally associated with each Customer Order. The sales representative is intended for use in calculation of commissions by the system and for general sales analysis. If default sales representative has been associated with the Customer, then that particular sales representative is automatically entered into the Customer Order. This default sales representative can be over-ridden. However, doing so will not change any records other than the Customer Order. The sales representative is chosen from a pre-defined list of sales representatives that is maintained by the user.
4.2.5.15 Commission Sharing	Commission Sharing allows the split of commission revenue dollars between two or more sales representatives. This information is initially entered and maintained in the Customer Master. The standard definition defines a percent of total commission that is shared between the specified sales representative and one or more additional ones. The percents applied to each sales representatives reflects the relative percent of the total commission, not of the order total. Commission sharing can be overridden in order entry on a case-by-case basis. This is particularly helpful when a sales representative has agreed to share commission for a particular order. Commission sharing applies to all line items on the order. Individual sharing cannot be set on a line item basis. Commission sharing does not affect the total commission paid but only how it is distributed between reps. Both the standard and overridden commission structure is displayed.
4.2.5.15 Territory	A *Territory* is optionally associated with each Customer Order. The Territory is intended for use in sales analysis and can be a geographical region or some other distinguishable boundary. If default Territory has been associated with the Customer, then that particular Territory is automatically entered into the Customer Order. This default Territory can be over-ridden. However, doing so will not change any records other than the Customer Order. The Territory can be chosen from a pre-defined list of Territories that is maintained by the user. However, freeform text can be stored as the Territory. The Territory Master contains the following: ❑ ID
4.2.5.16 Discount	A *Discount Code* is optionally associated with each Estimate. The Discount is a standard percentage that is discounted for an order, and item, and/or a Customer. If a Customer is selected for the Estimate and default Discount has been associated with that Customer, then that particular Discount is automatically entered into the Estimate. This default Discount can be over-ridden. However, doing so will not change any records other than the Estimate. The Discount is chosen from a pre-defined list of Discounts that is maintained by the user. The Discount Master contains the following: ❑ ID ❑ Description ❑ Discount expressed as a percent
4.2.5.17 Entity	An *Entity* is associated with each Customer Order. The entity defines which financial entity the Customer Order is to eventually post to. If there is only one entity defined in the system, then that default is defaulted so that no user entry is required.
4.2.5.18 Printed?	This flag indicates that the Customer Order has been printed. The flag can be cleared allowing the document to be printed again.
4.2.5.19 Printed Date	Upon printing of the Customer Order, the current date is stored with the Customer Order header record indicating the date of the printing. A provision is provided to clear this date that allows reprinting and displays no printed date to the user in the Customer Order

	header.
4.2.5.20 Accept Early?	
4.2.5.21 Days Early	
4.2.5.22 Is a Separate Backorder?	This flag indicates that this Customer Order is a separate backorder broken away from the original order.
4.2.5.23 EDI Blanket Order?	This flag indicates if this Customer Order is an EDI blanket order. A blanket order is one placed for a given period of time that stands until the quantities shipped match the total quantity ordered in the blanket order. After the quantities shipped match the total quantity ordered, a new blanket order needs to be placed to continue to receive parts.
4.2.5.24 EDI Release?	This flag indicates that this order is an EDI release. This permits outbound EDI transactions.
4.2.5.25 EDI Blanket Number	
4.2.5.26 Contract ID	This is the contract ID for the delivery schedule.
4.2.5.27 EDI Release Number	
4.2.5.28 Currency Hedging	When a Customer Order uses a foreign currency, order entry obtains the current exchange rate from currency maintenance. However, if wanted, the exchange rate can be set manually for individual Customer Orders. This allows the exchange rate to be fixed for the life of the Customer Order regardless of the fluctuations in the system exchange rates.
4.2.6 Customer Order Line Modes	The ordered item is specified in one of four ways for each line: ❑ Stocked ❑ Manufactured ❑ Misc. parts ❑ Configure to order
4.2.6.1 Stocked	A part ID is required. The system fills in product code and Commodity Code from the Part Master. If there is a customer part ID, the system fills it in automatically.
4.2.6.2 Manufactured	A part ID is optional. If a new Work Order is wanted, then have order entry create the Work Order "on the fly". As the Work Order is created, the system asks the user for the initial status (Firm or Released). If a Work Order already exists, it must be linked to the Customer Order line. If no part ID is to be used (a custom job), then a description must be manually entered along with the unit price.
4.2.6.3 Misc. Parts	A description and unit price is required.
4.2.6.4 Configure to Order	*Configure to Order* mode makes use of another sub system to automate the process of constructing Work Orders for assemble to order products. The product must have a part ID and be previously defined in the product configurator sub-system. This system uses menus to let the user logically construct a custom configuration from standard options. Each of these standard options is predefined in the engineering area of the system. These pre-defined engineering definitions are pasted together based on the instructions from the product configurator, to create a final assemble-to-order engineering definition for order entry purposes.
4.2.7 Create Customer Order Line	The following are required for each Purchase Order line: ❑ Part ID or description ❑ Quantity In addition, the following information is optional for each order line: ❑ Part ID ❑ Description ❑ Work Order ID ❑ Service Charge ID ❑ Unit of measure ❑ Unit price ❑ Discount percent ❑ Extension ❑ Ship date

	❑ Promise date ❑ Freight ❑ Commission percent ❑ Sales tax group ❑ Product code ❑ Commodity code ❑ Revenue account ID ❑ Revenue account description ❑ Customer part ID ❑ Drawing ID ❑ Drawing revision ❑ VAT code ❑ VAT percent ❑ VAT amount ❑ Line closed short? ❑ Specification? ❑ Piece tracked? ❑ Delivery schedule? ❑ Ship-To ID ❑ Available to promise ❑ WIP/VAS unit price ❑ Cost of Goods Sold account numbers ❑ Original promise ship date ❑ Line delivery schedule ❑ Supply type ❑ Warehouse ❑ HTS code ❑ Country of origin ❑ Material code ❑ Link part ID ❑ Link warehouse ❑ Stock order quantity ❑ Allocate quantity ❑ Job quantity unallocated ❑ Accept early? ❑ Days early ❑ Allocated quantity ❑ Acknowledgement ID
4.2.7.1 Work Order	This specifies the Work Order linked to the Customer Order line. When the Work Order is complete, it is not necessary to receive the item into stock prior to shipment. The shipment process implies receiving the item into stock and the subsequent issuance to the Customer Order. Only one Work Order requirement can be associated with an individual Customer Order line.
4.2.7.2 Service Charge	This specifies a service charge. No other entries are permitted on the same line as the Service Charge. The Service Charge master contains the following: ❑ ID ❑ Description ❑ Unit price ❑ Trade discount percent ❑ Commission percent ❑ Product code ❑ Commodity code ❑ Sales tax group

	❑ Revenue General Ledger account ❑ Specification ❑ Picture
4.2.7.3 Unit of Measure	An alternate *Unit of Measure* can be assigned that is used as the selling unit of measure. The default is the stocking unit of measure assigned to the part in the Part Master. If a relationship has been established between the part ID, the Customer, and an alternate customer part ID, then the unit of measure from that association is used as the default on the Customer Order line. The conversion factor must exist between the selling unit of measure and the stocking unit of measure. If the Customer Order line item is part numbered and the unit of measure is different from the stocked unit of measure, then the price for each quoted quantity is adjusted to reflect the Customers unit of measure.
4.2.7.4 Unit Price	The price comes from one of two places: ❑ Price matrix ❑ Fixed unit price A matrix of prices can be established based on part ID, Customer, and quantity. If the Customer Order line corresponds to a price in the matrix, then that price is used for the line. If a matrix does not exist, then a fixed price is retrieved from the Part Master.
4.2.7.5 Discount	A discount percent can be established for each Customer and/or part combination. This percent is automatically entered into the Customer Order line. However, it can be over-ridden. This percent is used as a percent reduction in the extended price for the line item.
4.2.7.6 Extension	This is the calculated price for the Customer Order line. The following are factored into this price: ❑ Unit price ❑ Quantity ❑ Discount percent
4.2.7.7 Ship Date	A date can be assigned to each line that overrides the *Ship Date* in the header. This date is used to indicate when that the order is shipped and can be modified from time to time as required. This date is used for material planning and the Scheduler.
4.2.7.8 Promise Date	This is the date the line is promised to the Customer. If no date is specified, the promise date from the header is used. This date is used for comparative purposes only and does not affect material planning nor scheduling.
4.2.7.9 Freight	A freight charge is specified here. Each line freight charge is totaled and added to the order. If the order ships in more than one part then the freight charge is added each time.
4.2.7.10 Commission Percent	The *Commission* to be paid to the sales representative is associated with each Customer Order line. The default percent is the one defined for the sales representative that was assigned in the header of the order. The percents can be over-ridden for each line. However, this does not change any information beyond the Customer Order itself. Changing the sales representative in the header does not change the Commission Percent of lines already entered. However, it will change the default commission for new lines entered. Commission basis can be carried all the way from Customer Order entry to Accounts Payable. The percent of commission is calculated from the sales representative defined in the Customer Master, which can be overridden on an order-by-order basis. Commission sharing allows the commission amount to be split among two or more sales representatives, as defined in the Sales Commission Master. Commission sharing does not affect the total commission paid, but only how it is to be distributed between reps.
4.2.7.11 Sales Tax Group	The percent of sales tax is defined in the Sales Tax Master. Each Customer Master can have a sales tax associated with it that is used in order entry. The sales tax percent is established in the header and optionally at the line level. Those lines without a sales tax are calculated at the header percent.

	Each line sales tax is calculated based on the respective percent defined. The total sales tax for the order is added up and added to the order total.
4.2.7.12 Product Code	A *Product Code* can be assigned to each Customer Order line. If a part ID is specified for the line and a product code is associated with the part in the Part Master, then the product code is filled in automatically upon entry of the part ID. The product code can be over-ridden. However, doing so will not change the product code association in the Part Master. The product code can be chosen from a pre-defined list of product codes that is maintained by the user. However, freeform text can be stored as the product code. A product code is used to classify parts and allows easy assignment of General Ledger account numbers to a specific line of product. Because several account numbers are assigned to the product code, a singular assignment of a product code to a part in effect assigns numerous General Ledger account numbers.
4.2.7.13 Commodity Code	A *Commodity Code* can be assigned to each Customer Order line. If a part ID is specified for the line and a Commodity Code is associated with the part in the Part Master, then the product code is filled in automatically upon entry of the part ID. The product code can be over-ridden. However, doing so will not change the product code association in the Part Master. A Commodity Code is used to classify parts generally for material management purposes and has no logic in the system. The Commodity Code can be chosen from a pre-defined list of Commodity Codes that is maintained by the user. However, freeform text can be stored as the Commodity Code.
4.2.7.14 Revenue Account ID	The General Ledger revenue account can be optionally entered here. This account will receive the credit side of the financial transaction during invoicing. When these transactions are created, the system chooses the revenue accounts for a line item in the following way: ❑ First, use any accounts that are specified for the line using this function ❑ Next, for any accounts not specified on the line, use any revenue accounts specified for the product code of the line, if any ❑ Finally, use the default revenue accounts specified in the global parameters.
4.2.7.15 Revenue Account Description	The system automatically retrieves the description for the revenue account if it was supplied by the user.
4.2.7.16 Customer Part ID	The *Customers Part* ID can be entered to correspond to the internal part ID for the quoted line. If a relationship has been pre-defined between the internal part ID, customer part ID, and customer ID, then the internal part ID or the customer part ID can be entered on the line and the remaining ID will be filled-in automatically.
4.2.7.17 Drawing ID	Identification for an associated drawing. The Drawing ID is copied from the quote if it exists. The Drawing ID does not come from the Part Master. This is for informational purposes only.
4.2.7.18 Drawing Revision	Identification revision for an associated drawing. The Drawing ID Revision is copied from the quote if it exists. The Drawing ID Revision does not come from the Part Master. This is for informational purposes only.
4.2.7.19 VAT Code	A *Value-Added Tax* (VAT) code is associated with each line that eligible for taxation. The default value comes from the Part Master and can be over-ridden. The VAT code will be copied to the Shipper when it is created so that when the Invoice is created the appropriate tax percents are looked up and applied as necessary. The VAT Master contains the following: ❑ ID ❑ Description ❑ Tax percent ❑ Tax General Ledger account ID ❑ Recoverable tax percent ❑ Tax recoverable General Ledger account ID

4.2.7.20 VAT Percent	
4.2.7.21 VAT Amount	
4.2.7.22 Line Closed Short?	This flag indicates that the order line is closed without shipping the entire quantity. The flag removes any remaining demand from the planning portion of the system while keeping the overall Customer Order open.
4.2.7.23 Specification?	This flag indicates that a specification exists for the line.
4.2.7.24 Piece Tracked?	This flag indicates that the part specified on the line has been setup for piece tracking. Piece tracking is defined in the Part Master.
4.2.7.25 Delivery Schedule?	This flag indicates that the line has a delivery schedule associated with it.
4.2.7.26 Ship-To ID	Each Customer Order line can have its own Ship-To Address associated with it. For those lines with such a definition, the header Ship-To Address is over-ridden. With this functionality, each line can be potentially shipped to a different address.
4.2.7.27 Available To Promise	This displays the quantity available for shipment at any given moment.
4.2.7.28 WIP/VAS Unit Price	
4.2.7.29 Cost of Goods Sold Account Numbers	Each Customer Order line can have specific General Ledger account numbers assigned to it for Cost of Goods Sold. These accounts are debited for actual or standard cost of shipped items depending on the costing method in use. These account numbers are used during Manufacturing Costing. When these transactions are created, the system chooses the Cost of Goods Sold accounts for a line item in the following way: ❑ First, use any accounts that are specified for the line using this function ❑ Next, for any accounts not specified on the line, use any Cost of Goods Sold accounts specified for the product code of the line, if any ❑ Finally, use the default Cost of Goods Sold accounts specified in the global parameters.
4.2.7.30 Original Promise Date	A date can be assigned to each line that overrides the *Original Promise Date* in the header. This is the date that was originally promised to the Customer or the date the Customer wanted shipment. The date is not used within the system except for Reporting comparisons between actual and promise ship dates.
4.2.7.31 Line Delivery Schedule	Each Customer Order line can have its own delivery schedule that overrides the Customer Order header delivery date. The following information is used in establishing this delivery schedule: ❑ Quantity ❑ Desired ship date ❑ Actual ship date ❑ Quantity shipped ❑ Release number ❑ Ship-To address ❑ Reference information ❑ Warehouse ID ❑ User defined #1 ❑ User defined #2
4.2.7.31.1 Quantity	This is the quantity associated with the specific delivery line.
4.2.7.31.2 Desired Ship Date	This is the date that the delivery line is to shipped on.
4.2.7.31.3 Actual Ship Date	This is the date that the delivery line actually shipped, and is maintained automatically by the system from shipment detail.
4.2.7.31.4 Quantity Shipped	This is the quantity that has shipped for the delivery line and is maintained automatically by the system from shipment detail.
4.2.7.31.5 Release	A unique number that identifies each line in the delivery schedule.

Number	
4.2.7.31.6 Ship-To Address	This is the ID associated with the customers Ship To address that is the address that the specific delivery line will be shipped to.
4.2.7.31.7 Reference Information	This is user defined reference information for the delivery line.
4.2.7.31.8 Warehouse ID	This is the warehouse that is to fulfill the delivery line requirement.
4.2.7.31.9 User Defined #1	This is a user defined field.
4.2.7.31.10 User Defined #2	This is a user defined field.
4.2.7.32 Supply Type	This displays the source of the supply if the order line has been allocated.
4.2.7.33 Warehouse	This is the warehouse that is to be used when calculating available to promise. The default is the primary warehouse specified in the Part Master.
4.2.7.34 HTS Code	This is the Harmonized Tariff Schedule for the line. The default is taken from the value specified in the Part Master and can be overridden as required.
4.2.7.35 Country of Origin	
4.2.7.36 Material Code	
4.2.7.37 Link Part ID	
4.2.7.38 Link Warehouse	
4.2.7.39 Stock Order Quantity	
4.2.7.40 Allocate Quantity	
4.2.7.41 Job Quantity Unallocated	
4.2.7.42 Accept Early?	
4.2.7.43 Days Early	
4.2.7.44 Allocated Quantity	
4.2.7.45 Acknowledgement ID	
4.2.8 Check for Material Availability	Material analysis may be performed on each order entry line. The Customer Order allows checking of on-hand and projected levels of inventory parts being ordered for each line. This function does not assess material availability for material requirements of linked Work Orders. The material availability check gives the following information for each line item: ❑ Part ❑ Description ❑ Quantity ordered ❑ Quantity shipped ❑ Ship date ❑ Promise date ❑ Projected quantity available (after shipment) ❑ On hand quantity
4.2.9 Check for Schedule Availability	In order entry, the impact of the Work Order for an ordered item on the current shop schedule is assessed. Other "what-if" schedules may also be used for the capacity assessment. The standard, or actual, schedule is used to generate the actual promise date. An infinite capacity schedule shows the loading on the required resources to meet the desired ship date. If a linked Work Order exists, it is used for this analysis. If not, the generic Engineering Master for the part is used. If more than one Engineering Master

	version exists, then the active version is indicated in the Part Master. There are two ways to check schedule availability: ❑ Checking whether a desired release date and want date are possible to meet based on the current schedule ❑ Determining a reasonable lead time to promise with a projected release date The schedule check can include a material availability as an option. This check will examine material lead times and Purchase Orders that may already been placed in determining when work can start on a particular operation based on available materials.
4.2.9.1 Input Parameters	The following parameters are all taken directly from the Work Order header: ❑ Release date ❑ Want date ❑ Quantity Forward or backward scheduling is performed based on the setting in the header of the Work Order. The following parameters are supplied at the time of scheduling: ❑ Schedule ID ❑ Check material availability ❑ Check service availability ❑ Freeze started operations All other scheduling parameters come from the selected schedule definition. The schedule must be previously defined in the Global Scheduler area of the system.
4.2.9.1.1Check Material Availability	The Scheduler checks to make sure that all materials required by the final operation are available on the scheduled start date of the operation. If a Purchase Order line is linked to the material, then the due date of that line item must come before the proposed scheduled start date for the operation. If there is no linking and the material has a part ID, then the Scheduler checks to see if a sufficient quantity of the material is available on the proposed start date of the operation. The Scheduler considers the quantity currently on hand, adding in all supply orders, (including planned orders, Purchase Orders and Work Orders for fabricated components), that are due on or before the proposed start date. It then subtracts the quantities needed by all other Work Orders that have been scheduled prior to this one that need the material on or before the proposed start date. The Scheduler uses the line item due date as the "due in" date for incoming Purchase Orders and the want date for incoming Work Orders that make fabricated components. It also accounts for demand caused by planned orders. If insufficient quantity of material will be available, the system checks to see if there is enough time to initiate a new order by examining the part's lead-time. If material is not available, the Scheduler stops scheduling in the backward direction and begins a forward finite schedule.
4.2.9.1.2 Check Service Availability	Those operations defined as outside services are normally planned with infinite capacity. An option is available to ascertain whether a service is available prior to its scheduling.
4.2.9.1.3 Freeze Started Operations	The Scheduler will not change the schedule of operations that have one or more Labor Tickets applied against them. This prevents disruption on the shop work floor. By default, the Scheduler is free to reschedule all operations to optimize the overall shop schedule.
4.2.9.2 Output Parameters	The following parameters are returned by the Scheduler: ❑ Scheduled start date ❑ Scheduled finish date ❑ Total days delay ❑ Determinant path days delay The output from the Scheduler is the scheduled start date, scheduled finish date, total days

	of delay, and determinant path days of delay (an operation waiting for another resource to become available from another operation).
4.2.9.2.1 Scheduled Start Date	This is the date on which the first operation of the Work Order will start.
4.2.9.2.2 Scheduled Finish Date	This is the date on which the Work Order is scheduled to be completed.
4.2.9.2.3 Total Days Delay	Similar to Determinant Path Days Delay, this is the days delay for all operations in the Work Order and not just the determinant path.
4.2.9.2.4 Determinant Path Days Delay	This is the total time between the start and finish dates of the determinant path that is not occupied by actual scheduled production. This provides a measure of how much earlier the want date could be if no other Work Orders were scheduled to interfere with this one. Visually, this is the sum of the horizontal gaps between successive operations of the determinant path that are not caused by weekends or other nonproduction time.
4.2.9.3 Display Audit Trail	Audit information can be displayed on how the Work Order was placed into the chosen schedule. The following information is provided: ❑ Attempt number ❑ Sub ID ❑ Sequence ❑ Resource ❑ Unit number ❑ Work Order pass number ❑ Direction ❑ Result ❑ Result detail ❑ Start date ❑ Finish date
4.2.9.3.1 Attempt Number	
4.2.9.3.2 Sub ID	
4.2.9.3.3 Sequence	
4.2.9.3.4 Resource	
4.2.9.3.5 Unit Number	
4.2.9.3.6 Work Order Pass Number	
4.2.9.3.7 Direction	
4.2.9.3.8 Result	
4.2.9.3.9 Result Detail	
4.2.9.3.10 Start Date	
4.2.9.3.11 Finish Date	
4.2.9.4 Reserve Capacity	Once an adequate number of "what-if" scenarios have been run to determine the required dates and lead-time, the quote may be saved into the schedule. If it is not wanted to reserve capacity, then the quote can be removed from the schedule. If satisfactory scheduling results are not achieved using the existing schedules, then the quote can be saved into the schedule for analysis in context of other competing Work Orders. By reviewing the complete schedule, it may be possible to remove one or more constraints

	thus allowing the quote to schedule satisfactorily.
4.2.10 Create Progress Billing	*Progress Billing* is the procedure of billing a Customer incrementally for goods and/or services before the actual goods or services are available for delivery. Progress costing is the procedure of expensing costs incrementally for goods and/or services as a result of revenue recognition taking place during progress billing. The progress billing definition is created with the following information for each line in the Customer Order that is to use the Progress Billing feature: ❑ Customer Order ID ❑ Line number ❑ Work Order ID ❑ Event ❑ Milestone ❑ Line specification ❑ Specification to carry to the Invoice(s) ❑ Billing specification The invoicing for a progress bill is carried out by the Invoicing subsystem. The costing is carried out by the Manufacturing Costing subsystem.
4.2.10.1 Work Order	If the Progress Billing is associated with the progress of an associated *Work Order*, that Work Order is specified here.
4.2.10.2 Event	A billing *Event* is defined a pre-planned step that results in the creation of an Invoice for presentation to the Customer and a posting to the General Ledger based on revenue recognition parameters that have been set up on that Event. Billing is organized as a user-defined series of events. Events can be defined for each Customer Order line item. Each line item may have virtually any number of events. There are two mechanisms that trigger events: event date and milestone. During analysis of the existing events the system compares the event date (defined by the user) to the run date of the program. If the event date is less than or equal to the run date of the program, the event triggers. If the date does not trigger the event, the system examines each operation of the related Work Order having the same Milestone ID. If all operations in the set are closed (or cancelled), the event triggers. The system only analyses events that have not yet been triggered; therefore, if the triggered flag is set manually, the system never considers the event for triggering. Revenue recognition can be defined as either a flat amount or a percent of the Customer Order line, not both. The amount to be credited can also be defined. The amount to be billed can be defined as either a flat amount or a percent, but not both. Both Billing Amount and Revenue Recognition are independent of each other. Costing is a function of milestone completion and is associated with revenue recognition. The system performs costing from the milestone and Work Order point of view and recognizes revenue from the event and billing point of view. It is important to note that the system carries out costing (i.e. Cost of Goods Sold based on revenue recognition) as milestones complete. However, billing cannot be triggered from a milestone in this circumstance. The system generates a warning when this connection is missing. The Event contains the following information: ❑ Sequence number ❑ Description ❑ Billing amount

	❑ Billing percent ❑ Revenue amount ❑ Revenue percent ❑ General Ledger account ID ❑ Event date ❑ Milestone ID
4.2.10.3 Create Milestone	A *Milestone* is defined as a point in time. Typically, a milestone is the completion of a specified operation in a Work Order/Master. Each operation of a milestone must have the milestone ID in it. This permits the correct functioning of a multi-level Work Order and also permits out of sequence Milestones.
4.2.11 Print Order Acknowledgement	The *Customer Order Acknowledgement* is printed for delivery to the Customer. The system flags the Customer Order, as printed, with the current date.
4.2.12 Lookup Customer Order	*Customer Orders* can be searched by a variety of parameters. These parameters are: ❑ Customer ID ❑ Part ID ❑ Customer name ❑ Customer Purchase Order ID ❑ Work Order ID ❑ Invoice ID ❑ Packing List ID ❑ Customer Order ID ❑ Quote ID ❑ Customer part ID ❑ Entity ID ❑ Order status Wildcard characters can be used in any of the parameters. All Customer Orders that match these selection criteria are retrieved in a list for further selection of a specific order. Once the specific order is chosen, detail can then be retrieved.
4.2.12.1 Order Status	The following header information is retrieved on the specific order selected: ❑ Order ID ❑ Customer ID ❑ Customer name ❑ Customer Sold-To address ❑ Customer Ship-To address ❑ Customer Purchase Order ID ❑ Order date ❑ Next ship date ❑ Last ship date ❑ Status ❑ Quote ID (if from a quote) ❑ Entity ID ❑ Contact name ❑ Contact phone number ❑ Contact fax number ❑ Sales representative ❑ Terms ❑ Free on Board (FOB) point ❑ Ship Via ❑ Territory ❑ Currency name The following line detail is retrieved: ❑ Quantity ordered ❑ Quantity shipped to date

	❑ Line closed? ❑ Work Order ID ❑ Part ID ❑ Customer part ID ❑ Description ❑ Selling unit of measure ❑ Unit price ❑ Discount percent ❑ Extended price ❑ Ship date ❑ Promise date ❑ Freight charge ❑ Sales tax group ID ❑ Product code ❑ Commodity code ❑ Revenue General Ledger account ID override ❑ Exchange sell rate ❑ Exchange buy rate ❑ Drawing ID ❑ Drawing revision
4.2.12.2 Work Order Status	The following information is retrieved on the associated *Work Order status* for specific Customer Order line: ❑ Want date ❑ Finish date ❑ Start date ❑ Release date ❑ Quantity ❑ Quantity received to date ❑ Status ❑ Percent of total order complete For each operation within the Work Order, the following are retrieved: ❑ Leg number ❑ Sequence number ❑ Resource ID ❑ Scheduled finish date ❑ Scheduled start date ❑ Setup complete? (if applicable) ❑ Start quantity into the operation ❑ End quantity out of the operation ❑ Quantity complete ❑ Quantity available ❑ Percentage of completion ❑ Percentage issued to next operation ❑ Status (firm, released, closed)
4.2.12.3 Invoice and Shipment Status	For *Invoice and Shipment Status* the following information is retrieved: ❑ Packing List ID ❑ Pacing List line number ❑ Shipped date ❑ Quantity shipped ❑ Invoice ID ❑ Invoice date ❑ Total Invoice amount
4.2.12.4 Backorder	For *Backorder Status* the following information is retrieved on all backorders for the

Status	Customer Order chosen: ❑ Order ID ❑ Customer Purchase Order ID ❑ Customer ID ❑ Customer name
4.2.12.5 Customer MTD/YTD Status	For *Customer MTD/YTD Status* the following information is retrieved for the Customer of the order chosen: ❑ Period ❑ Month-to-date sales ❑ Year-to-date sales
4.2.12.6 Demand Assignments	Just as supply can be assigned to a Customer Order, other areas in the system can assign supply to the Customer Order as well. This view shows all allocations for the Customer Order regardless of the source of their origination.
4.2.13 Manage Customer Order	
4.2.13.1 Find	Information can be search and retrieved for the following: ❑ Part ID ❑ Part description ❑ Co-product
4.2.13.1.1 Find Part ID	This provides functionality to quickly locate a particular part. The following can be searched: ❑ Part ID ❑ Description ❑ Stock unit of measure ❑ Fabricated? ❑ Purchased? ❑ On hand quantity ❑ Manufacturer ❑ Manufacturer part ID The information is sorted by part ID.
4.2.13.1.2 Find Part Description	This provides functionality to quickly locate a particular part. The following can be searched: ❑ Description ❑ Part ID ❑ Stock unit of measure ❑ Fabricated? ❑ Purchased? ❑ On hand quantity ❑ Manufacturer ❑ Manufacturer part ID The information is sorted by description.
4.2.13.1.3 Find Co-Product	This provides functionality to quickly locate a co-product for the given part. The following can be searched: ❑ Co-product part ID ❑ Description ❑ Stock unit of measure ❑ Fabricated? ❑ Purchased? ❑ On hand quantity ❑ Manufacturer ❑ Manufacturer part ID The information is sorted by Co-product part ID.

4.2.13.2 Set/Reset Exchange Rates	This is used to set rates for individual Customer Orders. When a Customer Order is entered for a Customer that used a foreign currency, the system automatically obtains the current exchange rate from the currency exchange rate tables. By setting the exchange rates here, the rates are fixed for this specific order. The following data are maintained: ❑ Currency ID ❑ Foreign to System Currency amount ❑ System Currency to Foreign amount ❑ Order amount The currently defined system exchange rates can also be looked up and filled into the appropriate fields based on a selected date.
4.2.13.3 Renumber Lines	This function renumbers the line items on the Customer Order and is useful when lines have been deleted leaving gaps in the numbering. This function is not required and is provided for aesthetics purposes only.
4.2.13.4 Reprice Lines	Changing the Customer ID or Discount Code does not update line item prices based on different unit prices or currencies that may exist between Customers and discount codes. This function is used to update the price accordingly.
4.2.13.5 Set user Preferences	The logic of Customer Orders can be controlled in the following ways: ❑ Default status Each of these preferences is persistent with the workstation where they are set.
4.2.13.5.1 Default Status	The default status of Customer Orders can be set as: ❑ Firm ❑ Released ❑ On Hold Released status can only be set if the user currently logged in has sufficient privileges to release Customer Orders. Firmed Customer Orders exist only for planning purposes and cannot be shipped.
4.2.13.5.2 Unit Price	The unit price can be set to: ❑ Always re-evaluate the unit price ❑ Prompt before re-evaluating the unit price ❑ Do not re-evaluate the unit price
4.2.13.6 Repeat Line Item	Line information is duplicated from one line item to the next using this function. The new line number is incremented by one past the highest line number in the order.
4.2.13.7 Allocate Supply	Supply can be assigned to a Customer Order line to fulfill the requirements of the line. If a delivery schedule exists for the line then supply can be assigned to these individual lines. The supplying sources must have the same Warehouse ID as the Customer Order line to which supply is to be assigned. If the Warehouse ID is different then the allocation cannot be performed. The following information defines the supply allocation: ❑ Supply type ❑ Base ID ❑ Lot ID ❑ Split ID ❑ Sequence number ❑ Line number ❑ Piece number ❑ Allocate quantity The following are displayed as the result of the supply allocation:

	❑ Desired date ❑ Supply unallocated quantity ❑ Supply quantity ❑ Received quantity ❑ Link allocated quantity ❑ Link received quantity ❑ Link issued quantity ❑ Supply part ID ❑ Substitute part? ❑ New part/warehouse? ❑ Vendor ID ❑ Vendor part ID
4.2.13.7.1 Supply Type	The source of the supply is specified here. Possible sources of supply are: ❑ Inventory ❑ Purchase Order ❑ Purchase Order delivery schedule ❑ Interbranch Transfer ❑ Work Order ❑ Co-Product
4.2.13.7.2 Base ID	This is the specific source depending on the type of supply selected. For inventory this is the warehouse, for other types this is the document number.
4.2.13.7.3 Lot ID	This is the specific lot number when the supply type is a Work Order.
4.2.13.7.4 Split ID	This is the specific split number when the supply type is a Work Order.
4.2.13.7.5 Sequence Number	
4.2.13.7.6 Line Number	
4.2.13.7.7 Piece Number	
4.2.13.7.8 Allocate Quantity	
4.2.13.7.9 Desired Date	
4.2.13.7.10 Supply Unallocated Quantity	
4.2.13.7.11 Supply Quantity	
4.2.13.7.12 Received Quantity	
4.2.13.7.13 Link Allocated Quantity	
4.2.13.7.14 Link Received Quantity	
4.2.13.7.15 Link Issued Quantity	
4.2.13.7.16 Supply Part ID	
4.2.13.7.17 Substitute Part?	
4.2.13.7.18 New Part/Warehouse?	
4.2.13.7.19 Vendor	

ID	
4.2.13.7.20 Vendor Part ID	
4.2.13.8 EDI Order Accums	EDI order accumulators are managed here. Typically this function is used if the order is for a single part ID. This feature is only available if the EDI Release? flag is set. The following customer information is viewed and maintained here: ❑ Release number ❑ Shipments as of date ❑ Build authorization ❑ Buy authorization ❑ Accumulated shipments The following actual totals are viewed and maintained here: ❑ Adjustment to shipments ❑ Adjustment to releases ❑ Accumulated shipments ❑ Accumulated releases
4.2.13.8.1 Release Number	The customer's release number (RAN).
4.2.13.8.2 Shipments as of Date	The date by which the customer has received the accumulated shipments.
4.2.13.8.3 Build Authorization	The quantity of parts that the customer has authorized your company to build.
4.2.13.8.4 Buy Authorization	The quantity for which the customer has authorized materials to be purchased.
4.2.13.8.5 Accumulated Shipments	The quantity of shipments the customer reports that have been shipped to them.
4.2.13.8.6 Adjustment to Shipments	The adjustment quantity to the accumulated shipments. This field is used to adjust the calculated shipment quantity for historical data that may or may not exist in the database.
4.2.13.8.7 Adjustment to Releases	The adjustment quantity for the amount ordered. This is used to adjust and reconcile internal order quantity with Customer Order quantity.
4.2.13.8.8 Accumulated Shipments	The actual shipments from this order. This value is calculated by the system.
4.2.13.8.9 Accumulated Releases	The actual order quantity from this order. This value is calculated by the system.
4.2.13.9 EDI Line Accums	EDI line accumulators are used to track shipments, view in transit quantities, adjust total ship quantities to ensure accurate historical data values, and adjust delivery schedule lines. The following shipment information is viewed and maintained here: ❑ Release number ❑ Their accum date ❑ Our last ship date ❑ Their accum quantity ❑ Our accum shipments ❑ Their discrepancy ❑ Our shipment adjustment ❑ Their intransit quantity ❑ Our total shipments

	The following customer authorization information is viewed and maintained here: ❑ Fabricate (build) current ❑ Fabricate high quantity ❑ Fabricate high date ❑ Raw (buy) current ❑ Raw high quantity ❑ Raw date
4.2.13.9.1 Release Number	The customer's release number (RAN).
4.2.13.9.2 Their Accum Date	The date for which the accumulated quantity applies. This is typically the date of the last shipment receipt. This data is imported through EDI.
4.2.13.9.3 Our Last Ship Date	The last date a shipment was made to this customer.
4.2.13.9.4 Their Accum Quantity	The total accumulated quantity of this part the customer has received as of the CUM date. This data is imported through EDI.
4.2.13.9.5 Our Accum Shipments	The total quantity shipped to this customer by the last shipped date. The system automatically calculates this value.
4.2.13.9.6 Their Discrepancy	The difference between the customer's CUM quantity and the system accumulated shipments quantity.
4.2.13.9.7 Our Shipment Adjustment	This value reconciles, for historical data keeping purposes, the total accumulated shipments quantity to a customer. A value is entered here by the user to add or subtract from the accumulated shipments that the system has automatically calculated.
4.2.13.9.8 Their Intransit Quantity	The quantity shipped between the customer's CUM date and the system determined last shipped date.
4.2.13.9.9 Our Total Shipments	The total shipments made to the customer. The accumulated shipments plus or minus the adjustment quantity.
4.2.13.9.10 Fabricate Current	This is the quantity that the customer has authorized to be built.
4.2.13.9.11 Fabricate High Quantity	This displays the highest quantity authorized to build to date.
4.2.13.9.12 Fabricate High Date	This displays the date when the highest authorized quantity to build occurred.
4.2.13.9.13 Raw Current	The quantity for which the customer has authorized raw materials to be purchased.
4.2.13.9.14 Raw Quantity	This displays the highest quantity authorized to buy to date.
4.2.13.9.15 Raw Date	This displays the date when the highest authorized quantity to buy occurred.
4.2.14 Delete Customer Order	Removing a Customer Order from the system, including all line items, is allowed as follows: ❑ Deleted orders cannot be recovered ❑ An order with a shipment against it cannot be deleted ❑ If there are any linked Work Orders the, user should be notified to appropriately manage the Work Order
4.2.14.1 Delete Line	This deletes individual lines from the Customer Order.
4.2.14.2 Delete Header	This deletes the entire Customer Order. All lines must be eligible for deletion, as specified above, for the Customer Order to be deleted.
4.2.15 Maintain Customer Master	This is where the Customer Master is maintained. Customers can be added, changed, and deleted. The following information is part of the Customer Master: ❑ Customer ID ❑ Sold To address

	❑ Bill To address ❑ Ship To addresses ❑ Default Ship To address ❑ Standard Industrial Classification (SIC) code ❑ Alternate Industrial Classification (AIC) code ❑ Default discount code ❑ Default carrier ID ❑ Free on Board (FOB) point ❑ Ship Via ❑ Default Sales representative ID ❑ Territory ❑ Priority ❑ Account open date ❑ Account modified date ❑ Customer accepts partial shipments? ❑ Customer accepts early orders up to 'n' days? ❑ Customer Contacts ❑ Default contact ❑ Credit limit ❑ Receivable age limit ❑ Credit status ❑ Credit limit control ❑ Is a Return Material Authorization (RMA) required for a return? ❑ Terms ❑ Entity ID ❑ Currency ID ❑ Default transaction currency ID ❑ Default Accounts Receivable (A/R) account ID ❑ Default tax group ID ❑ Tax ID number ❑ Print dunning letters when appropriate? ❑ Customer is tax exempt? ❑ Compute tax on wholesale price? ❑ user defined label set ❑ user defined fields 1-10 ❑ Intrastat ❑ E-Commerce ❑ Language forms ❑ Notes
4.2.15.1 Sold To Address	This information includes the following specific elements: ❑ Sold To name ❑ Sold To address #1 ❑ Sold To address #2 ❑ Sold To address #3 ❑ Sold To city ❑ Sold To state ❑ Sold To zip code ❑ Sold To country
4.2.15.2 Bill To Address	This information includes the following specific elements: ❑ Bill To name ❑ Bill To address #1 ❑ Bill To address #2 ❑ Bill To address #3 ❑ Bill To city ❑ Bill To state

	❑ Bill To zip code ❑ Bill To country
4.2.15.3 Ship To Addresses	Each customer can have an unlimited number of Ship To Addresses associated with it. This information includes the following specific elements: ❑ Ship To ID ❑ Ship To name ❑ Ship To address #1 ❑ Ship To address #2 ❑ Ship To address #3 ❑ Ship To city ❑ Ship To state ❑ Ship To zip code ❑ Ship To country ❑ Default discount code ❑ Default carrier ID ❑ Free on Board (FOB) point ❑ Ship Via ❑ Default Sales representative ID ❑ Territory ❑ Default tax group ID ❑ Tax ID number ❑ Customer is tax exempt? ❑ Language ID used to print shipping label ❑ Intrastat information ❑ Order Management
4.2.15.3.1 Discount Code	This is used to specify a discount percent used by default on an item sold.
4.2.15.3.2 Carrier Code	This specifies a default carrier or courier business used to transport product.
4.2.15.3.3 Free on Board	This specifies the default point of sale that identifies where ownership passes to the buyer.
4.2.15.3.4 Ship Via	This is the default desired method to be used when shipping materials or products.
4.2.15.3.5 Sales Representative	This is the default salesperson responsible for this customer.
4.2.15.3.6 Territory	The geographic territory handled by the sales representative.
4.2.15.3.7 Tax Group	This is the default tax group used for this customer.
4.2.15.3.8 Tax Number	This is the customers tax ID number.
4.2.15.3.9 Customer Is Tax Exempt?	This is whether or not the customer is exempt from paying taxes.
4.2.15.3.10 Language ID for Shipping Label	Language ID is used to specify a given languages for the shipping label for dealing with international customers.
4.2.15.3.11 Intrastat	Intrastat is the system for collecting statistics on the physical trade in goods (i.e. the actual movement of goods) between the Member States of the European Union (EU). It has been in operation since the beginning of the Single Market on January 1, 1993. This information includes the following specific elements: ❑ Port of arrival ❑ Port of transshipment ❑ Country ID ❑ Nature of transaction ❑ Mode of transport

	❑ Siret number
4.2.15.3.11.1 Port of Arrival	Port of arrival is the location from which goods are received.
4.2.15.3.11.2 Port of Transshipment	Port of transshipment is the location from which goods are shipped.
4.2.15.3.11.3 Intrastat Country ID	Country ID is defined as the Member State of the EU the company belongs to.
4.2.15.3.11.4 Nature of Transaction	Nature of transaction is the type of transaction being made used to prevent Value Added Tax and Intrastat discrepancies.
4.2.15.3.11.5 Mode of Transport	Mode of transport method by which goods are delivered.
4.2.15.3.11.6 Siret Number	Siret number is a French company ID number.
4.2.15.3.12 Order Management	Order Management is setup at the customer shipping address level to determine how and where from a Customer Order will be filled, consolidated, and delivered.
4.2.15.3.12.1 Primary Warehouse	The Primary Warehouse is the primary default shipping warehouse for a given Ship To address ID.
4.2.15.3.12.2 Priority Code	Priority Code determines the Customer Order fulfillment priority for a given Ship To address ID. This also fills in the order fill rate associated with the priority code.
4.2.15.3.12.3 Fill Rate Type	Fill Rate Type is a list of options on how to deal with orders that can not be filled in full per either a whole order or order line level. When unavailable inventory for a part on an order line item reaches the fill rate threshold, then for line level cancels the line item or for whole order cancels the whole order.
4.2.15.3.12.4 Alternate Warehouses	Alternate Warehoused are used if a customer's primary warehouse is unavailable for some reason, then the secondary warehouses can be used.
4.2.15.3.12.5 Consolidate Orders	Consolidate Orders allow order consolidation. Which is the shipping of multiple orders in a single shipment.
4.2.15.3.12.6 Compliance Labeling	Compliance Labeling requires that a customer's Ship To address must have compliance labeling.
4.2.15.4 Default Ship To Address	This is the shipping address that is used by default for a customer.
4.2.15.5 Standard Industrial Classification	The Standard Industrial Classification (SIC) code is an national company and industry directories list of codes developed by the U.S. Census Bureau and last updated in 1987. Note, The North American Industry Classification System (NAICS) replaces the U.S. Standard Industrial Classification (SIC) system as of 1997. The system was developed by the U.S., Canada, and Mexico to provide comparable statistics across the three countries.
4.2.15.6 Alternate Industrial Classification	The Alternate Industrial Classification (AIC) code is an internal company classification for a given customers industry.
4.2.15.7 Discount Code	This is used to specify a discount percent used by default on an item sold.
4.2.15.8 Carrier Code	This specifies a default carrier or courier business used to transport product.
4.2.15.9 Free on Board	This specifies the default point of sale that identifies where ownership passes to the buyer.
4.2.15.10 Ship Via	This is the default desired method to be used when shipping materials or products.
4.2.15.11 Sales Representative	This is the default salesperson responsible for this customer.
4.2.15.12 Territory	The geographic territory handled by the sales representative.

4.2.15.13 Priority	The is a customers default priority for Work Orders and how they are scheduled.
4.2.15.14 Account Open Date	This is the date that this customer was created in the system.
4.2.15.15 Account Modified Date	This is the date on which this customer account was last modified.
4.2.15.16 Partial Shipments Accepted?	This is whether or not the customer has agreed to accept partial shipments of an order.
4.2.15.17 Early Shipments Accepted?	This is whether or not the customer has agreed to accept early shipments of an order and if so by how many days.
4.2.15.18 Contacts	This is the list of contacts for a customer. (i.e. purchasing, engineering, Accounts Payable). Each customer can have an unlimited number of Contacts associated with it.
4.2.15.19 Default contact	This is the main or default contact that is used for a customer.
4.2.15.20 Credit Limit	This is the credit limit that Customer Order entry uses when an order is placed for this customer.
4.2.15.21 Receivable Age Limit	This is the number of days at which orders will no longer be taken without a payment from the customer.
4.2.15.22 Credit Status	The status of the customer's credit is used to determine if orders and/or shipments are allowed as follows: ❑ okay - No restrictions ❑ Orders On Hold - No Orders can be taken ❑ Shipments On Hold - No shipments allowed. ❑ All On Hold - No orders or shipments allowed.
4.2.15.23 Credit Limit Control	This is whether or not to allow an override if the customer has exceeded their credit limit.
4.2.15.24 Return Material Authorization required	This is whether or not a Return Material Authorization (RMA) is required before allowing a customer return.
4.2.15.25 Terms	This specifies the sales terms that will apply when an order is placed.
4.2.15.26 Entity	This specifies the companies financial entity ID that will associated with an order placed.
4.2.15.27 Currency	This is the default currency used for a specified customer.
4.2.15.28 Transaction Currency	This is the default currency used for a transactions.
4.2.15.29 Default Accounts Receivable Account	This is the default Accounts Receivable account number for this customer.
4.2.15.30 Tax Group	This is the default tax group used for this customer.
4.2.15.31 Tax Number	This is the customers tax ID number.
4.2.15.32 Print Dunning Letters When Appropriate	This is whether or not to print dunning letters when appropriate. Peter - This is reference only information (meaning that their is no software logic behind the function).
4.2.15.33 Customer Is Tax Exempt?	This is whether or not the customer is exempt from paying taxes.
4.2.15.34 Compute Tax On Wholesale price?	This is whether or not to compute the tax based on the wholesale price.
4.2.15.35 user Defined Label Set	This selects which existing user defined label set will be used for a customer. The elements are as follows: ❑ user defined label set ID ❑ user defined label 1 ❑ user defined label 2 ❑ user defined label 3 ❑ ... ❑ user defined label 10
4.2.15.36 user Defined Fields	These are 10 unique data fields that the user can define their purpose and use. The elements are as follows:

	❑ user defined field 1 ❑ user defined field 2 ❑ user defined field 3 ❑ ... ❑ user defined field 10
4.2.15.37 Intrastat	Intrastat is the system for collecting statistics on the physical trade in goods (i.e. the actual movement of goods) between the Member States of the European Union (EU). It has been in operation since the beginning of the Single Market on January 1, 1993. This information includes the following specific elements: ❑ Port of arrival ❑ Port of transshipment ❑ Country ID ❑ Nature of transaction ❑ Mode of transport ❑ Siret number
4.2.15.37.1 Port of Arrival	Port of arrival is the location from which goods are received.
4.2.15.37.2 Port of Transshipment	Port of transshipment is the location from which goods are shipped.
4.2.15.37.3 Intrastat Country ID	Country ID is defined as the Member State of the EU the company belongs to.
4.2.15.37.4 Nature of Transaction	Nature of transaction is the type of transaction being made used to prevent Value Added Tax and Intrastat discrepancies.
4.2.15.37.5 Mode of Transport	Mode of transport method by which goods are delivered.
4.2.15.37.6 Siret Number	Siret number is a French company ID number.
4.2.15.38 E-Commerce	E-Commerce is used as part of setting up a customer with Electronic Data Interchange (EDI) transactions. The elements are as follows: ❑ Order Acknowledgement Code
4.2.15.38.1 Order Acknowledgement	The Order Acknowledgement Code defines the return document verifying the receipt and acceptance of an order, when a customer sends an order electronically.
4.2.15.39 Language Forms	Language forms are used to specify a given languages for a given form when dealing with international customers. The elements are as follows: ❑ Language ID used for Sold To addresses ❑ Language ID used for Bill To address
4.2.16 Maintain Sales Tax Master	This is where the Sales Tax Master is maintained. Sales taxes can be added, changed, and deleted. The following information is part of the Sales Tax Master: ❑ Sales tax group ID ❑ Sales tax group description ❑ Sales tax ID ❑ Sales tax description ❑ Percent set ❑ General Ledger account ID ❑ General Ledger account description
4.2.16.1 Sales Tax Group	A sales tax group is a listing of all sales taxes a customer in a particular location must pay. A group can be defined as the default taxes used for a customer and future orders. There is both a sales tax group ID and description.
4.2.16.2 Sales Tax	This is the unique sales tax ID to be associated with the individual taxes within a tax group. There is both a sales tax ID and description.

4.2.16.3 Percent Set	Percent set is the actual tax percent set for a sales tax ID including the effective date and maximum tax value. This information includes the following specific elements: ❑ Effective date ❑ Tax percent ❑ Ceiling /maximum tax value
4.2.16.3.1 Effective Date	The date that a given tax percent became effective.
4.2.16.3.2 Tax Percent	The actual tax percent to be collected
4.2.16.3.3 Ceiling	The maximum tax to be collected.
4.2.16.4 General Ledger Account	This is the General Ledger account to which sales tax is to be posted. There is both a General Ledger account ID and description
4.2.17 Maintain Discount Code Master	This is where the *Discount Code Master* is maintained. Discount codes can be added, changed, and deleted. This is used to specify a named discount percent used by default on any item sold. This information includes the following specific elements: ❑ ID ❑ Description ❑ Discount expressed as a percent used for price reduction

4.3 Engineering and Job Definition	The *Engineering and Job Definition* sub-system is used for entering and maintaining manufacturing information. This information, centered on a router and Bill of Material, can take the form of a Quote Master, Engineering Master, or Work Order. Engineering and Job Definition involves the following functionality: ❑ Creating and maintaining a Quote Master, Engineering Master, or Work Order ❑ Performing 'what-if" scheduling analysis ❑ Fulfilling of requirements ❑ Work Order status inquiry ❑ Engineering Change Notices
4.3.1 General Engineering and Job Definition Reports	
4.3.1.1 Engineering Report	The *Engineering Report* provides information on an individual Engineering Master, Work Order, or Quote Master in a detailed and summary version. The summary form provides a one-line-per-item format of basic quantity and labor information for each leg, operation, and material requirement. The report can be printed, viewed, e-mailed, or sent to a file.
4.3.1.1.1 Summary Engineering Report	This is the *Summary Version* of the engineering report. Header: Company name Report title Type: Engineering Master, Work Order, or Quote Master Identification: part/description and/or Work Order ID Work Order header: Work Order ID Line items: Work Order detail Work Order desired quantity Work Order engineered by Work Order drawing ID Work Order drawing revision Co-Products detail Co-Products desired quantity Operation detail Operation calculation end quantity Operation setup hours Operation run Operation run type Operation service ID Operation drawing ID Operation drawing revision Requirement detail Requirement piece number Requirement calculation quantity Requirement reference Requirement drawing ID Requirement drawing revision
4.3.1.1.2 Detail Engineering Report	This is the *Detailed Version* of the engineering report. Header: Company name

	Report title Work Order ID Work Order header: Work Order ID Line items: Work Order detail Work Order desired quantity Work Order engineered by Work Order drawing ID Work Order drawing revision Work Order long description Co-Products detail Co-Products desired quantity Operation type Operation scrap yield percent Operation drawing ID Operation drawing revision Operation calculation end quantity Operation calculation start quantity Operation resource ID Operation setup hours Operation fixed scrap units Operation resource setup ID Operation run Operation run type Operation minimum move quantity Operation run resource ID Operation move hours Operation capacity usage maximum Operation service ID Operation transit days Operation capacity usage minimum Requirement detail Requirement calculation quantity Requirement drawing ID Requirement drawing revision Requirement quantity per Requirement usage unit of measure Requirement fixed quantity Requirement dimensions Requirement long description
4.3.1.2 Split Work Order With Requirements Linked to Purchase Orders Requiring Review	The *Split Work Order With Requirements Linked to Purchase Orders Requiring Review* report only shows Purchase Orders that are linked to Work Orders that are being split. Header: Work Order ID Work Order sub ID Work Order split ID Line items: user Details Part ID (if it exists) Purchase Order ID Purchase Order line number

4.3.1.3 Bill of Material Report	The *Bill of Material Report* provides an indented Bill of Materials for a user given range of Engineering Masters or Work Orders. An optional limit output to explode top level parts only, will only print the top-level parts of those that aren't required by any other fabricated part. Otherwise, a Bill of Material will be printed for all fabricated parts. This report is always sequenced by Part / Job ID. Header: Company name Run comments Parent part header: Parent part ID Parent part description Line items: Level indicator Quantity percent Fixed quantity Scrap percent Dimensions Usage unit of measure
4.3.1.4 Costed Bill of Material Report	The *Costed Bill of Material Report* is similar to the Bill of Material report above, but only prints for Engineering Masters and provides additional cost information. An optional output limit is to explode the top level parts only. This will only print the top level parts of those that aren't required by any other fabricated part. This report is always sequenced by part ID. Header: Company name Report title Parent Part header: Parent part ID Parent part description Line items: Subordinate part ID Subordinate part description Quantity percent Lot size Part total hours Unit cost ((= part material + labor + burden + service cost) lot factor) Total cost (=quantity per x (part material + labor + burden + service costs)) Level indicator
4.3.1.5 Work Order/Master Cost Report	The *Work Order/Master Cost Report* prints the estimated costs for Engineering and Quote Masters and estimated and projected costs for Work Orders. Costs are totaled for all operations, all materials, and the whole Work Order or master. One line appears for the Work Order header and for each leg, operation, and material requirement on the order. Costs and quantities from subordinate objects are totaled into the next level. The following types of summary costs appear: Estimated - based on the quantities and costs shown in each operation and material requirement

	Actual - based on part standards and resource standards for standard costing, or material Invoices (or FIFO values) and Employee labor rates for actual costing. In both cases, actual times are obtained from Labor Tickets, and actual material quantities from material transactions Variance - actual cost minus Estimated Cost Projected - is equal to the actual cost of the completed work or issued materials, plus the remainder of the work at estimated cost Each of the summary costs can be expanded to include the following detail costs: Material cost Labor cost Burden cost Service cost Additionally, the following items are shown for Work Orders: Release Date Want Date Quantity Status When the Work Order is linked to a Customer Order, the following is shown: Customer Order ID Customer ID Customer Name Order Quantity Unit Price Freight Total Price Summary Direct Sales = Order Quantity x Unit Price Summary Direct Profit/(Loss) = Direct Sales - Total Cost
4.3.1.5.1 Summary Version	This is the *Summary Version* of the Work Order / Master Cost Report that contains a single line for each Work Order/Master. Header: Company name Report title Run comments Work Order header: Work Order ID Type of Line header: Type of line Work Order footer: Work Order ID Work Order part description Detail material cost Detail labor cost Detail burden cost Detail service cost Detail total Report footer: Detail material cost

	Detail labor cost Detail burden cost Detail service cost Detail grand total
4.3.1.5.2 Detail Version	This is the *Detail Version* of the Work Order / Master Cost Report that contains Work Order level information followed by Customer Order reference information followed by operation and material information with cost, sales, and profit/loss summaries. Header: Company name Report title Run comments Work Order header: Work Order ID Work Order part ID Work Order Part description Desired release date Desired want date Desired quantity Status Type of Line header: Type of line Line items: Line reference Line quantity Line unit price Line total Detail reference Detail quantity Detail material cost Detail labor cost Detail burden cost Detail service cost Detail total Type of Line footer: Material cost Labor cost Burden cost Service cost Total cost Work Order footer: Material summary cost Labor summary cost Burden summary cost Service summary cost Total summary cost Summary direct sales Summary direct profit /(loss)

4.3.1.5.3 Co-Products Version	This is the *Co-Product Version* of the Work Order / Master Cost Report. A co-product is an additional part produced by a Work Order in addition to the main part. Header: Company name Report title: Work Order / Master Co-Product Report Work Order/Master Range being printed (All, if no range specified) Work Order/Master header: Work Order ID / revision Part ID Part description Desired release date Desired want date Desired quantity Status Line items: Part ID, description, or user supplied reference description Quantity Material cost Labor cost Burden cost Service cost Total cost for line Work Order/Master footer: Material summary cost Labor summary cost Burden summary cost Service summary cost Total summary cost
4.3.1.6 Work Order Comparative Costs Report	The *Work Order Comparative Costs Reports* are the same costing information as the master cost report but prints comparative costs for the estimated, actual, and projected costs, including variance costs for Work Orders. Report Types are: Comparative totals – Summary Comparative totals – Detail Comparative totals – Detail with breakdown Report Formulas are: Estimated Cost = Estimated (Material + Labor + Burden + Service) Actual cost = Actual (Material + Labor + Burden + Service) Variance = Estimated – Actual Projected Cost = Projected (Material + Labor + Burden + Service)
4.3.1.6.1 Summary Version	This is the *Summary Version* of the Work Order Comparative Costs Report, that contains a single line for each Work Order. Header: Company name Report title Run comments Work Order header:

	Work Order ID Type of Line header: Type of line Work Order footer: Work Order ID Work Order part description Desired quantity Estimated cost Actual cost Variance Projected cost Report footer: Estimated cost Actual cost Variance Projected cost
4.3.1.6.2 Detail Version	This is the *Detailed Version* of the Work Order Comparative Costs Report that contains a Work Order level information followed by Customer Order reference information followed by operation and material information for each cost comparison. Header: Company name Report title: Work Order Cost Report (Detail – Comparative Costs) Work Order Range being printed (All Work Orders, if no range specified) Work Order header: Work Order ID / revision Part ID Part description Desired release date Desired want date Desired quantity Status Reference header: (shown when a Work Order is linked to a Customer Order) Customer Order ID Customer ID Customer Name Order Quantity Unit Price Freight Total Price Operation header: Operation number Resource ID Sub ID Quantity Estimated cost Actual cost Variance cost Projected cost Sub-Total for all operations per cost

	Line items: Part ID, description or user supplied reference description Quantity Estimated cost Actual cost Variance cost Projected cost Sub-total for all operations per cost Work Order footer: Summary cost – total for each cost Summary direct sales – total for each cost Summary direct profit / (loss) – total for each cost
4.3.1.6.3 Detail Version With Breakdown	This is the *Cost Breakdown - Detailed Version* of the Work Order Comparative Cost report. This report is the like the detailed version, except that the , Material, Labor, Burden, and Service costs are broken out into separate sections before being totaled. Additionally, setup time and run time are split out for operations. Header: Company name Title: Work Order Cost Report (Comparative Costs w/breakdown) Work Order range being printed (All Work Orders, if no range specified) Work Order header: Work Order ID / Revision Part ID Part description Desired release date Desired want date Desired quantity Status Reference header: (shown when a Work Order is linked to a Customer Order) Customer Order ID Customer ID Customer Name Order Quantity Unit Price Freight Total Price Operation header: Operation number Resource ID Sub ID Estimated Quantity Actual Quantity Estimated setup times Actual setup times Estimated run times Actual run times Operation Labor-breakdown header: Operation number Resource ID

	Sub ID Estimated cost Actual cost Variance cost Projected cost Operation Burden-breakdown header: Operation number Resource ID Sub ID Estimated cost Actual cost Variance cost Projected cost Operation Labor and Burden Sub-totals for: Estimated cost Actual cost Variance cost Projected cost Line items: Part ID, description or user supplied reference description Quantity Estimated cost Actual cost Variance cost Projected cost Sub-Total for all operations per cost Work Order footer: Summary Cost – total for each cost Summary direct sales – total for each cost Summary direct profit / (loss) – total for each cost
4.3.1.7 Work Order Costs Report (Transaction Detail)	The *Work Order Costs Report with Transaction Detail* will show individual labor, inventory, and service transaction costs broken out by Material, Labor, Burden, and Service costs for each selected Work Order. This is a detailed cost report because it shows the source transaction for each cost incurred. Header: Company name Report title Run comments Work Order header: Work Order ID Work Order part ID Work Order part description Desired release date Desired want date Desired quantity Status Type of Line header: Type of line

	Type of Cost Type of cost: Setup / run hours Material Labor Burden Service Line Items: Detail reference Detail estimated quantity Detail actual quantity Detail status Detail setup costed Detail actual cost Hours reference Estimated quantity Actual quantity Estimated setup hours Actual setup hours Estimated run hours Actual run hours Type of Line footer: Summary actual cost Work Order footer: Summary actual cost total
4.3.2 Definition Source	The creation of the header for an engineering, quote, or job definition, can originate from one of five sources: ❑ Copying an existing Work Order ❑ Copying an existing Quote Master ❑ Copying an existing Engineering Master ❑ New ❑ Import from a drawing file
4.3.2.1 Copy an Existing Work Order	If the new definition is to be based upon an existing Work Order, then that order is chosen and copied into a new master. The new definition can be a Work Order, Quote Master, or Engineering Master. If the new master is a quote or Work Order, then the ID can either be manually keyed or auto-ID'd using the next available ID. The order header and lines are copied. All information can be edited after the copying process.
4.3.2.2 Copy a Quote Master	If the new master is to be based upon an existing Quote Master, then that quote is chosen and copied into a new master. The new definition can be a Work Order, Quote Master, or Engineering Master. If the new master is a quote or Work Order, then the ID can either be manually keyed or auto-ID'd using the next available ID. The quote definition header and lines are copied. All information can be edited after the copying process.
4.3.2.3 Copy an Engineering Master	If the new master is to be based upon an existing Engineering Master, then that master is chosen and copied into a new master. The new definition can be a Work Order, Quote Master, or Engineering Master. If the new master is a quote or Work Order, then the ID can either be manually keyed or auto-ID'd using the next available ID. The Engineering Master header and lines are copied. All information can be edited after the copying process.
4.3.2.4 New	This mode starts with no existing definition. The type of definition is specified (Quote Master, Engineering Master, Work Order). All of the header and detail information needs to be manually entered.
4.3.2.5 Import From a	[TBD]

Drawing File	
4.3.3 Create Header	The header is created with the following information: ❑ ID ❑ Part ID (not required for Work Orders) ❑ Release date (only required for Work Orders) ❑ Want date (only required for Work Orders) ❑ Engineered date ❑ Quantity ❑ Status The following are optional: ❑ Engineered by ❑ Forward schedule from release date (by default the Scheduler performs backward scheduling) ❑ Product Code ❑ Commodity Code ❑ Traveler printed ❑ Drawing ID and revision ❑ WIP General Ledger override accounts ❑ Binary picture ❑ Specification ❑ WIP General Ledger accounts ❑ Variable for formula-based quantity calculations ❑ Co-products
4.3.3.1 Release Date	The *Release Date* is the date supplied by the user that indicates the desired start date if *forward scheduling* the Work Order.
4.3.3.2 Want Date	The *Want Date* is the date that is wanted for the Work Order to be completed by. If creating the Work Order directly from a Customer Order, then this date is set to the ship date of the Customer Order. It can, however, be set to any date at any time.
4.3.3.3 Engineered Date	The *Engineered Date* is for reference purposes only and is not used in any logic.
4.3.3.4 Quantity	For an Engineering Master, this is the standard lot size quantity. For a Work Order, this is the desired quantity.
4.3.3.5 Status	This is the status of the overall master. For Engineering Masters and Quote Masters, only unreleased status is applicable. For Work Orders, several statuses are available. This is the status for the overall Work Order. Note that each operation and materials also have individual statuses. The status for a Work Order header include: ❑ Unreleased – Does not show up in any shop schedule or material plan ❑ Firm – Part of the schedule and material plan but cannot receive any inventory or labor transactions ❑ Released – Can receive inventory and labor transactions ❑ Closed – No longer part of the shop schedule or material plan and cannot receive inventory or labor transactions. May be changed to released status if additional transaction need to be applied against the Work Order ❑ Cancelled – Inventory and labor transactions are reversed
4.3.3.6 Engineered By	The *Engineered By* is for reference purposes only and is not used in any logic.
4.3.3.7 Forward Schedule	This flag indicates if the Work Order is to be Forward Scheduled during the Global Scheduling process. Work Orders are normally Backward Scheduled by default.
4.3.3.8 Product Code	A *Product Code* can be optionally assigned to the Work Order. If a part ID is specified for the Work Order and a product code is associated with the part in the Part Master, then the product code is filled in automatically upon entry of the part ID. The product code can be over-ridden. However, doing so will not change the product code association in the Part Master. The product code can be chosen from a pre-defined list of product codes that is maintained by the user. However, free-form text can be stored as the product code.

	A product code is used to classify parts and allows easy assignment of General Ledger account numbers to a specific line of product. Because several account numbers are assigned to the product code, a singular assignment of a product code to a part in effect assigns numerous General Ledger account numbers.
4.3.3.9 Commodity Code	A *Commodity Code* can be assigned to each Work Order. If a part ID is specified for the Work Order and a Commodity Code is associated with the part in the Part Master, then the product code is filled in automatically upon entry of the part ID. The product code can be over-ridden. However, doing so will not change the product code association in the Part Master. A Commodity Code is used to classify parts generally for material management purposes and has no logic in the system. The Commodity Code can be chosen from a pre-defined list of Commodity Codes that is maintained by the user. However, freeform text can be stored as the Commodity Code.
4.3.3.10 Drawing ID	The path and file name of a drawing is stored here. A provision is made to allow the user to search for the drawing and populate the field from that search. Alternatively, the user can enter any text string.
4.3.3.11 Drawing Revision	*Drawing Revision* is for reference purposes only and is not used in any logic.
4.3.3.12 WIP General Ledger Accounts	A Work Order can have specific General Ledger account numbers assigned to it for Work in Process. These accounts are debited for actual or standard cost of inventory issues and Labor Tickets, depending on the costing method in use. Upon receipt of the job into inventory, (or implied receipt by a direct shipment from WIP), these accounts are credited the corresponding amount. These account numbers are used during Manufacturing Costing. Any number of these accounts can be used for overriding purposes. When these transactions are created, the system chooses the WIP accounts for a Work Order in the following way: ❑ First, use any accounts that are specified for the Work Order using this function ❑ Next, for any accounts not specified in the Work Order, use any WIP accounts specified for the product code of the Work Order - if any ❑ Finally, use the default WIP accounts specified in the global parameters.
4.3.3.13 Variable	Any number of Variables can be established for each Work Order. These are named items whose value can be changed from time-to-time. Variables are primarily used to specify material requirements in terms of variable dimensions. The material requirement in the Engineering Master can use a formula with these variables to express its requirement quantity. Upon creation of the Work Order, these variables can be quantified and the actual material quantity requirement will be calculated.
4.3.3.14 Co-Products	A *Co-Product* is an additional part produced by a Work Order, in addition to the main part. A Work Order or master specifies a part in its header that is considered the main part of the order. This part may or may not be assigned a part ID. The co-product list specifies the additional parts that are made with the main part. All co-products must have part IDs. Co-products are costed directly from Work Order details and calculated based on a percent of the entire order cost. Values can be assigned to co-products much like materials are assigned values. The following are used to define each co-product: ❑ Part ID ❑ Material percent ❑ Labor percent ❑ Burden percent ❑ Service percent ❑ Quantity per

	❑ Desired quantity In addition, the following are displayed by the system: ❑ Part description ❑ Received quantity to date The system calculates the total percent for each of material, labor, burden, and service although it is not required that they total 100%. The quantity per for each co-product can be expressed as either a static value or as a ratio to the header quantity.
4.3.4 Define Operations	Operations are added to the Work Order/Master to create a router. The following are the types of operations that can be created: ❑ Standard (internal) ❑ Sub-contract (external)
4.3.4.1 Standard	*Standard Operation* is used to define the need for an in-house resource in a router. The following are required information to define the operation: ❑ Resource ID ❑ Setup time ❑ Run ❑ Sequence The following are optional in defining the operation: ❑ Load size (if run above is expressed in terms of a load size) ❑ Setup hours ❑ Run ❑ Run type ❑ Move hours ❑ Minimum move quantity ❑ Start quantity override ❑ End quantity override ❑ Specification ❑ Scrap or Yield percent ❑ Fixed scrap quantity ❑ Setup cost per hour ❑ Run cost per hour ❑ Run cost per unit ❑ Setup burden per hour ❑ Run burden per hour ❑ Run burden per unit ❑ Setup burden percent ❑ Run burden percent ❑ Fixed burden amount ❑ Cost reset? ❑ Minimum capacity units usage ❑ Maximum capacity units usage ❑ Begin part trace ❑ Concurrent resources
4.3.4.1.1 Setup Time	*Setup Time* defines the amount of time required to setup the operation for each time that it is used. The unit of measure is expressed in hours. If an operation is scheduled discontinuously, then this setup time needs to be used each time the operation is scheduled. Setup time is not applicable for contractor operations.
4.3.4.1.2 Run/Run Type	*Run/Run Type* is the amount of time required to process each piece of the Master. This can be expressed in terms of hours/piece, minutes/piece, pieces/hour, pieces/minute, hours/load, or load/hour. If either of the last two is used, then the load size must be

	specified in 4.3.4.1.4 below. Run is not applicable for contractor operations.
4.3.4.1.3 Sequence	This is the unique identification for the operation within the Master or leg. This sequence also determines the order in which the operations are presented to the user and the order in which the operations are performed during scheduling.
4.3.4.1.4 Load Size	*Load Size* is used in connection with run above. This specifies the quantity of parts defined as a "load" or "batch".
4.3.4.1.5 Move Time	*Move Time* is the amount of time required to move the pieces to the next operation. It is expressed in hours and is not applicable for contractor operations.
4.3.4.1.6 Minimum Move Quantity	*Minimum Move Quantity* is the minimum quantity required to be completed at this resource before moving it to the next resource. It is used to define operation overlap.
4.3.4.1.7 Start Quantity Override	*Start Quantity Override* is the number of pieces entering the operation from the previous one. It is used to override the calculated quantities from the Work Order quantity and scrap/yield.
4.3.4.1.8 End Quantity Override	*End Quantity Override* is the number of pieces leaving the operation. It is used to override the calculated quantities from the Work Order quantity and scrap/yield. These pieces either flow to the next operation or to finished goods. If this is the last operation, the end quantity equals the Work Order desired quantity.
4.3.4.1.9 Specification	*Specification* is multi-line text used to describe the operation in detail.
4.3.4.2.0 Scrap or Yield Percent	A percent is optionally entered here to represent the anticipated *Scrap or Yield* for this operation. This number is used during the Work Order quantity calculation. Either scrap or yield can be expressed – but not both.
4.3.4.2.1 Fixed Scrap Quantity	*Fixed Scrap Quantity* is the fixed quantity of scrap that is anticipated to be used at this operation regardless of Throughput quantity. Usually this scrap is due to setup spoilage.
4.3.4.2.2 Setup Cost Per Hour	*Setup Cost Per Hour* is the cost per hour of setting up the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.2.3 Run Cost Per Hour	*Run Cost Per Hour* is the cost to run the operation for one hour. It is only used if the system is set to base labor cost on the actual quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.2.4 Run Cost Per Unit	*Run Cost Per Unit* is the cost to use the resource to produce one unit. It is only used if the system is set to base labor cost on the actual quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.2.5 Setup Burden Per Hour	*Setup Burden Per Hour* is the burden cost for one hour of setting up the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.2.6 Run Burden Per Hour	*Run Burden Per Hour* is the burden cost for one hour of running the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.2.7 Run Burden Per Unit	*Run Burden Per Unit* is the burden cost for producing one unit at this operation. It is generally used when the labor cost for the operation is determined by the quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.

4.3.4.2.8 Setup Burden Percent	*Setup Burden Percent* is the burden cost for setting up the operation. This burden amount is calculated by taking the percent from the amount of setup burden per hour for the operation (not from the setup cost of the operation). Both the setup burden per hour and this setup burden percent are used as the basis for burden application. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.2.9 Run Burden Percent	*Run Burden Percent* is the burden cost for running the operation. This burden amount is calculated by taking the percent from the amount of run burden per hour for the operation (not from the run cost of the operation). Both the run burden per hour and this run burden percent are used as the basis for burden application. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.3.0 Fixed Burden Amount	*Fixed Burden Amount* is a time-time burden amount that is applied to the first Labor Ticket for the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.3.1 Cost Reset?	*Cost Reset* is used to indicate whether the costs in this operation should be over-ridden if the utility to reset costs from the respective Shop Resource Master is run.
4.3.4.3.2 Minimum Capacity Units Usage	*Minimum Capacity Units Usage* is the minimum units of capacity that the operation must use in order to be scheduled.
4.3.4.3.3 Maximum Capacity Units Usage	*Maximum Capacity Units Usage* is the maximum units of capacity that an operation will consume when being scheduled.
4.3.4.3.4 Begin Part Trace	*Begin Part Trace* is a flag that indicates part trace information needs to be collected upon completion of units at this operation. This information includes a lot number and other properties as defined in the Part Master Lot Profile.
4.3.4.3.5 Concurrent Resources	*Concurrent Resources* specifies one or more other resources that must also be available in order for the operation to be scheduled. The degree of concurrency is also specified. For each concurrent resource the following are required: ❑ Resource ID ❑ Setup hours ❑ Run hours ❑ Duration that the resource is needed expressed as a percent ❑ Flag to indicate whether the resource is required at the start of the operation
4.3.4.4 Sub-Contract	*Sub-Contract Operation* is used to define the need for an external resource in a router. The following are required information to define the operation: ❑ Resource ID ❑ Days that the Work Order leg will be out to the contractor ❑ Run ❑ Sequence The following are optional in defining the operation: ❑ Setup hours ❑ Run type ❑ Load size ❑ Move hours ❑ Minimum move quantity ❑ Start quantity override ❑ End quantity override

	❑ Specification ❑ Scrap or yield percent ❑ Fixed scrap quantity ❑ Setup cost per hour ❑ Run cost per hour ❑ Run cost per unit ❑ Setup burden per hour ❑ Run burden per hour ❑ Run burden per unit ❑ Setup burden percent ❑ Run burden percent ❑ Fixed burden amount ❑ Cost reset? ❑ Minimum capacity units usage ❑ Maximum capacity units usage ❑ Begin part trace ❑ Concurrent resources ❑ Vendor ID ❑ Vendor service ID ❑ Service part ID
4.3.4.4.1 Setup Time	*Setup Time* defines the amount of time required to setup the operation for each time that it is used. The unit of measure is expressed in hours. If an operation is scheduled discontinuously, then this setup time needs to be used each time the operation is scheduled. Setup Time is not applicable for contractor operations.
4.3.4.4.2 Run/Run Type	*Run/Run Type* is the amount of time required to process each piece of the Master. It can be expressed in terms of hours/piece, minutes/piece, pieces/hour, pieces/minute, hours/load, or load/hour. If either of the last two is used, then the load size must be specified in 4.3.4.1.4 below. Run is not applicable for contractor operations.
4.3.4.4.3 Sequence	*Sequence* is the unique identification for the operation within the Master or leg. This sequence also determines the order in which the operations are presented to the user and the order in which the operations are performed during scheduling.
4.3.4.4.4 Load Size	*Load Size* is used in connection with run above. This specifies the quantity of parts defined as a "load" or "batch."
4.3.4.4.5 Move Time	*Move Time* is the amount of time required to move the pieces to the next operation. It is expressed in hours and is not applicable for contractor operations.
4.3.4.4.6 Minimum Move Quantity	*Minimum Move Quantity* is the minimum quantity required to be completed at this resource before moving it to the next resource. It is used to define operation overlap.
4.3.4.4.7 Start Quantity Override	*Start Quantity Override* is the number of pieces entering the operation from the previous one. Used to override the calculated quantities from the Work Order quantity and scrap/yield.
4.3.4.4.8 End Quantity Override	This is the number of pieces leaving the operation. It is used to override the calculated quantities from the Work Order quantity and scrap/yield. These pieces either flow to the next operation or to finished goods. If this is the last operation, the end quantity equals the Work Order desired quantity.
4.3.4.4.9 Specification	This is multi-line text used to describe the operation in detail.
4.3.4.5.0 Scrap or Yield Percent	A percent is optionally entered here to represent the anticipated scrap or yield for this operation. This number is used during the Work Order quantity calculation. Either scrap or yield can be expressed – but not both.
4.3.4.5.1 Fixed Scrap Quantity	This is the fixed quantity of scrap that is anticipated to be used at this operation regardless of Throughput quantity. Usually this scrap is due to setup spoilage.
4.3.4.5.2 Setup Cost Per Hour	This is the cost per hour of setting up the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of

	the operation will not update this value unless a utility is run.
4.3.4.5.3 Run Cost Per Hour	This is the cost to run the operation for one hour. It is only used if the system is set to base labor cost on the actual quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.5.4 Run Cost Per Unit	This is the cost to use the resource to produce one unit. It is only used if the system is set to base labor cost on the actual quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.5.5 Setup Burden Per Hour	This is the burden cost for one hour of setting up the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.5.6 Run Burden Per Hour	This is the burden cost for one hour of running the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.5.7 Run Burden Per Unit	This is the burden cost for producing one unit at this operation. It is generally used when the labor cost for the operation is determined by the quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.5.8 Setup Burden Percent	This is the burden cost for setting up the operation. This burden amount is calculated by taking the percent from the amount of setup burden per hour for the operation (not from the setup cost of the operation). Both the setup burden per hour and this setup burden percent are used as the basis for burden application. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.5.9 Run Burden Percent	This is the burden cost for running the operation. This burden amount is calculated by taking the percent from the amount of run burden per hour for the operation (not from the run cost of the operation). Both the run burden per hour and this run burden percent are used as the basis for burden application. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.6.0 Fixed Burden Amount	This is a time-time burden amount that is applied to the first Labor Ticket for the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.6.1 Cost Reset?	This flag is used to indicate whether the costs in this operation are to be over-ridden if the utility to reset costs from the respective Shop Resource Master is run.
4.3.4.6.2 Minimum Capacity Units Usage	This is the minimum units of capacity that the operation must use in order to be scheduled.
4.3.4.6.3 Maximum Capacity Units Usage	This is the maximum units of capacity that an operation will consume when being scheduled.
4.3.4.6.4 Begin Part Trace	This is a flag that indicates Part trace information needs to be collected upon completion of units at this operation. This information includes a lot number and other properties

	defined in the Part Master Lot Profile.
4.3.4.6.5 Concurrent Resources	This specifies one or more other resources that must also be available in order for the operation to be scheduled. The degree of concurrency is also specified. For each concurrent resource the following are required: ❑ Resource ID ❑ Setup hours ❑ Run hours ❑ Duration that the resource is needed expressed as a percent ❑ Flag to indicate whether the resource is required at the start of the operation
4.3.4.6.6 Vendor ID	This specifies the vendor that is to perform the service. Only used for outside service operations on Quote Masters.
4.3.4.6.7 Vendor Service ID	This specifies the service that the vendor will perform. Only used for outside service operations on Quote Masters.
4.3.4.6.8 Service Part ID	The vendor part number for the service to be performed. Only used for outside service operations on Quote Masters.
4.3.4.7 Pre-Defined	This method automatically enters all operation detail from a pre-defined template. The template contains the following information that directly correlates to the operation itself: ❑ Template ID ❑ Resource ID ❑ Service ID ❑ Setup hours ❑ Run ❑ Run type ❑ Load size ❑ Move hours ❑ Minimum move quantity ❑ Start quantity override ❑ End quantity override ❑ Specification ❑ Scrap or yield percent ❑ Fixed scrap quantity ❑ Setup cost per hour ❑ Run cost per hour ❑ Run cost per unit ❑ Setup burden per hour ❑ Run burden per hour ❑ Run burden per unit ❑ Setup burden percent ❑ Run burden percent ❑ Fixed burden amount ❑ Minimum capacity units usage ❑ Maximum capacity units usage ❑ Begin part trace ❑ Concurrent resources ❑ Vendor ID (if a subcontract template) ❑ Vendor service ID (if a subcontract template) ❑ Service part ID (if a subcontract template)
4.3.4.7.1 Setup Time	This defines the amount of time required to setup the operation for each time that it is used. The unit of measure is expressed in hours. If an operation is scheduled discontinuously, then this setup time needs to be used each time the operation is scheduled. Setup time is not applicable for contractor operations.
4.3.4.7.2 Run/Run Type	This is the amount of time required to process each piece of the Master. It can be expressed in terms of hours/piece, minutes/piece, pieces/hour, pieces/minute, hours/load, or load/hour. If either of the last two is used then, the load size must be specified in 4.3.4.1.4 below. Run is not applicable for contractor operations.

4.3.4.7.4 Load Size	Used in connection with run above, this specifies the quantity of parts defined as a "load" or "batch."
4.3.4.7.5 Move Time	This is the amount of time required to move the pieces to the next operation. It is expressed in hours and is not applicable for contractor operations.
4.3.4.7.6 Minimum Move Quantity	This is the minimum quantity required to be completed at this resource before moving it to the next resource. It is used to define operation overlap.
4.3.4.7.7 Start Quantity Override	This is the number of pieces entering the operation from the previous one. It is used to override the calculated quantities from the Work Order quantity and scrap/yield.
4.3.4.7.8 End Quantity Override	This is the number of pieces leaving the operation. It is used to override the calculated quantities from the Work Order quantity and scrap/yield. These pieces either flow to the next operation or to finished goods. If this is the last operation, the end quantity equals the Work Order desired quantity.
4.3.4.7.9 Specification	This is multi-line text used to describe the operation in detail.
4.3.4.8.0 Scrap or Yield Percent	A percent is optionally entered here to represent the anticipated scrap or yield for this operation. This number is used during the Work Order quantity calculation. Either scrap or yield can be expressed – but not both.
4.3.4.8.1 Fixed Scrap Quantity	This is the fixed quantity of scrap that is anticipated to be used at this operation regardless of Throughput quantity. Usually this scrap is due to setup spoilage.
4.3.4.8.2 Setup Cost Per Hour	This is the cost per hour of setting up the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.3 Run Cost Per Hour	This is the cost to run the operation for one hour. It is only used if the system is set to base labor cost on the actual quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.4 Run Cost Per Unit	This is the cost to use the resource to produce one unit. It is only used if the system is set to base labor cost on the actual quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.5 Setup Burden Per Hour	This is the burden cost for one hour of setting up the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.6 Run Burden Per Hour	This is the burden cost for one hour of running the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.7 Run Burden Per Unit	This is the burden cost for producing one unit at this operation. It is generally used when the labor cost for the operation is determined by the quantity produced. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.8 Setup Burden Percent	This is the burden cost for setting up the operation. This burden amount is calculated by taking the percent from the amount of setup burden per hour for the operation (not from the setup cost of the operation). Both the setup burden per hour and this setup burden percent are used as the basis for burden application. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.8.9 Run	This is the burden cost for running the operation. This burden amount is calculated by

Burden Percent	taking the percent from the amount of run burden per hour for the operation (not from the run cost of the operation). Both the run burden per hour and this run burden percent are used as the basis for burden application. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.9.0 Fixed Burden Amount	This is a one-time burden amount that is applied to the first Labor Ticket for the operation. The initial value is taken from the corresponding Shop Resource and copied into the operation. The cost can be over-ridden without changing the Shop Resource. A change to the Shop Resource after the creation of the operation will not update this value unless a utility is run.
4.3.4.9.1 Minimum Capacity Units Usage	This is the minimum Units of Capacity that the operation must use in order to be scheduled.
4.3.4.9.2 Maximum Capacity Units Usage	This is maximum Units of Capacity that an operation will consume when being scheduled.
4.3.4.9.3 Begin Part Trace	This is a flag that indicates part trace information needs to be collected upon completion of units at this operation. This information includes a lot number and other properties as defined in the Part Master Lot Profile.
4.3.4.9.4 Concurrent Resources	This specifies one or more other resources that must also be available in order for the operation to be scheduled. The degree of concurrency is also specified. For each concurrent resource the following are required: ❑ Resource ID ❑ Setup hours ❑ Run hours ❑ Duration that the resource is needed expressed as a percent ❑ Flag to indicate whether the resource is required at the start of the operation
4.3.4.9.5 Vendor ID	This specifies the vendor that is to perform the service. Only used for outside service operations on Quote Masters.
4.3.4.9.6 Vendor Service ID	This specifies the service that the vendor will perform. Only used for outside service operations on Quote Masters.
4.3.4.9.7 Service Part ID	The vendor part number for the service to be performed. Only used for outside service operations on Quote Masters.
4.3.5 Define Materials	Materials are added to operations in the Work Order/Master to create a Bill of Material. Each material requirement is tied exclusively to one operation. The following are the types of materials that can be created: ❑ Inventoried part ❑ Non-inventoried part ❑ Sub-Assembly (leg)
4.3.5.1 Inventoried	This requirement is used to define the need for standard part numbered inventory. The following are required information to define the requirement: ❑ Part ID ❑ Piece number ❑ Quantity per unit produced at the attached operation ❑ Quantity per based on start or end The following are optional in defining the requirement: ❑ Fixed quantity ❑ Scrap percent ❑ Quantity per based on start or end ❑ Reference ❑ Usage unit of measure

	❑ Dimensions ❑ Dimensional inventory parameters ❑ Material unit cost ❑ Labor unit cost ❑ Burden unit cost ❑ Service unit cost ❑ Fixed cost ❑ Burden per unit ❑ Burden percent ❑ Cost reset? ❑ Vendor ID ❑ Vendor part ID ❑ Manufacturer name ❑ Manufacturer's part ID ❑ Effective date ❑ Discontinue after date ❑ Drawing ID ❑ Drawing revision
4.3.5.1.1 Piece Number	This is the unique identification for the material within the operation. This number also determines the order in which the materials are presented to the user.
4.3.5.1.2 Fixed Quantity	This is a one-time quantity that is used regardless of the quantity for the master. Typically this is used for setup scrap.
4.3.5.1.3 Scrap Percent	This is the percent of the quantity per anticipated to be scraped during processing.
4.3.5.1.4 Quantity Per Based On Start Or End	The quantity per can be specified as either the quantity required entering the operation or leaving the operation. The choice depends on whether the scrap and yield events for the operation occur before or after the new material is used.
4.3.5.1.5 Reference	This is for information purposes only and no logic in the system. The intent is to refer to the engineering drawing for the part.
4.3.5.1.6 Usage Unit of Measure	A unit of measure can be specified for the leg that is different from the stocking unit of measure. A conversion factor must exist either in the Part Master or as a global conversion.
4.3.5.1.7 Dimensions	This is used to enter a formula as an alternate way to calculate quantity per for the material. This is useful where the actual quantity is the result of multiple dimensions that produce a result. This is most useful when used in connection with variables that can have their value defined at the time of Work Order creation. The following operators are available: ❑ Addition ❑ Subtraction ❑ Multiplication ❑ Division ❑ Raise to a power
4.3.5.1.8 Dimensional Inventory Parameters	For parts that are defined as dimensional in the Part Master, one or more dimensions must be supplied. These parameters are used to specify the dimensions in addition to the quantity for the required material. The following dimensions are available: ❑ Length ❑ Width ❑ Height
4.3.5.1.9 Material Unit Cost	This is the material portion of the cost for this item. The initial value is taken from the corresponding Part Master and copied into the material. The cost can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.0 Labor Unit Cost	This is the labor portion of the cost for this item. The initial value is taken from the corresponding Part Master and copied into the material. The cost can be over-ridden

	without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.1 Burden Unit Cost	This is the burden portion of the cost for this item. The initial value is taken from the corresponding Part Master and copied into the material. The cost can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.2 Service Unit Cost	This is the service portion of the cost for this item. The initial value is taken from the corresponding Part Master and copied into the material. The cost can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.3 Fixed Cost	This is the fixed portion of the cost for this item. It is a time-time burden amount that is applied upon the first and only first material issue. The initial value is taken from the corresponding Part Master and copied into the material. The cost can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.4 Burden Per Unit	This is the fixed burden cost for each unit of material issue. The initial value is taken from the corresponding Part Master and copied into the material. The cost can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.5 Burden Percent	This is the burden cost expressed as a percent of the total material cost. The initial value is taken from the corresponding Part Master and copied into the material. The percent can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value unless a utility is run.
4.3.5.2.6 Cost Reset?	This flag is used to indicate whether the costs in this material are to be over-ridden if the utility to reset costs from the respective Material Master is run.
4.3.5.2.7 Vendor ID	This is the vendor that is to be used as a recommendation when the requirement goes to purchasing. The initial value is taken from the Preferred vendor in the corresponding Part Master. The vendor can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.2.8 Vendor Part ID	This is the vendor's part number that is to be used as a recommendation when the requirement goes to purchasing. The initial value is taken from the Preferred vendor in the corresponding Part Master. The vendor can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.2.9 Manufacturer Name	This contains the manufacturer of the part. While the manufacturer can be specified as part of the vendor information in the Part Master, this is not copied into the material requirement. The manufacturer name is automatically carried to the Purchase Order.
4.3.5.3.0 Manufacturer 4.3.5.3.1 Part ID	This contains the manufacturer's part number for the part. While the manufacturer part number can be specified as part of the vendor information in the Part Master, this is not copied into the material requirement. The manufacturer's part ID is automatically carried to the Purchase Order.
4.3.5.3.2 Effective Date	Effectivity is applied to the material of Engineering Masters, not Quote Masters or Work Orders. This date indicates when material becomes effective.
4.3.5.3.3 Discontinue After Date	Effectivity is applied to the material of Engineering Masters, not Quote Masters or Work Orders. This date indicates when material is to be discontinued.
4.3.5.3.4 Drawing ID	This is the drawing ID for the part. The initial value is taken from the corresponding Part Master. The drawing ID can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.3.5 Drawing Revision	This is the drawing revision for the part. The initial value is taken from the corresponding Part Master. The drawing revision can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.4 Non-Inventoried	This requirement is used to define the need for an item that is neither part ID'd or inventoried. The following are required information to define the requirement: ❑ Description

	❑ Piece number ❑ Quantity per unit produced at the attached operation ❑ Quantity per based on start or end ❑ Material unit cost ❑ Labor unit cost ❑ Burden unit cost ❑ Service unit cost ❑ Fixed cost ❑ Burden per unit ❑ Burden percent The following are optional in defining the requirement: ❑ Fixed quantity ❑ Scrap percent ❑ Reference ❑ Usage unit of measure ❑ Vendor ID ❑ Manufacturer name and part ID ❑ Drawing ID and revision
4.3.5.4.1 Piece ID	This is the unique identification for the material within the operation. This ID also determines the order in which the materials are presented to the user.
4.3.5.4.2 Quantity Per Based On Start Or End	The quantity per can be specified as either the quantity required entering the operation or leaving the operation. The choice depends on whether the scrap and yield events for the operation occur before or after the new material is used.
4.3.5.4.3 Material Unit Cost	This is the material portion of the cost for this item. The user must provide this value.
4.3.5.4.4 Labor Unit Cost	This is the burden portion of the cost for this item. The user must provide this value.
4.3.5.4.5 Burden Unit Cost	This is the burden portion of the cost for this item. The user must provide this value.
4.3.5.4.6 Service Unit Cost	This is the service portion of the cost for this item. The user must provide this value.
4.3.5.4.7 Fixed Cost	This is the fixed portion of the cost for this item. It is a time-time burden amount that is applied upon the first and only first material issue. The user must provide this value.
4.3.5.4.8 Burden Per Unit	This is the fixed burden cost for each unit of material issue. The user must provide this value.
4.3.5.4.9 Burden Percent	This is the burden cost expressed as a percent of the total material cost. The user must provide this value.
4.3.5.5.0 Fixed Quantity	This is a one-time quantity that is used regardless of the quantity for the master. Typically this is used for setup scrap.
4.3.5.5.1 Scrap Percent	This is the percent of the quantity per anticipated to be scraped during processing.
4.3.5.5.2 Reference	This is for information purposes only and no logic in the system. The intent is to refer to the engineering drawing for the part.
4.3.5.5.3 Usage Unit of Measure	A unit of measure can be specified for the material that is different from the stocking unit of measure. A conversion factor must exist either in the Part Master or as a global conversion.
4.3.5.5.4 Vendor ID	This is the vendor that is to be used as a recommendation when the requirement goes to purchasing.
4.3.5.5.5 Manufacturer Name	This contains the manufacturer of the part. The manufacturer name is automatically carried to the Purchase Order.
4.3.5.5.6 Manufacturer Part ID	This contains the manufacturer's part ID for the part. The manufacturer's part ID is automatically carried to the Purchase Order.

4.3.5.5.7 Drawing ID	This is the drawing ID for the part. The initial value is taken from the corresponding Part Master. The drawing ID can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.5.8Drawing Revision	This is the drawing revision for the part. The initial value is taken from the corresponding Part Master. The drawing revision can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.6 Sub-Assembly (Leg)	This is a special type of material requirement representing a sub-assembly to be built "on-the-fly". It will **not** be received and subsequently issued to another Work Order. The scheduling of each leg is independent, as is the costing. The leg may or may not be part numbered. The following are required to define the leg: ❑ Part ID or description ❑ Leg number ❑ Quantity per unit produced at the attached operation ❑ Quantity per based on start or end The following are optional in defining the requirement: ❑ Fixed quantity ❑ Scrap percent ❑ Reference ❑ Usage unit of measure ❑ Drawing ID ❑ Drawing revision
4.3.5.6.1 Leg Number	This is the unique identification for the leg within the Work Order. The Leg Number is associated with a specific operation.
4.3.5.6.2 Quantity Per Based On Start Or End	The quantity per can be specified as either the quantity required entering the operation or leaving the operation. The choice depends on whether the scrap and yield events for the operation occur before or after the new material is used.
4.3.5.6.3 Fixed Quantity	This is a one-time quantity that is used regardless of the quantity for the master. Typically this is used for setup scrap.
4.3.5.6.4 Scrap Percent	This is the percent of the quantity per anticipated to be scraped during processing.
4.3.5.6.5 Reference	This is for information purposes only and no logic in the system. The intent is to refer to the engineering drawing for the part.
4.3.5.6.6 Usage Unit of Measure	A unit of measure can be specified for the leg that is different from the stocking unit of measure. A conversion factor must exist either in the Part Master or as a global conversion.
4.3.5.6.7 Manufacturer Name	This contains the manufacturer of the part. The manufacturer name is automatically carried to the Purchase Order.
4.3.5.6.8 Manufacturer Part ID	This contains the manufacturer's part number for the part. The manufacturer's part number is automatically carried to the Purchase Order.
4.3.5.6.9 Drawing ID	This is the drawing number for the part. The initial value is taken from the corresponding Part Master. The drawing number can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.5.7.0 Drawing Revision	This is the drawing revision for the part. The initial value is taken from the corresponding Part Master. The drawing revision can be over-ridden without changing the Part Master. A change to the Part Master after the creation of the material will not update this value.
4.3.6 Calculate Quantities and Costs	Both quantities and costs are maintained for each operation, requirement, and leg of a Work Order/Master.
4.3.6.1 Calculate Quantities for Each Operation	Start and end quantities are maintained for each operation in the Work Order/Master by working back from the last operation. The estimate is calculated by taking into account scrap or yield for each operation, or using the specific quantity over-rides specified in the

	operation. Actual quantities are taken from Labor Tickets as they are applied to specific operations. The quantities need to be periodically re-calculated to reflect the cascading effect of quantity changes on an operation. In the event that the calculated quantities are over-ridden by the user, a "Q" is graphically associated with the operation. Total material quantity = [Quantity Per] x [Operation Start or End Quantity[1]] + [Fixed Quantity] + ([Scrap Percent] x ([Quantity Per] x [Operation Start or End Quantity])) [1] Depending on the setting of *Quantity Per Based On Start Or End*
4.3.6.2 Calculate Costs for Each Level	The Work Order/Master maintains numerous costs in summarized format from a variety of cost sources. These sources include Labor Tickets and inventory transactions. The costs are maintained level-by-level throughout the structure in the categories of material, labor, burden, and service. Also, several costs are tracked level-by-level: ❑ Estimated ❑ Actual ❑ Variance (estimated – actual) ❑ Projected (actual + remaining estimate) The method of rolling up costs between levels is determined by a global setting. "Maintain Separate Costs" causes the system to maintain material, labor, burden, and service is isolated categories as it is rolled up, resulting in the total cost in each of these four categories for the entire Work Order/Master. Fold material cost causes the entire cost of a level (material + labor + burden + service) to be added together and rolled into the material category of the level above. This results in only labor, burden, and service costs for the top most level. Material costs are determined by the following formula: Unit cost = [Material Unit Cost] + [Labor Unit Cost] + [Burden Unit Cost] + [Service Unit Cost] + [Fixed Cost] + [Burden Per unit] + ([Labor Unit Cost] x [Burden Percent])
4.3.7 Display the Work Order/Master	A vast array of information must be displayed for each object. The basic concept is to display a card for the header and then subordinate cards for each operation, material, and leg. These objects are all interconnected with lines to show the proper sequencing of the Work Order/Master. There are several modes to display these cards to best suit a wide variety of users and engineering structures. Each card displays data that is dependent upon the display mode being used. There are also several options available that control how the display is presented to the user. In any event, the underlying data remains the same for all of the display activity described in this section.
4.3.7.1 Display Modes	There are several ways to display the structure and detail of Work Order/Masters. There is a combination of graphical and textual modes that are suited to certain environments. These modes are: ❑ Graphical (one window) ❑ Graphical (two windows) ❑ Textual (one window) ❑ Textual (two windows)
4.3.7.1.1 Graphical – One Window	In the graphical view, each object (header, operation, material, leg) is represented by a rectangular card. The card shows basic information about the object and its relation to the other objects, and is used to select and edit all of the object's contents. The cards sit on a scrollable viewing area, which is always large enough to hold all the cards. The header always appears to the extreme lower left. All other cards appear above and to the right of the header.

	The first operation on the main leg is stacked up and to the right of the header. Subsequent operations continue to be stacked up and to the right of previous operations. The cards appear to be one behind the other, moving "away" into the screen. This unique display fits a maximum of information on the screen, while giving a feeling of three dimensions. Material requirements are shown in a separate color stacked in front of the operation to which they belong. Legs are represented by horizontal lines leaving the parent operation with an attached box to show the leg header. The leg header then acts as a "mini header" with its own chain of operations. The overall effect gives a feeling of raw materials and subassemblies flowing into their operations, and material flowing from one operation to the next.
4.3.7.1.2 Graphical – Two Windows	An alternate two-window display is available where the header, operations, and legs are shown in one window in their normal graphical display. A separate window is provided for materials. This is convenient for working with a large number of material requirements on a single operation. The separate display lets the user better manage the materials. More operations can be viewed in a single window because material requirements only take up screen space for one operation at a time. In two-window graphical mode, the screen is split into two portions. The graphical display shows in one section and materials for the selected operation in the other section. Only the material requirements for a single operation display at any one time. The user must select the operation to view the materials.
4.3.7.1.3 Textual – One Window	The text viewing mode provides a more traditional view of the Work Order/master. Each object is shown as a single line of text, displaying some basic information about the object. The header is always the first line of the display. Operations appear indented beneath the header. Material requirements appear indented beneath their operations. Note that this is different from graphical display. Materials in the text mode do not appear feeding into their operations, but are instead indented below them. Legs are also shown indented beneath their operations. Legs are indented one more character position than material requirements. The operations for legs are directly beneath the legs, and their materials are indented beneath them. This presents a traditional indented Bill of Materials
4.3.7.1.4 Textual – Two Windows	In two-window text mode, the screen is split into two portions. The normal text display of header, legs, and operations is shown in one portion. Materials for the selected operation are shown on the other portion. As in graphical mode, the user must select the operation to view the associated materials.
4.3.7.2 Card Information	The following data appears on the various cards for the Work Order/Master. In graphical mode, the data is presented on the faces of cards. In textual mode, the data is presented on the individual display lines. The following types of cards contain data: ❑ Header ❑ Operation ❑ Material ❑ Leg
4.3.7.2.1 Header	The following data are presented from the header of the Work Order/Master: ❑ Type (M-Engineering Master, Q-Quote Master, or the Work Order status if a Work Order) ❑ ID of the Work Order/Master

	❑ Part ID (blank if not an inventoried part) ❑ Quantity ❑ Specifications For Work Orders the following additional data are displayed: ❑ Days early/late (The difference between the scheduled finish date and the current date. A negative value indicates a late order, a positive value an early one.) ❑ Desired want date (The date by which the Work Order is to be completed.) ❑ Scheduled finish date (From the shop schedule) ❑ Desired start date ❑ Scheduled start date (From the shop schedule) ❑ Elapsed days (The elapsed days between release date and the current date.) ❑ True production hours (The total setup and run time for all operations on all legs, irrespective of calendar time taken to perform them.)
4.3.7.2.2 Operation	The following data are presented from the operation records of the Work Order/Master: ❑ Sequence number ❑ Shop Resource ❑ Specifications For Work Orders the following additional data are displayed: ❑ Operation status (unreleased, firm, released, closed, cancelled) ❑ Setup status (yes, no) ❑ Start and finish date (The scheduled start date and scheduled finish date, if the Work Order has been scheduled.) ❑ Delay (This indicates the difference between the time the operation could finish with an ideal schedule, and the time it is actually scheduled to finish.) For in-house operations: ❑ Setup time (The setup hours for the operation) ❑ Run time (The calculated run hours for the operation) For subcontracted operations: ❑ Service ID ❑ Transit days (Number of transit days for service, specified in operation.) ❑ Quantity in ❑ Quantity out
4.3.7.2.3 Material	The following data are presented from the material records of the Work Order/Master: ❑ Piece number ❑ Part ID (blank if not an inventoried part) ❑ Part description or Specifications ❑ Calculated quantity required (expressed in stocking unit of measure) ❑ Quantity per (from the material requirement record) ❑ Scrap percent ❑ Fixed quantity For Work Orders the following additional data are displayed: ❑ Material status (firm, released, closed, cancelled) ❑ Required date (Start date of the operation if not issued, otherwise the last issue date is shown)
4.3.7.2.4 Leg	The following date are presented in a manner similar to the header card: ❑ Type (M-Engineering Master, Q-Quote Master, or the Work Order status if a Work Order) ❑ Leg ID (for Engineering Master the part ID and revision, for Quote Master the Quote ID and line number, and for Work Order the Work Order ID) ❑ Part ID (blank if not an inventoried part)

	❑ Quantity ❑ Specifications For Work Orders, the following additional data are displayed: ❑ Days early/late (The difference between the scheduled finish date and the current date. A negative value indicates a late order, a positive value an early one.) ❑ Scheduled start date (From the shop schedule) ❑ Scheduled finish date (From the shop schedule)
4.3.7.3 Display Status Elements	Real-time indicators are displayed showing the progression of a Work Order through the shop schedule. These are: ❑ Progress meters ❑ Determinate path
4.3.7.3.1 Progress Meters	A horizontal bar appears at the top of each card in graphical mode and to the left of each line in textual mode. This bar indicates the relative percent of completion for the object. It begins empty and fills in black as work progresses. For the header, the bar indicates the percent of goods received into finished goods versus the total desired quantity. For operations, the bar shows the percent of quantity completed Reported through Labor Ticket entry or service entry versus the end quantity required of the operation. For material requirements, the bar shows the percent of material issued though inventory transaction entry versus the total calculated quantity required.
4.3.7.3.2 Determinate Path	The *Determinant Path* for a Work Order is the string of operations (a path) that controls the total duration of the Work Order. Whereas "critical path" is the controlling path in an ideally scheduled Work Order, the determinant path also takes into account schedule delays caused by unavailability of resources. Determinant path for a Work Order is shown in the graphical by a darker outline around each operation on the path. The Work Order must be scheduled into the Standard Schedule to show a determinate path.
4.3.7.4 Display Options	The Work Order/Master can be displayed with several optional preferences in addition to the several display modes described earlier. These include: ❑ Card color ❑ Card size ❑ Show and hiding various types of cards
4.3.7.4.1 Card Color	Each of the six types of cards can be displayed with user settable colors. These colors are set specific to each Workstation. Below is listed each card type and the default color. ❑ Header – White ❑ Leg – Violet ❑ Internal operation – Green ❑ Sub contract operation – Light blue ❑ Material – Red ❑ Tool/Fixture - Violet
4.3.7.4.2 Card Size	The user, to accommodate viewing both large and small engineering structures, can modify the size of the cards displayed in graphical mode. In addition, the user can choose an accompanying font, font size, and font attributes for the content displayed within the cards. Six separate size preferences can be defined and associated with the Workstation enabling the user to preserve desired settings and easily switch from one to another. Specifically the settable attributes are: ❑ Font - Any font that is installed on the Workstation ❑ Font Size - For True Type fonts any size can be selected. For non-true type fonts the size must be selected from the list of sizes offered for the font.

	❑ Enhancement - Font in normal or bold style. ❑ Lines of Text - Choose the number of lines to be visible in graphical mode, or the number of columns of information to display in text mode. This controls how much the cards overlap vertically. ❑ Width - The width of a card in graphical mode, in terms of the number of characters shown in the selected font and size. ❑ Height - The height of a card in graphical mode, in terms of the number of characters shown in the selected font and size. ❑ Offset - The horizontal distance between edges of successive cards, in terms of the number of characters shown in the selected font and size.
4.3.7.4.3 Show/Hide Card Types	There are several switches that let users turn on and off various elements of the card structure. ❑ Show/Hide Multi-Level - The Show/Hide Multi-Level option controls how the other Show/Hide functions operate. By selecting a card and setting this switch the system will determine if the subordinate cards to the current selection will be shown based on subsequent settings. ❑ Show/Hide Operations – This turns the display of operation cards on and off. ❑ Show/Hide Materials – This turns the display of material cards on and off. ❑ Hide All – This turns off all operations and materials leaving only the header and leg structure. ❑ Show All – Restores viewing so that all cards are shown.
4.3.8 Schedule Work Order	If the resource Scheduler is in use, a Work Order can be scheduled into the current schedule and any of the what-if schedules established in global scheduling. No rescheduling of other operations takes place as in Global Scheduling.
4.3.8.1 Scheduling Modes	The Scheduler can be operated in one of two modes: ❑ Regular ❑ Check availability
4.3.8.1.1 Regular	In this mode, the Work Order is scheduled into the existing schedule and becomes part of that schedule.
4.3.8.1.2 Check Availability	In this mode the, Work Order is scheduled but does actually reserve any capacity in the chosen schedule. This mode is typically used for proforma purposes.
4.3.8.2 Input Parameters	The following parameters are all taken directly from the Work Order header: ❑ Release date ❑ Want date ❑ Quantity Forward or backward scheduling is performed based on the setting in the header of the Work Order. The following parameters are supplied at the time of scheduling: ❑ Schedule ID ❑ Check material availability ❑ Check service availability ❑ Freeze started operations All other scheduling parameters come from the selected schedule definition. The schedule must be previously defined in the Global Scheduler area of the system.
4.3.8.2.1Check Material Availability	The Scheduler checks to make sure that all materials required by the final operation are available on the scheduled start date of the operation. If a Purchase Order line is linked to the material, then the due date of that line item must come before the proposed scheduled start date for the operation. If there is no linking and the material has a part ID, then the Scheduler checks to see if a sufficient quantity of the material is available on the proposed start date of the operation. The Scheduler considers the quantity currently on hand, adding in all supply orders, (including planned orders, Purchase Orders and Work Orders for

	fabricated components), that are due on or before the proposed start date. It then subtracts the quantities needed by all other Work Orders that have been scheduled prior to this one that need the material on or before the proposed start date. The Scheduler uses the line item due date as the "due in" date for incoming Purchase Orders and the want date for incoming Work Orders that make fabricated components. It also accounts for demand caused by planned orders. If insufficient quantity of material will be available, the system checks to see if there is enough time to initiate a new order by examining the part's lead-time. If material is not available, the Scheduler stops scheduling in the backward direction and begins a forward finite schedule.
4.3.8.2.2 Check Service Availability	Those operations defined as outside services are normally planned with infinite capacity. An option is available to ascertain whether a service is available prior to its scheduling.
4.3.8.2.3 Freeze Started Operations	The Scheduler will not change the schedule of operations that have one or more Labor Tickets applied against them. This prevents disruption on the shop work floor. By default, the Scheduler is free to reschedule all operations to optimize the overall shop schedule.
4.3.8.3 Output Parameters	The following parameters are returned by the Scheduler: ❑ Scheduled start date ❑ Scheduled finish date ❑ Total days delay ❑ Determinant path days delay The output from the Scheduler is the scheduled start date, scheduled finish date, total days of delay, and determinant path days of delay (an operation waiting for another resource to become available from another operation).
4.3.8.3.1 Scheduled Start Date	This is the date on which the first operation of the Work Order will start.
4.3.8.3.2 Scheduled Finish Date	This is the date on which the Work Order is scheduled to be completed.
4.3.8.3.3 Total Days Delay	Similar to Determinant Path Days Delay, this is the days delay for all operations in the Work Order and not just the determinant path.
4.3.8.3.4 Determinant Path Days Delay	This is the total time between the start and finish dates of the determinant path that is not occupied by actual scheduled production. This provides a measure of how much earlier the want date could be if no other Work Orders were scheduled to interfere with this one. Visually, this is the sum of the horizontal gaps between successive operations of the determinant path that are not caused by weekends or other non production time.
4.3.8.4 Display Audit Trail	Audit information can be displayed on how the Work Order was placed into the chosen schedule. The following information is provided: ❑ Attempt number ❑ Sub ID ❑ Sequence ❑ Resource ❑ Unit number ❑ Work Order pass number ❑ Direction ❑ Result ❑ Result detail ❑ Start date ❑ Finish date
4.3.8.4.1 Attempt Number	
4.3.8.4.2 Sub ID	

4.3.8.4.3 Sequence	
4.3.8.4.4 Resource	
4.3.8.4.5 Unit Number	
4.3.8.4.6 Work Order Pass Number	
4.3.8.4.7 Direction	
4.3.8.4.8 Result	
4.3.8.4.9 Result Detail	
4.3.8.4.10 Start Date	
4.3.8.4.11 Finish Date	
4.3.9 Fulfill Work Order Requirements	Supply order creation can be performed directly from the Work Order without the need to explicitly enter all the order information into the native supply order editor. Quote Masters and Engineering Masters cannot be used to generate supply orders. A material requirement can drive the creation of a Purchase Order. An outside service operation can drive the creation of a Purchase Order and/or the Dispatching of a service. The management of subordinate Work Orders (legs) can also be performed. By selecting a demand the system gathers all the pertinent information and transports the user to the applicable supply order editor and populates the form with the gathered information The following supply orders are automatically created: ❑ Purchase inventoried material to the job ❑ Purchase non-inventoried material to the job ❑ Purchase a service to the job ❑ Dispatch a purchased service ❑ Release subordinate Work Order (leg)
4.3.9.1 Purchase Inventoried Material to the Job	The user chooses one record containing a purchased part. The system automatically calculates the total quantity required and the associated link to the Work Order requirement to enable automatic inventory issue to the Work Order upon Purchase Order receipt. The user is given the choice of adding an additional quantity to the calculated quantity. The additional quantity is received into inventory. Order quantity = Required quantity + Additional quantity A table is presented which shows the requirement and its associated Work Order links. The total quantity required and total quantity issued for the requirement is also displayed. Information is gathered from the Work Order and is used to create a Purchase Order. The following information is taken to purchasing: ❑ Work Order ID ❑ Sequence ❑ Piece ❑ Quantity required (net of issued to date) ❑ Need date (to become the Purchase Order want date) The system gathers additional information if it is available: ❑ Preferred vendor from Part Master ❑ Unit price based on vendor quotes or lookup tables in the Part Master The vendor defaults to the preferred vendor established in the Part Master. A listing of vendors supplying this part (as established in the Part Master), in addition to a listing of

	all vendors, is provided. Pricing information for the Purchase Order is determined by the vendor quote maintained in the Part Master based on the chosen vendor and quantity ordered. Once satisfied with the order parameters, the user selects to generate a Purchase Order. The system transports to the standard Purchase Order editor, populates all the applicable information including the Work Order link, and waits for the user to finish detailing the Purchase Order. The detailing and saving process is identical to the standard functionality described in section 4.7 Purchasing.
4.3.9.2 Purchase Non-Inventoried Material to the Job	This operates exactly the same as described above in section 4.3.9.1 Purchase Inventoried Material to the Job, with the exception that no part ID, is associated with it. For this reason, no additional quantity can be specified.
4.3.9.3 Purchase a Service to the Job	This mode gathers purchasing information from the Work Order/Master and is used to create a Purchase Order. If wanted, the part quantity can be added onto. The following information is taken to purchasing: ❑ Work Order ID ❑ Sequence ❑ Quantity required (net of processed to date) ❑ Need date (to become the Purchase Order want date) The system gathers additional information if it is available: ❑ Preferred vendor from Part Master ❑ Unit price based on vendor quotes or lookup tables in the Part Master The purchasing process from this point is the same as in section 4.6.0.
4.3.9.4 Dispatch a Purchased Service	This mode shows the user the current status of Purchase Orders for a specific outside service. The Purchase Order information along with the user supplied desired Dispatch quantity is taken to the Dispatch sub-system. The Dispatching process from this point is the same as in section 4.6.0.
4.3.9.5 Release Subordinate Work Order	Each leg has a separate status of unreleased, firm, released, closed, or cancelled. This allows each leg to be treated as an independent Work Order and permits concurrent engineering.
4.3.10 Process Work Order	This involves the functions related specifically to a Work Order in preparing it for the shop floor and its life cycle. Since Quote Masters and Engineering Masters never go to the shop floor, this process is not applicable to them. Once a Work Order is ready for production several steps take place during its life cycle. The system supports concurrent engineering by permitting the Work Order to be released to the shop floor prior to the full completion of the engineering definition. This is accomplished by having a status assigned to each operation, material, and leg.
4.3.10.1 Change Status	Each operation and requirement in the Work Order/Master have a separate status so that each component can be controlled individually. This granularity of status control permits concurrent engineering. The following are the statuses: ❑ Unreleased ❑ Firm ❑ Released ❑ Closed ❑ Cancelled The user can either change one status at a time or one component status and all those subordinate to it.
4.3.10.2 Release to Shop Floor	Releasing a Work Order to the shop floor involves changing the status of the Work Order header to Released and printing any required shop paperwork.

4.3.10.3 Gather Actuals From Shop Floor	Material transactions, Labor Tickets, and quantity completions for each operation are gathered using features outside of this section. As these data are gathered they are immediately available for status checking, updating the material plan, and updating the various shop schedules.
4.3.10.4 Split Work Order	A Work Order can be split if it is desired to speed the production of a specific quantity of an order for delivery. The original Work Order is regarded as the parent Work Order and the split Work Order as the child. A parent Work Order may have many child Work Orders. When a Work Order is split, the system prorates Operation, Material and Service costs for operations sequentially numbered before the split according to the ratio of the Split Quantity to the original Desired Quantity. It is important to remember that with ending quantity the system takes into consideration scrap through all of the operations. When a Work Order is split the amount must also reflect the same assumed scrap quantities. Costs that incur for sequentially numbered operations after the split reside solely on the parent Work Order or child Work Order respectively. Special attention must be given to materials and services that are linked to Purchase Orders. Parent and Child Work Orders share costs by assigning portions of the Purchase Order to the splits. Once the operation where the split is to occur has been selected the following are required to make the new split Work Order: ❑ Split Work Order subordinate ID ❑ Split quantity for entire order ❑ Split quantity for operation ❑ Release date ❑ Want date
4.3.11 Check Status	This feature allows comprehensive inquiries into the status of a Work Order/Master. All status information is available for Work Orders. Only estimate type information is available for masters.
4.3.11.1 Cost	This mode shows each level of the Work Order/Master and the costs level-by-level. The costs are broken into four categories: ❑ Estimated ❑ Actual ❑ Variance (estimated – actual) ❑ Projected (actual + remaining estimate) For each of these categories the cost is broken into four types: ❑ Material ❑ Labor ❑ Burden ❑ Service All of these costs are calculated consistent with 4.3.6.2 above.
4.3.11.2 Status	This mode shows each operation in the Work Order/Master and the status level-by-level. The following information is retrieved: ❑ Estimated setup time ❑ Actual setup time ❑ Estimated run time ❑ Actual run time ❑ Variance ❑ Estimated quantity in ❑ Actual quantity in ❑ Estimated quantity out ❑ Actual quantity out

	❑ Actual start date ❑ Actual finish date ❑ Actual scrap ❑ Actual yield
4.3.11.3 Labor Detail	This mode shows Labor Tickets applied to a Work Order to-date. The following information is retrieved: ❑ Labor Ticket date ❑ Quantity good ❑ Quantity defective ❑ Time worked ❑ Employee ❑ Actual resource used (in case of a resource substitution) ❑ Clock in time ❑ Clock out time ❑ Break time
4.3.11.4 Material Detail	This mode shows inventory issue transactions applied to a Work Order to-date. The following information is retrieved: ❑ Transaction date ❑ Part ID ❑ Quantity issued ❑ Issued from warehouse/location
4.3.11.5 Service Detail	This mode shows Service Dispatches and receipts for a Work Order to-date. The following information is retrieved: ❑ Leg number ❑ Operation sequence ❑ Service ❑ Vendor ❑ Purchase Order ❑ Dispatch ID ❑ Dispatch date ❑ Quantity Dispatched ❑ Receiver transaction ❑ Receipt date ❑ Received quantity good ❑ Received quantity defective
4.3.11.6 Splits	This mode shows splits for a Work Order to-date. The following information is retrieved: ❑ Type ❑ Date ❑ Transaction ID ❑ Quantity ❑ Operation quantity ❑ Estimated material ❑ Estimated labor ❑ Estimated burden ❑ Estimated service ❑ Actual material ❑ Actual labor ❑ Actual burden ❑ Actual service ❑ Projected material ❑ Projected labor ❑ Projected burden ❑ Projected service
4.3.11.7 Material Availability	The Material Availability option provides complete access to the material planning sub-system in the context of the current Work Order.

	This functionality allows the user to examine the availability of all inventory parts required on the Work Order/Master and the potential impact of each requirement on inventory levels for that part. Additionally, requirements and Purchase Order links for all parts, inventory or non-inventory, can be viewed. Finally, the user can directly place Purchase Orders. The following information is given for each part: ❑ Detail – Operation number, piece number, part ID, and description of the material requirement. If the part is a non-inventory part, then the specification from the material requirement is shown instead of the part ID. ❑ Required date - The date the material must be available for the operation, as determined by the Global Scheduler. If the Work Order has not been scheduled, or this is a master, this field reads Not Scheduled. ❑ Projected available - For inventory parts only. Based on the total demand caused by other orders, and the total projected supply caused by Work Orders, this gives the quantity of the part projected to be available after issue of the required quantity. ❑ On hand - For inventory parts only. Gives the current total on hand quantity of this part in all locations. ❑ Purchase Order - If material has been purchased directly to this requirement, then a Purchase Order ID appears. ❑ Status - The status of the material. ❑ Desired receive date - The date the Customer should receive the order. ❑ Quantity ordered - The total of all orders.
4.3.11.7.1 Purchase One Material	This functionality allows for the automatic creation of Purchase Orders by selecting one material requirement. Functionality is identical to section 4.3.9.1 Purchase Inventoried Material to the Job and 4.3.9.2 Purchase Non-Inventoried Material to the Job. [TBD – maybe copy contents here instead]
4.3.11.7.2 Purchase Selected Materials	This functionality allows for the automatic creation of Purchase Orders by selecting one or more material requirements. Functionality is identical to section 4.3.9.1 Purchase Inventoried Material to the Job and 4.3.9.2 Purchase Non-Inventoried Material to the Job. [TBD – maybe copy contents here instead]
4.3.11.7.3 Show Purchase Order Links	Information on linked Purchase Orders can be displayed for individual material requirements. The following information is retrieved: ❑ Purchase Order ID ❑ Line number ❑ Vendor ID ❑ Vendor part ID ❑ Order quantity ❑ Received quantity to date ❑ Purchase Order status ❑ Purchasing unit of measure For more information, an option is provided to transport the user to the Purchase Order editor that displays the complete order.
4.3.11.8 Material Netting	This simply transports to the material planning sub-system and displays the chosen parts supply and demand. Netting options are controlled using standard functionality within this sub-system.
4.3.11.9 Resource Schedule	Resource scheduling information can be displayed for the Work Order in several modes. These modes are: ❑ Complete schedule ❑ Schedule detail

	❑ Work Order/Master Schedule
4.3.11.9.1 Complete Schedule	The complete Shop Schedule is presented using standard functionality. The Standard Schedule is automatically chosen and the current Work Order is set as the focus Work Order. Its operations appear in yellow to set them apart from other Work Orders.
4.3.11.9.2 Schedule Detail	The user identifies one operation from the Work Order. The system then displays the operation schedule for every operation in the Standard schedule that uses the same Shop Resource.
4.3.11.9.3 Work Order/Master Schedule	This displays a graphical representation of the Work Order and its schedule without displaying any other Work Orders. Unlike the other schedule displays in the system, this displays each leg of the Work Order on a separate line with each operation of that leg shown horizontally within that line regardless of the resources used. This schedule display permits the examination of interaction between the subassemblies of the Work Order.
4.3.11.10 Work Order Audit	Audit information can be displayed on how the Work Order was placed into the chosen schedule. The following information is provided: ❑ Attempt number ❑ Sub ID ❑ Sequence ❑ Resource ❑ Unit number ❑ Work Order pass number ❑ Direction ❑ Result ❑ Result detail ❑ Start date ❑ Finish date [TBD probably need to add audit detail section and check the above parameters]
4.3.11.10.1 Attempt Number	
4.3.11.10.2 Sub ID	
4.3.11.10.3 Sequence	
4.3.11.10.4 Resource	
4.3.11.10.5 Unit Number	
4.3.11.10.6 Work Order Pass Number	
4.3.11.10.7 Direction	
4.3.11.10.8 Result	
4.3.11.10.9 Result Detail	
4.3.11.10.10 Start Date	
4.3.11.10.11 Finish Date	
4.3.11.11 Customer Order	This displays a recap of information on the Customer Orders that are linked to this Work Order. This linkage can occur through either Customer Order entry or by material planning. One or more Customer Orders can be linked to a single Work Order.

	Information is retrieved based on three display modes: ❑ Original booked orders ❑ Backlog orders ❑ Shipments Summary information is calculated based on the display mode chosen and subsequent Customer Orders retrieved. This information is: ❑ Total production ordered - The Desired Quantity of the Work Order, regardless of linked Customer Orders. ❑ Total production received - The total quantity of the Work Order received to finished goods, regardless of Customer shipments. ❑ Total order quantity - The total quantity of all Customer Order line items linked to this Work Order. ❑ Total shipped quantity - The total quantity of all linked line items that has been shipped against the orders. The following information is retrieved for each linked Customer Order: ❑ Customer Order ID ❑ Line number ❑ Misc. Ref. - The reference description from the order line ❑ Customer ID ❑ Order quantity ❑ Shipped to date quantity ❑ Status - The status of the Customer Order. ❑ Ship on - The desired ship date for the order line ❑ Shipped Date - Actual ship date from the Packing List for the shipped line ❑ Promise Date - The date on which the user promised to deliver the Customer Order
4.3.11.11.1 Original Booked Orders	In this mode, all lined Customer Orders are retrieved.
4.3.11.11.2 Backlog Orders	In this mode, only Customer Orders with a Firm, Released, or On Hold status with lines containing some unshipped quantity are retrieved.
4.3.11.11.3 Shipments	In this mode, only Customer Orders with a Packing List against them are retrieved. One line appears for each Packing List that contains shipments of each order line. This may cause the same Order ID/line number combination to display more than once, but each line represents a separate Packing List line. In this case, each line represents a single Packing List shipment, and the Shipped Quantity shows the amount shipped on that Packing List. Returns appear as negative shipped quantities.
4.3.12 Manage Engineering and Job Definition	This section describes functionality to modify Masters and Work Orders.
4.3.12.1 Find Cards	This provides functionality to quickly locate a particular card. This may be difficult for the user in large Masters/Work Orders. The user can search for: ❑ A material card ❑ A leg header card
4.3.12.1.1 Find Part	This mode searches for a material card based on part ID. Wildcards can be used to aid the searching process. The prior search string is retained for reuse in finding the next part. The found part becomes the focus for the Work Order/Master display.
4.3.12.1.2 Find Subordinate Leg	This mode searches for a leg based on the leg number. The found leg header becomes the focus for the Work Order/Master display.

4.3.12.2 Renumber Materials	The system assigns material requirement piece numbers sequentially as requirements and legs are added to an operation. When a single operation has a large number of materials, the user may want to re-sequence the requirements by part ID to make the list more manageable. This functionality is restricted to only Engineering Masters and Quote Masters since the possibility exists that a piece number in a Work Order may be referenced in records gathered for the Work Order.
4.3.12.3 Recalculate Quantities	The system automatically calculates Start and End Quantity for each operation, as well as each required material quantity. Calculation must begin with the final operation and work backwards and may take more than a few seconds. Because of this, the system does not recalculate every time a quantity is changed. Instead recalculations only occur when needed and at such time the Work Order is no longer displayed. A progress indication is displayed showing the progress in recalculation. The user can force a recalculation without waiting for a condition of automatic recalculation to occur. This is useful, for example, if the user wants to see the calculated quantities after changing the start or end quantities or an operation. Start and end quantities are maintained for each operation in the Work Order/Master by working back from the last operation. The estimate is calculated by taking into account scrap or yield for each operation, or using the specific quantity over-rides specified in the operation. Actual quantities are taken from Labor Tickets as they are applied to specific operations. The quantities need to be periodically recalculated to reflect the cascading effect of quantity changes on an operation. In the event that the calculated quantities are over-ridden by the user, a "Q" is graphically associated with the operation. Total material quantity = [Quantity Per] x [Operation Start or End Quantity[1]] + [Fixed Quantity] + ([Scrap Percent] x ([Quantity Per] x [Operation Start or End Quantity])) [1] Depending on the setting of *Quantity Per Based On Start Or End*
4.3.12.4 Reset Costs From Standards	When operations, materials, and services are added to a Work Order/Master, the costs are copied from the respective Shop Resource Master, Part Master, or Service Master. Since these costs are a copy, the values may differ from the master. This can occur when costs in a master are updated or if the costs in a card are manually overridden. On occasion, it is desirable to reset costs in Masters/Work Orders to the values currently present in the respective masters. It is generally desired to do this in a controlled manner restricting the updating to certain parts, resources, or services. This functionality refreshes standard cost information from the original masters. Any or all of the following can be reset: ❑ Shop Resources ❑ Outside services ❑ Parts
4.3.12.5 Mass Replace Materials	This provides the functionality to replace many requirements for the same part ID with a new one in an automated fashion. In addition quantity and cost information can be adjusted. Once the user has chosen a part, the system presents a list of all requirements that use that material and are eligible for replacement. Requirements are retrieved for Engineering Masters, Quote Masters, and Work Orders where no material has yet been issued to it. The following data are retrieved for each eligible requirement: ❑ Work Order/Master ID ❑ Sequence number - Sequence number of the operation containing the requirement

	❑ Piece Number - Piece number of the requirement ❑ Quantity per ❑ Scrap percent ❑ Fixed quantity ❑ Dimensions Once the eligible requirements are retrieved the user has the option of showing any or all of the following types of requirements: ❑ Work Orders ❑ Engineering Masters ❑ Quote Masters Once a substitute part is selected, the user can alternately modify the quantity per, scrap percent, fixed quantity, and dimensions. Replacement then occurs upon selection of one, several, or all lines. An option is provided to reset costs on the new part with those in the Part Master during the mass replace. When this option is not chosen, the current costs associated with the existing part are preserved for use with the replaced part.
4.3.12.6 Mass Delete Parts	This provides the functionality to delete many requirements for the same part ID with a new one in an automated fashion. Once the user has chosen a part, the system presents a list of all requirements that use that material and are eligible for replacement. Requirements are retrieved for Engineering Masters, Quote Masters, and Work Orders where no material has yet been issued to it. The following data are retrieved for each eligible requirement: ❑ Work Order/Master ID ❑ Sequence number - Sequence number of the operation containing the requirement ❑ Piece Number - Piece number of the requirement ❑ Quantity per ❑ Scrap percent ❑ Fixed quantity ❑ Dimensions Once the eligible requirements are retrieved, the user has the option of showing any or all of the following types of requirements: ❑ Work Orders ❑ Engineering Masters ❑ Quote Masters Deletion then occurs upon selection of one, several, or all requirement lines.
4.3.12.7 Export and Import	These functions allow masters and Work Orders to be written to ASCII text files and to be read back from these files. This feature can be used in the following ways: ❑ Importing/Exporting from Other Systems ❑ Transferring Information Between Databases No design assurance is provided to ensure compatibility between software versions.
4.3.12.7.1 Export	Information is saved to a user specified file name with a .eng extension. All data that defines a master is exported to this file.
4.3.12.7.2 Import	This copies in data from an ASCII file. If the current definition contains data, the imported data will be pasted where the cursor is currently located.
4.3.12.8 Allocate Demand to Work Order	You can allocate demand from Work Orders to other sources in order to satisfy outside demand.

4.3.12.8.1 Demand Type	You can allocate demand from a Work Order to the following six sources: · Customer Order Delivery Schedule Lines · Customer Orders · Inventory · Work Orders · Interbranch Transfers
4.3.12.8.2 Demand Base ID	
4.3.12.8.3 Lot ID	
4.3.12.8.4 Split ID	
4.3.12.8.5 Sub ID	
4.3.12.8.6 Sequence/Line	
4.3.12.8.7 Piece Number	
4.3.12.8.8 Demand Required Date	
4.3.12.8.9 Allocate Quantity	
4.3.12.8.10 Demand Unallocated Quantity	
4.3.12.8.11 Demand Quantity	
4.3.12.8.12 Supplied Quantity	
4.3.12.8.13 Link Allocated Quantity	
4.3.12.8.14 Link Received Quantity	
4.3.12.8.15 Link Issued Quantity	
4.3.12.8.16 Demand Part ID	
4.3.12.8.17 Substitute Part	
4.3.12.8.18 New Part/Warehouse	
4.3.12.9 Allocate Supply to Material Requirement	
4.3.13 Delete Engineering and Job Definition	This is used to permanently remove part or all of an engineering or job definition from the system. Each type of component can be deleted:

	❑ Header ❑ Operation ❑ Requirement ❑ Leg This operation removes the Work Order/Master and all operations, legs, and materials. A Work Order can be deleted even if it has Labor Tickets and inventory transactions against it. In this case, the system prompts for another level of confirmation.
4.3.13.1 Header	This deletes the entire engineering structure from the system. If a Work Order is being deleted that has attached Labor Tickets and/or inventory transactions, then a second level confirmation occurs. In this case the once attached Labor Tickets or inventory transactions remain orphaned in the system.
4.3.13.2 Operation	This deletes the selected operation from the system. Since requirements are associated with operations, any such associated requirements will also be deleted.
4.3.13.3 Requirement	This deletes the selected material requirement.
4.3.13.4 Leg	This deletes the selected leg header and all subordinate operations, requirements, and subordinate legs.
4.3.14 Engineering Change Control	Engineering Change Control is a mechanism to control the process of changing Engineering Masters and Work Orders. Engineering Change Control can be used for: ❑ Notifying production and engineering of pending changes ❑ Tracking approvals needed to make changes ❑ Preventing specific transactions to 'in-process Work Orders' during pending changes ❑ Auditing changes. ❑ Applying changes made to a master, to some or all Work Orders of the same part.
4.3.14.1 Define ECN Header	The following make up he header of an ECN: ❑ ECN ID ❑ Status ❑ Created date (not updated by system) ❑ Modified date (not updated by system) ❑ Originator ❑ Associated ECN's ❑ Subject ❑ Authorization name #1 (reference only) ❑ Authorization name #2 (reference only) ❑ Authorization name #3 (reference only) ❑ Authorization name #4 (reference only) ❑ Authorization date #1 (reference only) ❑ Authorization date #2 (reference only) ❑ Authorization date #3 (reference only) ❑ Authorization date #4 (reference only) ❑ Notes
4.3.14.1.1 Status	Each ECN has one of the following statuses: ❑ Pending - Indicates that the ECN is active and all notification and information mechanisms report the ECN, depending on the transaction taking place. ❑ Complete - Indicates that the ECN is complete, all changes have been made and approved. No notifications are given for a complete ECN. In effect, it is a historical entry and becomes the audit trail. ❑ Canceled - Indicates that the ECN has been canceled. Canceled ECN's may be deleted or marked as canceled to keep the comments made to it as history, even though the changes were never carried out.
4.3.14.1.2 Originator	This is a semicolon-separated list of individuals, the department, or other identifying code that indicates who originated the ECN and who is responsible for it. The owner (user ID that created the ECN) and any user IDs in this list are the only users who have permission to modify the master or Work Order that is the subject of the ECN. The system determines which users are permitted for modifying the master or Work Order.

4.3.14.2 Specify Detail of Changes	With an ECN active, the system records changes made to detail and stores them with the ECN. The following are captured for each detail change: ❑ Entry number ❑ Reference ❑ Action ❑ Child notify ❑ Lock ❑ Comments
4.3.14.2.1 Entry Number	This table contains one line for each entry. Each line, if system generated, is directly associated with a given object in the master or Work Order.
4.3.14.2.2 Reference	The specific object within the master or Work Order that has been modified
4.3.14.2.3 Action	A = Added E = Edited D = System deleted X = Manually deleted
4.3.14.2.4 Child Notification	If set on, the system notifies users entering transactions related to the master, Work Order, or part in question, if the relationship is immediately subordinate to the modified record. If set off, the system only recognizes pending changes if the transaction affects a specific record of this list. Default value is off.
4.3.14.2.5 Lock	If set on, the system notifies any user attempting a transaction against this record that an engineering change is pending. The user is not permitted to override the notification. If set off, the notification may be overridden and is simply Reported as a warning. The default is to lock.
4.3.14.2.6 Comments	Up to 250 characters of comment information specific to this change.
4.3.14.3 Apply ECN	This function provides a means of executing the ECN changes done against the master on each eligible Work Orders of the same part if the Work Order is unreleased, released, or firmed. Once the ECN has been chosen the system retrieves a list of all eligible Work Orders. The following information is presented: ❑ Work Order ID ❑ Want date ❑ Status ❑ Message Individual Work Orders can be selected for exclusion from the ECN application. Upon completion of the engineering change the system automatically recalculates start and end quantities for each of the updated Work Orders. The status of the ECN is automatically changed to Complete.

4.4 Scheduling	*Scheduling* is the process of planning the different events involved in the manufacturing process. There are three major reasons for creating a schedule: ❑ To understand how much capacity is already occupied ❑ To identify possible future threats to on-time deliveries ❑ To help production, procurement, and sales departments to work together more successfully To facilitate the simulation of the shop floor, the following are available: ❑ Unlimited "what-if" schedules to determine the outcome of various changes in capacity, load, and calendar settings ❑ Checking the impact of Work Orders that would result from quotations and Customer Orders. This impact analysis can be performed directly in Customer Order entry and estimating/quoting. ❑ A highly graphical representation of multiple schedule scenarios that allows for pattern recognition and intuition in the scheduling process Two major activities comprise the scheduling process. First is the creation of the schedule. The second is the depiction and manipulation of the schedule.
4.4.1 General Work Order Scheduling Reports	
4.4.1.1 Shop Schedule Graphic	The *Shop Schedule Graph* is printed from the Scheduling views the shop schedule for firmed and released Work Orders. It allows for viewing of multiple resources and/or multiple schedules at the same time. Scheduling shows how much capacity is spoken for and identifies threats to on-time deliveries. Both load and capacity are considered for a schedule. Graph header: ❑ Company name ❑ Schedules list of schedules being displayed, up to three at one time Left column: ❑ Operations required Top row: ❑ Date range displayed (from hours per day to days per month) Graphed: ❑ Status of each operation per day/time range displayed
4.4.2 Define Global Schedule	A *Global Schedule* is the framework in which Work Orders are scheduled. The Standard schedule is the one that is used to drive the other sub-systems. An unlimited number of "what-if" global schedules can be created. Each can have its own set of resource calendars and capacities. The following are used in defining each global schedule: ❑ Schedule ID ❑ Schedule type ❑ Material availability ❑ Service availability The following are used to define the behavior of the Scheduler for all global schedules: ❑ Schedule horizon

	❑ Fit tolerance ❑ Schedule pieces if run minutes per piece is at least ❑ Generate Work Order audit ❑ Generate operation audit ❑ Sort by ❑ When "schedule as of" is today ❑ Schedule started Work Orders ❑ After forward scheduling pass ❑ Allocate fabricated materials
4.4.2.1 Schedule Type	Two types of schedules are supported: finite and infinite. A finite capacity schedule uses the capacities defined for each Shop Resource while an infinite capacity schedule ignores any capacity constraints.
4.4.2.2 Material Availability	This option allows on-hand quantities, planned availability, and part acquisition lead times to affect the schedule. Material Availability checks to make sure that all materials required by the final operation are available on the scheduled start date of the operation. If a Purchase Order line is linked to the material, then the due date of that line item must be before the proposed scheduled start date for the operation. If there is no linking and the material has a part ID, then the Scheduler checks to see if a sufficient quantity of the material is available on the proposed start date of the operation. The Scheduler considers the quantity currently on hand, adding in all supply orders, (including planned orders, Purchase Orders and Work Orders for fabricated components), that are due on or before the proposed start date and subtracting the quantities needed by all other Work Orders that have been scheduled prior to this one that need the material on or before the proposed start date. The Scheduler uses the line item due date as the "due in" date for incoming Purchase Orders and the want date for incoming Work Orders that make fabricated components. It also accounts for demand caused by planned orders. If insufficient quantity of material will be available, the system checks to see if there is enough time to initiate a new order by examining the part's lead-time. If material is not available, the Scheduler stops scheduling in the backward direction and begins a forward finite schedule.
4.4.2.3 Service Availability	[TBD]
4.4.2.4 Schedule Horizon	This defines the maximum number of days into the future the Scheduler is to search for available capacity.
4.4.2.5 Fit Tolerance	This is the percent required for an operation to "fit" into an available time slot (normally 100%) during finite scheduling mode. For example, a value of 90 indicates that an 8 hour operation can successfully fit into a 7.2 hour open slot (8 hours x 90% = 7.2 hours).
4.4.2.6 Schedule Pieces If Run Minutes Per Piece is at Least	This is a flag to indicate that, if an operation is defined to use a minimum/maximum number of capacity units, it will not split the work among more capacity units than a user supplied value. The run minutes per piece must be at least 10 minutes. The Scheduler will not split the duration for one piece among multiple units.
4.4.2.7 Generate Work Order Audit	This is a flag to indicate whether an audit trail is to be preserved based on how the Scheduler placed each operation into the schedule.
4.4.2.8 Generate Operation Audit	This is a flag to indicate whether an audit trail is to be preserved based on how the Scheduler placed each operation into the schedule.
4.4.2.9 Sort By	This is a switch to indicate whether Work Orders should be sorted by want date or priority then want date, prior to scheduling.
4.4.3.0 When "Schedule As of is" Today	This is a switch to indicate if the "current time" or "midnight" should be used when the user chooses to run the Scheduler as of "today".
4.4.3.1 Schedule Started Work Orders	This is a switch to indicate how Work Orders that have already been started should be handled: ❑ Schedule started operations before any other operation

	❑ Freeze started operations in their current place and then schedule all other operations ❑ Schedule all operations normally regardless if they have already started
4.4.3.2 After Forward Scheduling Pass	This defines what is to be done after the Scheduler forward schedules a Work Order. The following are the options: ❑ Backward schedule ❑ Backward schedule if on time ❑ Do not backward schedule There is an option to preserve the determinate path for the Work Order. The following options are then defined to direct the Scheduler what to do with the other Work Orders: ❑ Backward schedule ❑ Backward schedule if on time ❑ Do not backward schedule There is also an option to preserve the determinate path for the other Work Orders.
4.4.3.3 Allocate Fabricated Materials	This option causes the Scheduler to schedule supplying Work Orders before consuming Work Orders. Work Orders are re-sequenced prior to scheduling.
4.4.4 Create Work Order Schedule(s)	The Work Order Scheduler schedules and reschedules all released and firmed Work Orders in the system based upon the due dates and/or priorities that the user specifies. The Work Order Scheduler determines the following: ❑ When every operation begins and ends ❑ Whether Work Order want dates will be able to be meet based on the amount of capacity assigned to resources ❑ Where, when, and how much capacity can be added to improve delivery performance ❑ Where, when, and how much capacity is in excess of demands Unless instructed to do otherwise, the Scheduler first attempts to backward finite schedule every Work Order. Backward indicates that the system initially schedules the final operation, then the next to last one and so forth. The Work Orders are selected in the order and manner defined by the various scheduling parameters. Finite indicates that the system does not place more load into a time period than there is capacity within that time period. The other ways that the Scheduler operates are: ❑ If the global schedule is defined as infinite, then each resource is loaded based on the demand, which can possibly overload resources. This mode is not possible for the standard schedule because it must be scheduled finitely. ❑ Define one or more resources to schedule infinitely so that the resource may be overloaded if necessary to meet the workload presented to the resource. Normally, all resources are scheduled finitely. ❑ Define a Work Order (in the header) as forward schedule only to cause the Scheduler to place the first operation in the schedule based on release date and place subsequent operations “forward” from that point. The Scheduler computes the duration of an operation by calculating the time needed to accomplish the operation remaining quantity (ending quantity minus completed quantity) plus any setup time for the operation. When making the initial backward finite schedule for a Work Order, the Scheduler attempts to load the last operation of a Work Order so that it schedules it to finish at the

	end of the workday prior to the want date of the Work Order. If load from other operations causes a conflict, making it impossible to fit the entire operation (or the preset "fit tolerance" percent of the operation), the Scheduler searches through progressively earlier openings in capacity to find a slot in which the operation fits. The start date for the operation is then calculated based on the scheduled completion date of the operation. After the Scheduler successfully places the final operation in the backward direction, it attempts to load the next-to-last operation of the Work Order so that it finishes at the same time that it scheduled the final operation to begin. Two settings on the next-to-last operation can affect this process: minimum move quantity and move hours. When minimum move quantity is not null, the Scheduler attempts to load the next-to-last operation of the Work Order so that it schedules the last unit of the minimum move quantity to be done at the same time it schedules the final operation to begin. The move hours setting determines the minimum required offset from this optimal positioning. If needed, the Scheduler also: ❑ Checks for material availability ❑ Checks for service availability ❑ Generates an audit trail of the scheduling process For each Work Order, the Scheduler produces the following information: ❑ Start date and finish date ❑ Determinant path For each operation, a start and finish date is determined. The start date of the Work Order is implied by the start date of the first operation. The finish date is implied by the finish date of the last operation. For resources with multiple units of capacity, an operation may be scheduled to run on more than one simultaneously. In general, each schedule entry specifies a start and end time on a specified unit of a resource. The determinant path is the set of operations in a Work Order that controls the duration of the Work Order. This is measured after resource constraints are taken into account. Such a path measured before considering these constraints could be called a critical path.
4.4.4.1 Calendar	The weekly calendar for a resource specifies the duration of each of three shifts for the seven weekdays. Calendar exceptions allow this to be modified when needed. Calendars can be resource specific and/or schedule specific. There is a system-wide default calendar that is used as the default in the event that a particular schedule and/or resource does not have a specific calendar of its own.
4.4.4.2 Resource Capacity	Resource capacity is defined in terms of how many hours a given resource is available for each shift of each day and how many units of capacity are available during that period. For example, if a work center has 3 machines that operate 8 hours per day, one could say that the work center has 24 resource-hours of capacity. The work center perspective sees 3 machines, all operating 8 hours per day, on the same shift. Therefore, there are 24 hours of machine availability. If there are 3 jobs or less, totaling 24 hours or less, then the work center perspective is correct. However, the work center perspective does not account for the fact that only three jobs can be run at any given time, regardless of duration. The system sees this as a shift that is 8 hours long with 3 units of capacity. This means that a maximum of 3 operations may be scheduled to coincide with one another during that given time period. This is obviously different from 24 hours of capacity that is obtained by having one unit

	available for 24 hours. When the user specifies a number of units of capacity, the system assigns a unit number to each one starting at 0. For example, if a drill resource has a capacity of 3 on the first shift, the system will schedule operations on units 0, 1, and 2. The Scheduler always loads unit 0 first, then unit 1, and so on. This is significant in the following situations: ❑ Operations that are shorter than a given shift ❑ Capacities that vary between shifts
4.4.4.2.1 Capacities Shorter Than a Shift	Consider this example: each operation takes 2 hours and has the capacity (described above) of one 8 hour shift that has 3 units of capacity. The Scheduler will schedule up to twelve of these 2-hour operations per day. Each unit can do 4 operations in its 8 hours, and there are 3 running in parallel.
4.4.4.2.2 Capacities Vary Between Shifts	Consider the same example but add a second shift of 8 hours with only 2 units of capacity. The Scheduler sees this as a work center having a maximum of 3 machines. The first two are available 16 hours, (8 hours on the first shift and 8 hours on the second shift), and the third is available only 8 (8 hours on the first shift). When the Scheduler loads the operations for this work center, it first looks at capacity for unit 0 (the first machine). Therefore, it may schedule up to 16 hours of time on that machine. If neither the first nor the second machine is available, then the third is used (which has only 8 hours available on this day on the first shift.) It is important to note that this operation remains on this unit for its entire duration. This means that the operation is not eligible to use extra second shift time on the next day whether or not it is available. Or, any day because there is no third machine on second shift. The assumption is that the user cannot move the operation from this machine after it has begun. This may often be reasonable for quantities of one or any time there is significant setup involved. It may be problematic when staffing causes varying capacity. In this case, an operator can move between machines. The priority of the Work Order can be raised to correct this problem. If units 0 and 1 have load and unit 2 does not when the Scheduler starts an operation, the Scheduler starts with unit 2. However, if units 0 or 1 become available and the Scheduler finds a better schedule on 0 or 1, then it chooses the better Scheduler. This means that in the forward direction the Scheduler will delay the start of the schedule if it results in an earlier finish. In the backward direction the Scheduler will choose an earlier finish date if it results in a later start (perhaps due to more capacity duration).
4.4.4.3 Operation Duration	Each Work Order operation has a calculated start quantity feeding into it that depends upon the Work Order desired quantity and scrap levels on down-line operations. "Run hours" is calculated based on the specified run time, run type, and load size (if used). Total labor hours required for an operation, and therefore total resource-hours needed, can then be determined by: Resource Hours = (Setup Hours x Number of Machines) + (Start Quantity x Run Hours)/Piece An additional factor is any specified move hours for the operation. Although these do not produce load on the resource, they affect when the next operation can begin. The effective duration of an operation is then given by: Operation Duration = Resource-Hours + Move Hours = Setup Hours + (Start Quantity x Run Hours/Quantity) + Move Hours For a service operation, the following is used: Operation Duration = Transit Days
4.4.4.4 Operation Lead Time	To determine when an operation can start in relation to the other operations in the Work Order, the duration of the previous or subsequent operations are used. This date is called the "could start date" of the operation. If capacity was unlimited, the operation could start

	on this date. It couldn't start before because the previous operations still need time to finish. The "could start date" is also a function of the shop calendar. The dates do not include time when the resource is shut down. For backward scheduling: Operation could start date = Want Date - Sum of Subsequent Operations Duration For forward scheduling: Operation could start date = Release Date + Sum of Previous Operations Duration
4.4.4.5 Operation Overlap	The formulas in the section above are actually only correct when no overlap applies. The minimum move quantity of an operation specifies how much of an operation's pieces or quantities must be completed before they can begin to feed the next one. This causes the "could start date" for an operation to become more favorable (later for a backward schedule and earlier for a forward schedule). For example, if an operation's end quantity is 100 and minimum move quantity is 50, then the next operation can begin halfway through the previous one's duration. This assumes that the run rates are equal. If the consuming operation has a faster run rate than the supplying operation, then it starts later than half way through so that it does not run out of pieces before the supplying operation has finished producing them. In terms of the lead-time discussed previously, this effectively cuts the run portion of this operation's duration in half.
4.4.4.6 Subassembly Legs	Each subassembly of a Work Order is essentially scheduled independently in terms of starting date. The completion of the last operation of a subassembly determines when its parent operation can begin in the same way a previous operation would. Where both apply, the latest one determines when the next operation can start. The minimum move quantity for the final operation of a leg allows an overlap with its parent operation in the same way as previously discussed.
4.4.4.7 Operation Start Date and Status	If an operation is already started (released) when the Scheduler is run, then its completion status is taken into account. If setup is marked as completed, the setup time for the operation is not scheduled in. Quantity completed is compared against end quantity to prorate the remaining time required for the operation. The Scheduler optionally schedules started Work Orders first; either freezing or not freezing started operations after being scheduled.
4.4.4.8 Service Start Date	For subcontractor operations, the service receipt entry/service status function is used to indicate a date when materials were "shipped to be serviced". When running a new schedule, this date is used to deduct from the required transit days of this operation based on the fact that it has already started.
4.4.4.9 Concurrent Resources	If concurrent setup and run resources are specified for an operation, these add parallel resource-hour requirements for the resources specified. The capacity and calendars of those resources are used to schedule in the same way as the primary resource. The calendars of the concurrent resources can constrain the scheduling of the primary resource.
4.4.4.10 Discontinuous Operations	The Scheduler supports discontinuous scheduling of operations. A Shop Resource can be setup so that operations using that resource are scheduled discontinuously. During scheduling, when a load conflict occurs on a unit, the scheduled duration of run on that unit is compared with the minimum segment size. If the scheduled duration is at least the minimum segment size, then the Scheduler creates a "segment" schedule from that unit. Scheduling continues until a collection of "segment" schedules is found, (disjointed with respect to time), that is sufficient to successfully schedule the operation's duration. Each scheduled disjointed segment is independent of any other - containing its own setup and assigned units. Therefore, any segment may use different units from any other and, depending on usage min/max settings, may have a different number of units than any

	other segment.
4.4.4.11 Resource Minimums and Maximums	The Scheduler schedules quantities of the same operation to run in parallel on multiple units of resource. For each operation, the user specifies the minimum units required to start the operation. The operation is not scheduled to run at all unless at least this many simultaneous units are available. The user can also specify the maximum an operation will use. This is particularly useful if the user doesn't want an operation scheduled in parallel at all. In this case the maximum value should be specified as one. Leaving the maximum set to null defaults to one.
4.4.4.12 Work Order Priority	The Scheduler allows the prioritization of Work Orders on a scale of one to fifty. In situations where Work Orders compete for the same resource, this decides which takes priority.
4.4.4.13 Material Availability	If the global schedule is defined to check material availability, the Scheduler checks to make sure that all materials required by the final operation are available on the scheduled start date of the operation. If a Purchase Order line is linked to the material, then the due date of that line item must be before the proposed scheduled start date for the operation. If there is no linking and the material has a part ID, then the Scheduler checks to see if a sufficient quantity of the material is available on the proposed start date of the operation. The Scheduler considers the quantity currently on hand, adding in all supply orders, (including planned orders, Purchase Orders and Work Orders for fabricated components), that are due on or before the proposed start date. It then subtracts the quantities needed by all other Work Orders that have been scheduled prior to this one that need the material on or before the proposed start date. The Scheduler uses the line item due date as the "due in" date for incoming Purchase Orders and the want date for incoming Work Orders that make fabricated components. It also accounts for demand caused by planned orders. If insufficient quantity of material will be available, the system checks to see if there is enough time to initiate a new order by examining the part's lead-time. If material is not available, the Scheduler stops scheduling in the backward direction and begins a forward finite schedule.
4.4.4.14 Service Availability	[TBD]
4.4.4.15 Generate Audit Trail	This option turns on the generation of an audit trail of each pass the Scheduler makes when processing a Work Order. Up to three entries are permitted in the audit trail for each Work Order The system can also generate an audit trail for each attempt to schedule individual operations of Work Orders. The Work Order audit trail is a prerequisite to the operation audit trail. These options must be turned on here in order to use the respective audit trail features when viewing the shop schedule throughout the system.
4.4.5 Display Work Order Schedule(s)	The shop schedule displays the shop schedule for both firmed and released Work Orders and is the result of the running the Work Order Scheduler. The graphical display permits the following: ❑ View multiple resources at one time ❑ View multiple schedules at one time In addition several optional modes allow further examination of the schedule for the user: ❑ Show available capacity ❑ Show resource load ❑ Animation mode ❑ Audit mode ❑ Shop view mode
4.4.5.1 Show Available Capacity	This mode graphically represents all available capacity for each resource in the schedule. It is applicable to both finite and infinite schedules because available capacity is defined in the Resource Master. Deactivating this mode makes it easier to see scheduled

	operations.
4.4.5.2 Show Resource Load	This mode graphically represents all scheduled operations for each resource in the schedule. For finite schedules, this load must fit within the constraints of the resources capacity. For infinite schedules, the load may overload the existing capacity. Deactivating this mode makes it easier to see available capacity.
4.4.5.3 Animation Mode	This mode is used to step through the painting of the schedule one Work Order or one operation at a time. The Work Orders and operations appear in the position at which each was successfully scheduled, starting with a user selected Work Order. This is one way to view what the load against capacity was before an operation was successfully scheduled. Only the load for all operations that were scheduled prior to the current operation in the current schedule appear.
4.4.5.4 Audit Mode	This mode is used to view each attempt at scheduling each operation, starting with either the first or last operation of the Work Order to which a user specified operation belongs. Whether audit mode begins with the first or last operation depends on whether the Scheduler forward or backward scheduled the Work Order initially. The system processes and paints the results of all attempts prior to it. This is a way to view what the 'load against capacity' was before each attempt to schedule an operation.
4.4.5.5 Shop View	Use this option to limit the resources displayed to a subset of all possible resources. The predefined resource subsets can be maintained with the resources themselves.
4.4.6 Manipulate Work Order Schedule	Once the system has generated a Work Order schedule, the user is able to make certain changes to it manually to override any decisions made by the Scheduler. The following are the manual changes: ❑ Change resource capacity ❑ Freeze operations ❑ Reschedule operations
4.4.6.1 Change Resource Capacity	The capacity can be changed for any resource currently displayed. The change can involve moving capacity from one resource to another for a specific period of time, or simply alter a single resources capacity for a period of time. This is accomplished by drawing a "box" within the desired operation with a width corresponding to the date range of the desired capacity change. At this point, a resource is identified to indicate where the capacity is to be moved. If the same resource is identified that the "box" was drawn in, then capacity is simply adjusted and not moved between resources. The following information is then needed to perform the capacity change: ❑ Schedule or schedules to be affected ❑ Confirmation of the start and end dates of the change ❑ Start time of day ❑ Capacity units change ❑ Shift affected (First, second, and/or third) The start time of day defaults to the start time of day from the calendar exceptions for the specified resource. Access is provided to view and edit calendar exceptions directly from this area of the system. It can also be specified whether the capacity should be decreased from the originating resource (the one that the "box" was drawn inside of). This is useful for situations when capacity is to be added and not moved. Upon successful completion of capacity change the shop schedule is refreshed on the screen to reflect the changes.
4.4.6.2 Freeze Operations	Operations can be "frozen" so that future runs of the Scheduler will not alter its start and finish date/time. This is useful for overriding the scheduling of select operations and forcing the Scheduler to work within the constraint of manually scheduled work.

	Operations can be frozen in the following ways: ❑ Freeze operation immediate ❑ Freeze Work Order immediate ❑ Freeze operation manually Operations can be unfrozen in the following way: ❑ Unfreeze operation immediate ❑ Unfreeze Work Order immediate ❑ Manage a list of all frozen operations Operations will be indirectly frozen if the start or finish dates are manually overridden.
4.4.6.2.1 Freeze Operation Immediate	This takes a graphically selected operation and freezes its current start and finish date/time without alteration.
4.4.6.2.2 Freeze Work Order Immediate	This freezes the start and finish date/time of all operations in a Work Order without altering any of the individual operation dates. The Work Order is identified graphically by any of its operations.
4.4.6.2.3 Freeze Operation Manually	The operation is graphically selected and allows the following parameters to be manually overridden prior to freezing: ❑ Shop Resource ❑ Start date ❑ Start time ❑ Finish date ❑ Finish time
4.4.6.2.4 Unfreeze Operation Immediate	This takes a graphically selected operation and makes its start and finish date/time once again available to be altered by the Scheduler.
4.4.6.2.5 Unfreeze Work Order Immediate	This makes the start and finish date/times for all operations within the selected Work Order once again available to be altered by the Scheduler. The Work Order is identified graphically by any of its operations.
4.4.6.2.6 Unfreeze Work Order Immediate	A list of all currently frozen operations is retrieved for a selected schedule. The list can be made for all resources or for a single selected resource. The following information is retrieved for each frozen operation: ❑ Work Order ID ❑ Sequence number ❑ Resource ❑ user start date and time ❑ user finish date and time Individual frozen operations can then be selected from the list and unfrozen.
4.4.6.3 Reschedule Operations	The scheduled start or finish dates of an operation can be modified from what the Scheduler has automatically determined. This can be accomplished either by manually keying in either a new start date and time or an finish date and time, or by using a graphical drag and drop mode. The graphical drag and drop mode is accomplished for the start date by clicking on the left half of the desired operation and "dragging" it to the new desired start date and time. Likewise, the finish date is accomplished by dragging on the right half of the operation. The operation then becomes frozen. The Scheduler does not reschedule that operation from its new position unless it is manually unfrozen. However, the Scheduler will unfreeze a frozen operation and reschedule it if the frozen finish date is less than the schedule As Of date. The Scheduler adjusts the duration of frozen operations based on the remaining quantity.
4.4.7 Delete Work	

Order Schedule	

4.5 Material and Service Planning	*Material and Service Planning* is focused around all material planning and execution needs of the system. This sub-system is responsible for the following: ❑ Material Netting by Date or Using MRP Rules ❑ Comprehensive Viewing of Material Demand and Supply Information ❑ Direct Generating of Purchase Orders and Work Orders to Meet Demand ❑ Maintaining of Forecasts and Master Production Schedules ❑ MRP Generating of Planned Material Requirements and Work Orders ❑ Material Planning and Dimensional Inventory The optional dimensional inventory feature affects material planning in the following ways: ❑ If purchasing a specific line from the material plan and that line is linked to a Work Order, the Purchase Order that the system creates automatically includes the number of pieces and the dimensions from the requirement record. ❑ If purchasing to stock for a part, the system automatically places the number of pieces and dimensions into the Purchase Order.
4.5.1 General Material and Service Planning Reports	
4.5.1.1 Material Planning Reports	The *Material Planning Reports* are printed for a user given range based on sequence selected. The reports can be further limited by the selections below. This report can be printed, e-mailed, viewed, or sent to a file. Reports can be sequenced by: ❑ Part ID ❑ Product code ❑ Commodity code ❑ Planner's user ID ❑ Buyer's user ID Material netting is done by: ❑ Net by date ❑ Net by using MRP (material requirement planning) rules Part selection is done by: ❑ All parts ❑ Parts with material requirements for a given date range ❑ Parts with Customer Orders for a given date range The report output is further limited by the selecting: (select one) ❑ Fabricated parts only ❑ Purchased parts only ❑ Fabricated parts and Purchased parts only ❑ Either, but not both Optional filtering can by done by: (any or all) ❑ Parts with shortages only ❑ Net available quantities ❑ Deduct safety stock ❑ Include on hold orders ❑ Horizon days, user given Dimensional inventory (optional module) affects in the following ways: ❑ If a material is linked to a Work Order, the dimensional requirements are included

4.5.1.1.1 Material Planning Report (Sort by: Part)	This is the *Part Sequenced* version of the material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Part header: ❑ Part ID ❑ Part description ❑ Product code ❑ Commodity code ❑ Stock unit of measure ❑ Quantity on hand Line Items: ❑ Requirement required date ❑ Requirement net quantity ❑ Requirement order ID ❑ Due desired receive date ❑ Due net quantity ❑ Due order ID ❑ Project on hand ❑ Issue late by ❑ Order late by ❑ Release late by ❑ Order project early by ❑ Order project late by ❑ Release near Part footer: ❑ Total allocated (sum of requirement net quantity) ❑ Total on order (sum due net quantity)
4.5.1.1.2 Material Planning Report (by: Product Code)	This is the *Product Code Sequenced* version of the material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Product code header: ❑ Product code ❑ Part ID ❑ Part description ❑ Commodity code ❑ Stock unit of measure ❑ Quantity on hand Line Items: ❑ Requirement required date ❑ Requirement net quantity ❑ Requirement order ID ❑ Due desired receive date ❑ Due net quantity

	❑ Due order ID ❑ Project on hand ❑ Issue late by ❑ Order late by ❑ Release late by ❑ Order project early by ❑ Order project late by ❑ Release near Part footer: ❑ Total allocated (sum of requirement net quantity) ❑ Total on order (sum due net quantity)
4.5.1.1.3 Material Planning Report (by: Commodity Code)	This is the *Commodity Code Sequenced* version of the material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity Code ❑ Part ID ❑ Part description ❑ Commodity Code ❑ Stock unit of measure ❑ Quantity on hand Line Items: ❑ Requirement required date ❑ Requirement net quantity ❑ Requirement order ID ❑ Due desired receive date ❑ Due net quantity ❑ Due order ID ❑ Project on hand ❑ Issue late by ❑ Order late by ❑ Release late by ❑ Order project early by ❑ Order project late by ❑ Release near Part footer: ❑ Total allocated (sum of requirement net quantity) ❑ Total on order (sum due net quantity)
4.5.1.1.4 Material Planning Report (by: Planner)	This is the *Planner user ID Sequenced* version of the material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Planner header: ❑ Planner user ID

	Part header: ❑ Part ID ❑ Part description ❑ Product code ❑ Stock unit of measure ❑ Quantity on hand Line Items: ❑ Requirement required date ❑ Requirement net quantity ❑ Requirement order ID ❑ Due desired receive date ❑ Due net quantity ❑ Due order ID ❑ Project on hand ❑ Issue late by ❑ Order late by ❑ Release late by ❑ Order project early by ❑ Order project late by ❑ Release near Part footer: ❑ Total allocated (sum of requirement net quantity) ❑ Total on order (sum due net quantity)
4.5.1.1.5 Material Planning Report (by: Buyer)	This is the *Buyer user ID Sequenced* version of the material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Buyer header: ❑ Buyer user ID Part header: ❑ Part ID ❑ Part description ❑ Product code ❑ Stock unit of measure ❑ Quantity on hand Line Items: ❑ Requirement required date ❑ Requirement net quantity ❑ Requirement order ID ❑ Due desired receive date ❑ Due net quantity ❑ Due order ID ❑ Project on hand ❑ Issue late by ❑ Order late by ❑ Release late by ❑ Order project early by ❑ Order project late by ❑ Release near

	Part footer: ❑ Total allocated (sum of requirement net quantity) ❑ Total on order (sum due net quantity)
4.5.1.2 Repetitive Material Planning Reports	The *Repetitive Material Planning Report* is much like the material planning report, as shown above in 4.5.1.1. But the repetitive report does not have the option to print the horizon days.
4.5.1.2.1 Repetitive Material Planning (Sort by: Part)	This is the *Part Sequenced* version of the repetitive material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Part header: ❑ Part ID ❑ Part description ❑ Product Code ❑ Commodity Code ❑ Stock unit of measure ❑ Quantity on hand Line items: ❑ Repetitive column 1, 2, 3, ..., 10
4.5.1.2.2 Repetitive Material Planning (by: Product Code)	This is the *Product Code Sequenced* version of the repetitive material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Product code header: ❑ Product code ❑ Part ID ❑ Part description ❑ Commodity code ❑ Stock unit of measure ❑ Quantity on hand Line items: ❑ Repetitive column 1, 2, 3, ..., 10
4.5.1.2.3 Repetitive Material Planning (by: Commodity Code)	This is the *Commodity Code Sequenced* version of the repetitive material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Commodity Code header: ❑ Commodity code ❑ Part ID ❑ Part description ❑ Product code

	❑ Stock unit of measure ❑ Quantity on hand Line items: ❑ Repetitive column 1, 2, 3, ..., 10
4.5.1.2.4 Repetitive Material Planning (by: Planner)	This is the *Planner user ID Sequenced* version of the repetitive material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Planner header: ❑ Planner user ID ❑ Part ID ❑ Part description ❑ Product code ❑ Commodity code ❑ Stock unit of measure ❑ Quantity on hand Line items: ❑ Repetitive column 1, 2, 3, ..., 10
4.5.1.2.5 Repetitive Material Planning (by: Buyer)	This is the *Buyer user ID Sequenced* version of the repetitive material planning report. Header: ❑ Company name ❑ Report title ❑ Run comments Buyer header: ❑ Buyer user ID ❑ Part ID ❑ Part description ❑ Product Code ❑ Commodity code ❑ Stock unit of measure ❑ Quantity on hand Line items: ❑ Repetitive column 1, 2, 3, ..., 10
4.5.1.3 Order Point Report	The *Order Point Report* prints the material planning information based on a given part ID range and its order point information. The report can be further limited to parts that are below the order point only. The report can be printed, e-mailed, viewed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Part range and order point filter Line items ❑ Part ID ❑ Part description ❑ Product code ❑ Commodity code

	❑ Stock unit of measure ❑ Quantity allocated ❑ Quantity on order ❑ Order point ❑ Quantity on hand
4.5.1.4 Material Planning Browse and Search List	The *Material Planning Browse and Search List* is printed from the advanced search window. Two netting types are allowed as net by date and net using MRP rules. The list can also be filtered by net available quantity and/or deduct safety stock. The list can be printed, e-mailed, viewed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Run comments (net type and filters) Line items: ❑ Part ID ❑ Part description ❑ Stock unit of measure ❑ Allocated quantity ❑ Quantity on order ❑ Quantity on hand ❑ Exceptions messages based on last MRP run worst case.
4.5.1.5 Service Planning Report	The *Service Planning Report* prints information to track parts sent to and from outside service vendors. The report is printed for a user given service ID range and can be further limited to a single user given part being serviced. The two service selections are all services or services with operations for a user given date range. A user given horizon days is also printable. The report can be printed, e-mailed, viewed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Run comments Service header: ❑ Service ID ❑ Service description ❑ Service part ID ❑ Usage unit of measure Line Items: ❑ Requirement required date ❑ Requirement net quantity ❑ Requirement order ID ❑ Due desired receive date ❑ Due net quantity ❑ Due order ID ❑ Order late by ❑ Release late by ❑ Order project early by ❑ Order project late by ❑ Release near Service footer: ❑ Total allocated (sum of requirement net quantity)

	❑ Total on order (sum due net quantity)
4.5.1.6 Work Order Requirements Report	The *Work Order Requirements Report* summarizes un-purchased or un-issued materials required by a Work Order. It is also for managing non-inventory materials. This report is printed for a user given Work Order / Job range and can be further limited by a Work Order date range. This report can be sequenced by the Work Order want date or by the requirement date. Allow an option to include materials with part ID. The report can be printed, viewed, e-mailed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Run comments Work Order header: ❑ Work Order ID ❑ Desired want date ❑ Work Order part ID ❑ Desired quantity ❑ Status Line items ❑ Requirement sequence number ❑ Requirement piece number ❑ Requirement part ID and description ❑ Requirement required date ❑ Requirement calculated quantity (quantity required into operation) ❑ Requirement issued quantity ❑ Remaining Quantity (Calculated Quantity - Issued Quantity) ❑ Unit cost
4.5.2 Create Planning Bills of Material	*Planning Bills of Material* can be created to help structure forecasting and master scheduling. A planning Bill of Material indirectly forecasts or plans several parts by allowing the user to manipulate the relationship between the parent and subordinate parts and by providing a single forecast or plan for the parent part. In some cases, planning bills are multi-level. In this case, manipulating the top-most parent's forecast results in all forecasts at the lower levels. Planning parts are not real parts and do not appear elsewhere in the system where regular parts do. Planning bills of material are also not real and do not appear elsewhere in the system. At the lowest level, the planning Bill of Material refers to actual parts. This level can have no further planned parts below it.
4.5.3 Create a Master Schedule	The *Master Production Schedule* has two main purposes: ❑ Setting and maintaining a forecast of demand for specific parts ❑ Setting and maintaining a production schedule for use by MRP when generating planned orders
4.5.3.1 Forecast Creation	A *forecast* consists of a list of periods and predictions of quantity demanded for each period. The forecast Quantity specified on a line applies to the period starting with the forecast Date for the line and ending with the forecast Date on the next line. A forecast is not required to create a Master Schedule. The forecast does not directly create demand in the system.
4.5.3.1.1 Part ID	The part that is being forecasted.
4.5.3.1.2 Forecast Date	The date on which the part is planned to be received.
4.5.3.1.3 Day of the Week	This displays the day of the week for the forecast Date for reference purposes.
4.5.2.1.4 Forecast	The quantity of the part that is being received.

Quantity	
4.5.3.2 Forecast Generation	The forecast is defined and maintained in the following three ways: ❑ Manually entered ❑ Automatically filled ❑ Imported
4.5.3.2.1 Enter Manually	Each line of the forecast is manually keyed in.
4.5.3.2.2 Auto Fill	The *Auto Fill* feature automatically fills several lines by specifying the fill quantity, the period size (in number of days), the horizon (number of lines to fill), and the beginning week.
4.5.3.2.3 Import	The forecast is imported from an external text file. This typically comes from an external statistical sales analysis program. An option is given to purge all existing forecast data prior to the import. A shop schedule must be chosen to associate the incoming forecast with.
4.5.3.3 Export Forecast	The forecast is exported to an external text file. An external statistical sales analysis program for later import to the system typically uses this file. The Part Forecast to be exported can be restricted by the following selection criteria: ❑ Part range ❑ Product code ❑ Start date ❑ End date Periods Per Cycle must be specified (default of 12). The following types of data can be exported: ❑ Shipments ❑ Issues ❑ Adjustments out Forecasts can be adjusted by the following prior to export: ❑ Shipment returns ❑ Issue returns ❑ Adjustments in
4.5.3.4 Production Schedule Creation	The *Production Schedule* specifies actual quantities and due dates for production. MRP transforms these quantities into planned orders. The Production Schedule is specified for a specific part and shop schedule. The following information is part of the Production Schedule: ❑ Schedule date ❑ Day of the week ❑ Schedule quantity
4.5.3.4.1 Schedule Date	*Schedule Date* is a date for a scheduled supply order to be completed. MRP uses this as the Due Date when creating a planned order to meet this schedule.
4.5.3.4.2 Day of the Week	This displays the day of the week for the Schedule Date for reference purposes.
4.5.3.4.3 Schedule Quantity	The quantity of the part scheduled to be completed on the Schedule Date.
4.5.3.5 Production Schedule Generation	The *Production Schedule* is defined in the following four ways: ❑ Manually entered ❑ Copied directly from the forecast ❑ Auto filled ❑ Imported
4.5.3.5.1 Enter	The Production Schedule is keyed into the system.

Manually	
4.5.3.5.2 Copy from Forecast	The Production Schedule is created directly from the forecast by a specific line or a range of lines.
4.5.3.5.3 Auto Fill	The Auto Fill feature automatically fills several lines by specifying the fill quantity, the period size (in number of days), the horizon (number of lines to fill), and the beginning week.
4.5.3.5.4 Import	The *Import Forecast* functionality allows the forecast to be imported directly to the Production Schedule. This avoids additional effort when the Production Schedule is to be identical to the forecast. An option is provided to purge the existing Production Schedule prior to the import.
4.5.4 Perform Material Requirements Planning (MRP)	For each part that it processes, *MRP* performs a netting process that compares demand to supply by attempting to align each supply with a corresponding demand. MRP then makes recommendations to create and alter supply orders to balance with the quantity and dates of demand orders. In performing the netting operation, the existing stock on-hand is taken into account and safety stock is deducted. When MRP is run for a part, previous planned orders for the part are deleted. MRP will also generate planned requirements for every material requirement of every planned Work Order it generated. If Single Pass is not selected, then these requirements will be considered in the next pass of MRP. Planned requirements are generated regardless of the required parts order policy. During processing, MRP marks parts as having exceptions if a planned order is created, or if one of the normal netting exceptions (ex: Stockout) occurs for the part. The marking can be used as part of the query in the Search option. This allows focus on parts that may need attention.
4.5.4.1 Part Flagging	As transactions are performed in the system, the system marks parts as requiring MRP. Events that trigger this marking include creation and modification of Purchase Orders, Customer Order, and Work Orders for the part, as well as inventory transactions involving the part. This is done that only those parts that might require changes are processed, rather than all parts. The number of parts marked in this way is shown as Parts Requiring MRP Processing.
4.5.4.2 Order Policies	MRP is only run for parts with the following *Order Policies*: ❑ Discrete or EOQ ❑ Fixed ❑ Period supply ❑ Master Scheduled For discrete, EOQ, fixed, and period policies, the minimum order quantity and maximum order quantity for the part are also respected. For example, if demand is twenty-five and the part has a discrete policy with a minimum order quantity of thirty, the order will be for thirty units.
4.5.4.2.1 Discrete or EOQ	A planned order will be created to fill the exact required quantity for each demand.
4.5.4.2.2 Fixed	Planned orders can only be created in the order quantity specified. An integer number of planned supply orders will be generated as needed. For example, if demand is fifty and fixed Order Quantity is 100, one order for 100 will be generated. If fixed Order Quantity were twenty-five, then two orders for twenty-five would be created. This order may, of course, end up meeting multiple demands.
4.5.4.2.4 Period Supply	When a supply order must be generated, its quantity is enough to supply the specified days of supply for the part.
4.5.4.2.4 Master Scheduled	Planned supply orders are created to meet each schedule date and schedule quantity in the Master Production Schedule. These orders are not planned by MRP based on netting. Instead, they are simply generated from the production schedule.

4.5.4.3 Generation Modes	There are two choices for the scope of MRP processing: ❑ Regeneration ❑ Net Change
4.5.4.3.1 Regeneration	This mode processes all top level parts. A top-level part is one that is not required in any material requirement for a Work Order. Demand orders for top-level parts are only Customer Orders. If this option is expected, the system processes top level parts on the first MRP pass whether they are marked for MRP or not. The system processes non-top-level parts if they are marked for MRP.
4.5.4.3.2 Net Change	Process parts changed since last run (net change) – the system processes only parts marked for MRP.
4.5.4.4 Planning Passes	When MRP processes a set of parts, it generates two kinds of orders. Planned supply orders are created to meet existing demand for each part. Planned demand orders are also created to account for the material requirements of the newly planned orders. There are two modes for determining the depth of planning: ❑ Single pass ❑ Multiple level
4.5.4.4.1 Single Pass	*Single Pass* tells the system to stop after planning the first pass through the eligible parts list.
4.5.4.4.2 Multiple Level	MRP makes a second pass, now considering the new demand orders caused by the newly planned supply order. Additional passes continue until no new demand orders are created.
4.5.4.5 Planning Horizon	There are three options to control how marking is done with regard to horizon: ❑ No horizon ❑ Fixed horizon ❑ Plus part lead-time
4.5.4.5.1 No Horizon	Any exceptions appearing for the part mark the part as having MRP exceptions, regardless of how far out they are.
4.5.4.5.2 Fixed Horizon	This specifies a number of days to look forward from the current date for exceptions. MRP only marks the part as having exceptions if any occur within this time frame. Specify Horizon in days
4.5.4.5.3 Plus Part Lead-Time	The exception time frame is extended to the horizon plus the lead-time specified for the part. This produces a horizon that varies for each part. For a given horizon, parts that take longer to get are more likely to appear as MRP exceptions. This option is strongly recommended over the Fixed Horizon option.
4.5.4.6 Part Planning Parameters	Many parameters from the Part Master are used in MRP processing. These parameters include: ❑ Safety stock quantity ❑ Lead-time ❑ Minimum order quantity ❑ Maximum order quantity ❑ Multiples of ❑ Order quantity ❑ Days of supply ❑ Demand Fence one ❑ Demand Fence two
4.5.4.6.1 Safety Stock Quantity	This is the extra amount of a part that is to be kept in excess of real demand to cover fluctuations in demand caused by unplanned orders, scrap, or other events
4.5.4.6.2 Lead-Time	Number of days required to replenish parts (manufacture time, delivery days, etc.). The system uses this to compute order release and want dates when only one of the two is known. An entry is not required, but is recommended if MRP or scheduling are being used.
4.5.4.6.3 Minimum Order Quantity	Minimum suggested quantity used by MRP when placing a planned order (when MRP is implemented). The system uses this number as a material planning guide. An entry of zero means there is no minimum. This number does not restrict other types of orders and is only used by MRP when creating planned orders. An entry is not required.

4.5.4.6.4 Maximum Order Quantity	Maximum quantity used when processing a planned order. This number does not restrict other types of orders and is only used by MRP. An entry of zero means there is no maximum. An entry is not required.
4.5.4.6.5 Multiples Of	When MRP plans an order for this part, the quantity on order should be divisible by the value entered here.
4.5.4.6.6 Order Quantity	MRP uses this quantity when the order policy calls for a fixed order quantity or EOQ to replenish a pending out of stock condition. This number does not restrict other types of orders and is only used by MRP. An entry is not required.
4.5.4.6.7 Days of Supply	MRP uses this quantity when the order policy is period supply (calls for replenishment of parts sufficient to cover a number of days of manufacturing). This number does not restrict other types of orders; it is only used by MRP. An entry is not required.
4.5.4.6.8 Demand Fence 1	A *Demand Fence* is the time period boundary before a specified calculation applies to the determination of demand. A Demand Period is a time duration, bounded by the fence, during which the calculation method applies. Real Demand Period - Begins on the current date and ends a user-defined number of days later. During this period the forecast is ignored and only dependent and independent demand, i.e., real, are shown as demand. This period is defined by Demand Fence 1 and is specified in days. This period is commonly referred to as the "frozen" time period.
4.5.4.6.9 Demand Fence 2	Mixed Demand Period – Begins immediately following the Real Demand Period and ends a user-defined number of days later. During this period, demand is defined as the greater of the forecast or the dependent and independent demand. Demand Fence 2 defines the number of days in the Mixed Demand Period. This period is commonly referred to as the "slushy" time period. Forecast Demand Period - Begins immediately following the mixed demand period and ends with the forecast or Master Schedule. This period is commonly referred to as the "liquid" time period.
4.5.5 Material Netting	Basic planning information about a part is displayed and *Material Netting* is performed. Material Netting is a process of comparing demand and supply at given points and projecting a net balance and possible exceptions. An exception is a condition that may require an action such as a stock out, and may also be phrased as a suggestion of action to take. Only one part is processed and displayed at a time. The part can be selected by usual keying in or searching in addition to an advanced search mode.
4.5.5.1 Advanced Search	This feature allows sophisticated searches based on many criteria to locate a specific part or a series of parts. If more than one part is in the search result set, then the list of parts can be traversed forward and backward to display the netting results of each part. The following part attributes are searchable: ❑ Part ❑ Description ❑ Planner ❑ Buyer ❑ Planning lead-time ❑ On hand quantity ❑ Warehouse ❑ Preferred vendor ❑ Manufacturer ❑ Manufacturer part ID

	❑ Product code ❑ Commodity code ❑ Fabricated (yes, no, don't care) ❑ Purchased (yes, no, don't care) ❑ MRP required (yes, no, don't care) ❑ MRP exceptions exist (yes, no) The search criteria for the above attributes can be set to either: ❑ Part must have all these attributes (and) ❑ Part may have any of these attributes (or) The following MRP exception information is searchable: ❑ Issue is late by (days) ❑ Order is late by (days) ❑ Release is late by (days) ❑ Suggested release is late by (days) ❑ Order projected early by (days) ❑ Order projected late by (days) ❑ Stock-out by (days) ❑ Overstock by (days) ❑ Release near (yes, no) ❑ Suggested release near (yes, no) The search criteria for the above exceptions can be set to either: ❑ Part must have all these attributes (and) ❑ Part may have any of these attributes (or) All of the searchable parameters support Query By Example. This includes wildcards, equals, equal to or greater, and equal to or smaller. The Query By Example can be saved for later use.
4.5.5.1 Netting Types	There are two types of netting available: ❑ Net using MRP rules ❑ Net by date
4.5.5.1.1 Net Using MRP Rules	Net Using MRP Rules causes demand and supply orders to be independently sequenced by date and align them whenever possible. This produces the status of each demand order, and how its aligned supply order must be adjusted to meet the demand. Exceptions indicate the number of days a supply order is early or late in satisfying its associated aligned supply order. This method is generally used to work with materials that are purchased or fabricated for specific jobs because the focus is on each demand and what must be done to the corresponding supply order to meet it. ❑ In Overstock - There is a projected positive on-hand balance and the net quantity due for the supply order exceeds the quantity required for the aligned demand order. or, there is no aligned demand order. ❑ Stock-out - There is not enough projected on-hand stock from previous supply orders to meet the quantity required of the demand order. ❑ Order Late - The due date of the supply order is earlier than the current date; the order is late. this exception only appears for supply orders with no aligned demand orders. this overrides any other exception that might appear for the order. ❑ 'n' Early / 'n' Late - The due date of the supply order is 'n' days earlier or later than it needs to be to meet the aligned demand order. Note that this does not provide information on quantity. The quantity due may not be enough to satisfy the order. ❑ Expedite - This indicates that the requirement in this mode, projected quantity is the quantity after a supply order, if present, has been received and the demand order has consumed its requirement from the supply order and/or any existing on-

	hand balance. The following are exception messages for MRP netting: ❑ Date for the demand order has already passed but the aligned supply order's due date is in the future. ❑ Due on Time - The due date of the supply order matches the requirement date of the demand order but projected quantity is not enough to satisfy the demand. ❑ Rel. Upcoming / Rel. Now / Rel. Past Due – the system is suggesting a release date for a new supply order due on this date because the projected balance for the current date is not sufficient to meet the demand order for the date. This only occurs if there is not an aligned supply order; otherwise, an early, Late, or Due On Time exception appears. ❑ Rel. Past Due - indicates that the suggested release date has already passed. Rel. Now indicates that the suggested release date is the current date. Rel. Upcoming indicates the suggested release date is within 3 days from the current date. If suggested release date is more than three days away, a stock-out exception message is used.
4.5.5.1.2 Net by Date	*Net By Date* causes demand and supply orders to be sequenced by date required and due date. They are only aligned if they fall on the same date. Netting by date produces available quantity on each consecutive date. Exceptions indicate if a stock-out or overstock condition exists on a given date and suggest dates to release new supply orders. Netting By Date may be easier to work with for materials that are maintained as inventory and issued as needed because the focus is on each day's total projected on-hand quantity versus demand. In this mode, Projected Quantity is the quantity at the "end of the day" after all supplies have been received and demands have been met. The following are exception messages for MRP netting: ❑ Overstock - Projected Quantity for the date is greater than or equal to the total Required Quantities of all demand orders, if any, for the same date. The day will end with a surplus of stock. ❑ Stockout - Projected Quantity for the date is less than the total Required Quantities of all demand orders for the same date. Or, there are no demand orders and the Projected Quantity is zero or negative. ❑ Rel. Upcoming / Rel. Now / Rel. Past Due – the system is suggesting a release date for a new supply order due on this date because the projected balance for the current date isn't sufficient to meet the demand order for the date. These messages indicate that the suggested release date is close at hand, or already passed. ❑ Rel. Past Due - indicates that the suggested release date has already passed. Rel. Now indicates that the suggested release date is the current date. Rel. Upcoming indicates the suggested release date is within 3 days from the current date. ❑ Order Late - The Due Date of the supply order is earlier than the current date. The order is late. This exception only appears for supply orders with no aligned demand orders. This overrides any other exception that might be shown for the order. If suggested release date is more than three days away, a stock-out exception message is used. When there is a demand on this line that the planned supply cannot meet, the system presents a suggested release date of a supply order to meet the demand. This is done by subtracting the lead-time for the part (purchased or fabricated) from the required date for the demand. For a Purchase Order, this is the date that should place the order for the part. For a Work Order, this is the date the order should be released.

4.5.5.2 Netting Options	In addition, there are several status options that affect the viewing of supply and demand as well as the netting process itself. Each of these additional options applies to both netting types listed in section 4.5.5.1. These options include: ❑ Order status ❑ Net using available quantity ❑ Deducting safety stock ❑ Detail quantities ❑ Lead-time expression ❑ Suppress zeros ❑ Alternate planning calendar
4.5.5.2.1 Order Status	The status of the orders can be included and excluded from the display and netting process. Each of the following can be independently selected for inclusion: ❑ Unreleased ❑ Firmed ❑ Closed ❑ Cancelled Orders with released status are always displayed and included in the netting calculation.
4.5.5.2.2 Net Using Available Quantity	*Netting Using Available Quantity* is used to deduct on-hold quantities from the on hand quantity to initiate netting. This option considers all material that is on hold to be unavailable for netting.
4.5.5.2.3 Deducting Safety Stock	*Deducting Safety Stock* is used to subtract safety stock from the initial quantity on hand before netting is performed. The safety stock value is taken from the respective Part Master.
4.5.5.2.4 Detail Quantities	*Detail Quantities* is used to view all of the quantity values. Hiding these additional quantities simplifies the output by showing only the net required and net due quantities. These additional quantity values include: ❑ Total quantity required ❑ Quantity issued ❑ Quantity ordered ❑ Quantity received
4.5.5.2.5 Lead-Time Expression	Lead-time can be expressed as one of the following: ❑ Four day weeks ❑ Five day weeks ❑ Six day weeks ❑ Seven day weeks
4.5.5.2.6 Suppress Zeros	All zeros in the display are suppressed.
4.5.5.2.7 Alternate Planning Calendar	Alternate Planning Calendars can be established for use in the Repetitive Display Mode. While any number of planning calendars can be established, only one is active at any given time. The active planning calendar is associated with the workstation where it is set. The data elements handled are: ❑ Calendar ID ❑ Description ❑ Planning origin (origin date) ❑ Days in period (size in days of the planning period) ❑ Total periods (number of periods in the planning horizon) ❑ Range 1 Days/Period (number of days of the first display range) ❑ Range 1 Number of periods ❑ Range 2 Days/Period (number of days of the first display range) ❑ Range 2 Number of periods ❑ Range 3 Days/Period (number of days of the first display range)

	❑ Range 3 Number of periods
4.5.5.3 Display Modes	Supply and demand can be displayed in two different formats depending on the nature of the planning activity. These modes are: ❑ Batch display ❑ Repetitive display There are four classes of information that are displayed: ❑ Part parameters ❑ Demand (requirement) information ❑ Supply information ❑ Netting Information
4.5.5.3.1 Batch Display Mode	This display mode is for manufacturers who schedule on a batch basis and want to view the material plan with a focus on jobs. The following information is displayed. Part parameters: ❑ Part ID ❑ Part description ❑ Order policy ❑ Lead-time ❑ Safety stock ❑ On hand quantity ❑ On hold quantity ❑ Netable quantity ❑ Minimum order quantity ❑ Maximum order quantity ❑ Multiples of quantity ❑ Product code ❑ Commodity code ❑ Active Engineering Change Notice (ECN) ❑ Engineering Master revision ❑ Unit of measure ❑ Planner ❑ Buyer ❑ Primary warehouse ❑ Primary location ❑ Preferred vendor ❑ Total unit cost ❑ Drawing ID ❑ Drawing revision ❑ Auto issue (yes, no) ❑ Inspection required (yes, no) ❑ Piece tracked (yes, no) Requirements: ❑ Required date ❑ Total quantity required ❑ Quantity issued to date ❑ Quantity still remaining ❑ Status of the requirement order (if pegged) ❑ Number of the requirement order (if pegged)

	Supplies: ❑ Quantity ordered ❑ Quantity received to date ❑ Quantity pending ❑ Due date ❑ Release date of order ❑ Status of order ❑ Order number ❑ Days supply order issued late ❑ Days supply order is ordered late ❑ Days a supply order is released late ❑ Date the supply order should be released to meet material plan ❑ Days an order is expected early ❑ Days an order is expected late ❑ Quantity overstocked ❑ Quantity understocked ❑ Flag indicating that the actual release of the supply order is within 'n' days ❑ Flag indicating that the suggested release of the supply order is within 'n' days ❑ Scheduled start date ❑ Scheduled finish date Netting: ❑ Projected quantity (based on netting options)
4.5.5.3.2 Repetitive Display Mode	This display mode is for manufacturers who schedule on a repetitive basis and want to view the material plan with a focus on time buckets. The following information is displayed: Part parameters: ❑ Part ID ❑ Part description ❑ Order policy ❑ Lead-time ❑ Safety stock ❑ On hand quantity ❑ On hold quantity ❑ Netable quantity ❑ Minimum order quantity ❑ Maximum order quantity ❑ Multiples of quantity ❑ Product code ❑ Commodity code ❑ Active Engineering Change Notice (ECN) ❑ Engineering Master revision ❑ Unit of measure ❑ Planner ❑ Buyer ❑ Primary warehouse ❑ Primary location ❑ Preferred vendor ❑ Total unit cost ❑ Drawing ID ❑ Drawing revision ❑ Auto issue (yes, no) ❑ Inspection required (yes, no) ❑ Piece tracked (yes, no) ❑ Demand Fences

	❑ Origin of Demand Fences (global, Product code, part) ❑ Current calendar Netting: ❑ Customer demand ❑ Dependant demand ❑ Gross demand ❑ Current MRP plan ❑ Current firmed orders ❑ Projected inventory ❑ Suggested MPS Specific detail for requirements and supplies can be displayed by drilling into the aggregate nettings above. Demand detail includes: ❑ Want date ❑ Order quantity ❑ Want date ❑ Quantity still remaining ❑ Status of the requirement order (if pegged) ❑ Order ID (if pegged) Supply detail includes: ❑ Vendor ❑ Order ID ❑ Order status ❑ Order quantity ❑ Quantity due ❑ Want date A Short Parts option is provided to only display those parts that have negative projected quantities for the dates displayed. An All Exceptions option is provided to display all parts, including those with exception messages.
4.5.6 Material Allocations	
4.5.6.1 Process Allocations	
4.5.6.1.1 Processing Parameters	
4.5.6.1.2 Create Allocations	
Assign Allocation Quantities	
4.5.6.1 Allocate Supply to Material	
4.5.6.2 Allocate Supply to Customer Order	
4.5.6.3 Allocate Supply to Interbranch Transfer	
4.5.6.4 Allocate Work	

Order to Demand	
4.5.6.5 Allocate Purchase Order to Demand	
4.5.6.6 Allocate Interbranch Transfer to Demand	
4.5.6 Material Analysis	Additional detail can be drilled into for the specific part being displayed. The following categories of information can be displayed: ❑ Inventory transactions ❑ Inventory locations ❑ Inventory pieces ❑ Purchase history ❑ Selling history ❑ Subordinate parts
4.5.6.1 Inventory Transactions	A table is displayed showing information for all *Inventory Transactions* associated with the part. Transactions in the table appear from the most recent to the oldest. The order of transactions can be reversed and can be restricted using a From Date and a To Date. The following information is displayed for each transaction: ❑ Transaction ID ❑ Date ❑ Type ❑ Location ❑ Reference ❑ Quantity ❑ Material unit cost ❑ Labor unit cost ❑ Burden unit cost ❑ Service unit cost ❑ Description
4.5.6.1.1 Type	This indicates the type of inventory transaction: ❑ Issue ❑ Receipt ❑ Adjust in ❑ Adjust out ❑ Contra issue (Issue return) ❑ Contra receipt (receipt return)
4.5.6.1.2 Location	This is the warehouse and location of the inventory transaction.
4.5.6.2 Inventory Locations	A table is displayed showing all valid warehouse locations for the part. The following information is displayed for each warehouse/location: ❑ Warehouse ❑ Location ❑ Primary location? ❑ Auto issue location? ❑ Hold reason ❑ Quantity ❑ Part location description
4.5.6.3 Inventory Pieces	A table is displayed showing one line for each unique dimension combination for each warehouse/location. The following information is displayed:

	❑ Part ID ❑ Warehouse ❑ Location ❑ Number of pieces ❑ Length ❑ Width ❑ Height ❑ Dimensions unit of measure The results can sorted by a primary sort: ❑ Length ❑ Width ❑ Height And then sorted by a secondary sort: ❑ Length ❑ Width ❑ Height The results can be optionally displayed in descending order.
4.5.6.4 Purchase History	A table is displayed showing one line for each existing Purchase Order line that is for the specified part. This includes all firmed, released, closed, and canceled Purchase Orders. The following information is displayed for each Purchase Order line: ❑ Order date ❑ Desired receive date ❑ Promise date ❑ Last received date ❑ Purchase Order ID ❑ Delivery schedule? ❑ Vendor ❑ Order quantity ❑ Received quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Fixed cost ❑ Standard unit cost The results can be sorted by: ❑ Order date ❑ Desired receive date ❑ Purchase Order ID Then the results can be sequenced in one of the following orders: ❑ Ascending ❑ Descending
4.5.6.5 Selling History	A table is displayed showing one line for each existing Customer Order line that is for the specified part. This includes Customer Orders of all status values. The following information is displayed for each Customer Order line: ❑ Order date ❑ Desired ship date ❑ Original promise date ❑ Last ship date

	❑ Customer Order ID ❑ Customer ❑ Order quantity ❑ Shipped quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Standard unit price The results can be sorted by: ❑ Order date ❑ Desired ship date ❑ Customer Order ID Then the results can be sequenced in one of the following orders: ❑ Ascending ❑ Descending
4.5.6.6 Subordinate Parts	When performing analysis on a fabricated part, the Bill of Material can be retrieved to facilitate a convenient way to drill into subordinate materials. Upon selection of a subordinate material, the display is updated to reflect the netting of the newly chosen part. The Bill of Material for the fabricated part can be retrieved from the following sources: ❑ Engineering Master ❑ Selected material requirement order ❑ Work Order The parent part (the part requiring the subordinate parts) of the subordinate parts listed can also be displayed as needed. This is especially useful when using the Use Selected Material Requirement Order option.
4.5.6.6.1 Engineering Master	The system uses the current *Engineering Master* for the part ID to get the list of material requirements for the part. Any line currently selected in the material plan has no effect.
4.5.6.6.2 Selected Material Requirement Order	This allows viewing of subordinate parts for a Work Order requiring the current purchased or fabricated part. The line with a requirement pegged to the Work Order of interest must be chosen before using this option. This moves up a level and allows material planning for all of the sibling parts of the current part.
4.5.6.6.3 Use Specific Material Order	The system uses a specific Work Order to determine material requirements. Before using this option, select the line containing the desired order. This option is useful if a Work Order for a standard part has been customized and may contain additional material requirements not specified in the master.
4.5.6.7 Display Order	Both supply and demand orders can be accessed directly for full viewing and editing. A specific demand or supply line is chosen when drilling into the order detail.
4.5.6.7.1 Supply Order	The Purchase Order is displayed in its native editor so that modifications can be made without traversing the main menu. Modifications are subject to the user permissions established in the native editor.
4.5.6.7.2 Demand Order	The Customer Order is displayed in its native editor so that modifications can be made without traversing the main menu. Modifications are subject to the user permissions established in the native editor.
4.5.7 Service Analysis	
4.5.7.1 Supply and Demand Display	Service Planning displays the demand for outside services coming from Work Orders vs. Dispatch and receipt information. This aids in determining when Purchase Orders for outside services need to be placed and what is currently Dispatched to outside services. Linked service Purchase Orders and linked Service Dispatches (supply) are displayed on the same row as the linked contractor operation (demand).

	There are four classes of information that are displayed: ❑ Service Information ❑ Demand information ❑ Supply information ❑ Dispatch information Service parameters: ❑ Service ID ❑ Transit days ❑ Run/Run type ❑ Load Size ❑ Minimum move quantity ❑ Unit cost ❑ Minimum charge ❑ Base charge ❑ Service part ID ❑ Date required ❑ Total quantity required ❑ Total Quantity Dispatched ❑ Quantity Completed ❑ Quantity Required ❑ Net Quantity Dispatched ❑ Status ❑ Operation vendor ID ❑ Peg To ❑ Quantity Ordered ❑ Quantity Received ❑ Net Quantity Due ❑ Due Date ❑ Release Date ❑ Due vendor ID ❑ Order ID ❑ Order Line number ❑ Issue Late (number of days) ❑ Order Late (number of days) ❑ Release Late (number of days) ❑ Suggested Release Late (Date) ❑ Order Projected Early (number of days) ❑ Order Projected Late (number of days) ❑ Release Near (date) ❑ Suggested Release Near (calculated release date) ❑ Exception (Dispatch state) ❑ Suggested Release (calculated release date) ❑ Schedule Start (date) ❑ Schedule Finish (date)
4.5.7.2 Purchase History	A table is displayed showing one line for each existing Purchase Order line that is for the specified service. This includes all firmed, released, closed, and canceled Purchase Orders. The following information is displayed for each Purchase Order line: ❑ Order date ❑ Desired receive date ❑ Promise date ❑ Last Dispatched date ❑ Last received date

	❑ Service part ID ❑ Purchase Order ID ❑ Purchase Order line number ❑ Vendor ❑ Order quantity ❑ Received quantity ❑ Dispatched quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Base charge ❑ Minimum charge ❑ Standard unit cost The results can be sorted by: ❑ Order date ❑ Desired receive date ❑ Service part ID ❑ Purchase Order ID Then the results can be sequenced in one of the following orders: ❑ Ascending ❑ Descending
4.5.7.3 Dispatch History	When sending parts to an outside service, it is often desirable to Dispatch the parts in portions rather than all at once. A history of parts that have been sent to outside service can be displayed showing all Dispatch activity. A table is displayed showing one line for each existing Purchase Order line that is for the specified service. This includes all firmed, released, closed, and canceled Purchase Orders. The following information is displayed for each Purchase Order line: ❑ Dispatch date ❑ Desired receive date ❑ Promise date ❑ Dispatch ID ❑ Dispatch line number ❑ Service part ID ❑ Order date ❑ Purchase Order ID ❑ Purchase Order line number ❑ Vendor ❑ Order quantity ❑ user Dispatch quantity ❑ Dispatched quantity ❑ Dispatch received quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Base charge ❑ Minimum charge ❑ Standard unit cost ❑ Linked operations of a purchased service The results can be sorted by: ❑ Dispatch date

	❑ Desired receive date ❑ Dispatch ID ❑ Service part ID ❑ Order date ❑ Purchase Order ID Then the results can be sequenced in one of the following orders: ❑ Ascending ❑ Descending An option allows the history to be displayed without fully received services.
4.5.7.4 Dispatches for Vendor	A table is displayed showing the status of parts sent to an outside service vendor. The following information is presented for each line: ❑ Service ❑ Vendor service ID ❑ Service part ID ❑ Purchase Order ❑ Purchase Order line number ❑ Order quantity ❑ Order date ❑ Purchase Order desired receive date ❑ Promise date ❑ Dispatch ID ❑ Dispatch line number ❑ user Dispatch quantity (expressed in the vendor's unit of measure) ❑ Dispatched quantity ❑ Dispatch date ❑ Dispatch desired receive date ❑ Unit price ❑ Discount percent ❑ Base charge ❑ Minimum charge ❑ Standard unit cost ❑ Linked operations The results can be sorted by: ❑ Dispatch date ❑ Expected receive date ❑ Dispatch ID ❑ Order date ❑ Purchase Order ID Then the results can be sequenced in one of the following orders: ❑ Ascending ❑ Descending
4.5.7.5 Dispatches for Work Order	A table is displayed showing the status of parts Dispatched and received for a specific Work Order. The following information is presented for each line: ❑ Sequence number ❑ Service ❑ Vendor ❑ Vendor service ID ❑ Service part ID

	❑ Purchase Order ❑ Purchase Order line number ❑ Order quantity ❑ Dispatch transaction ID ❑ Dispatch ID ❑ Dispatch line number ❑ Dispatch date ❑ Dispatched quantity ❑ Receipt transaction ID ❑ Receiver ID ❑ Receiver line number ❑ Receipt date ❑ Good received quantity ❑ Bad received quantity
4.5.8 Requirement Fulfillment Mode	Supply orders can be automatically generated without the need to explicitly enter all the order information into the native supply order editor. By selecting a demand, the system gathers all the pertinent information and transports the user to the applicable supply order editor and populates the form with the gathered information. The following supply orders are automatically created: ❑ Purchase material to a job ❑ Purchase service to a job ❑ Purchase material to inventory ❑ Place Work Order ❑ Firm or release a planned order ❑ Delete a planned order ❑ Dispatch a purchased service
4.5.8.1 Purchase Material to Job	The user chooses one or more records containing a purchased part. The system automatically calculates the total quantity required and the associated links to the Work Order requirements to enable automatic inventory issue to the Work Order upon Purchase Order receipt. The user is given the choice of adding an additional quantity to the calculated quantity. The additional quantity is received into inventory. Order quantity = Required quantity + Additional quantity A table is presented which shows each of the requirements and its associated Work Order links, if any. The total quantity required and total quantity issued for each requirement is also displayed. The vendor defaults to the preferred vendor established in the Part Master. A listing of vendors supplying this part (as established in the Part Master), in addition to a listing of all vendors, is provided. Pricing information for the Purchase Order is determined by the vendor quote maintained in the Part Master based on the chosen vendor and quantity ordered. Once satisfied with the order parameters, the user selects to generate a Purchase Order. The system transports to the standard Purchase Order editor, populates all the applicable information including Work Order links and waits for the user to finish detailing the Purchase Order. The detailing and saving process is identical to the standard Purchase Order functionality described in section 4.7.
4.5.8.2 Purchase Material to Inventory	The user chooses one or more records containing a purchased part. The system automatically calculates the total quantity required. The user is given the choice of adding an additional quantity to the calculated quantity.

	Order quantity = Required quantity + Additional quantity A table is presented which shows each of the requirements, the total quantity required, and total quantity issued. The vendor defaults to the preferred vendor established in the Part Master. A listing of vendors supplying this part (as established in the Part Master), in addition to a listing of all vendors, is provided. Pricing information for the Purchase Order is determined by the vendor quote maintained in the Part Master based on the chosen vendor and quantity ordered. Once satisfied with the order parameters, the user selects to generate a Purchase Order. The system transports to the standard Purchase Order editor, populates all the applicable information and waits for the user to finish detailing the Purchase Order. The detailing and saving process is identical to the standard Purchase Order functionality described in section 4.7.
4.5.8.3 Place Work Order	The user chooses one or more records containing a fabricated part. The system automatically calculates the total quantity required. The user is given the choice of adding an additional quantity to the calculated quantity. This does not link the Work Order to the Customer Order. If desired, the user needs to do this manually using the Customer Order editor. Order quantity = Required quantity + Additional quantity A table is presented which shows each of the requirements, the total quantity required, and total quantity issued. Here the Engineering Master revision is also specified for creation of the Work Order details. All available revisions are listed for ease of selection. In addition the following information is specified: ❑ Work Order ID (if left blank the system automatically assigns the ID) ❑ Release date ❑ Want date ❑ Order quantity (to be overridden if desired) ❑ Forward schedule from release date option ❑ Work Order status (unreleased, firmed, or released) Once satisfied with the order parameters, the user selects to generate a Work Order. The system automatically creates the Work Order in the background and refreshes the supply and demand information.
4.5.8.4 Firm or Release a Planned Order	Planned orders (by MRP) can be turned into real orders using this function. Planned orders for purchased parts are placed as Purchase Orders, and fabricated parts are placed as Work Orders. Once a specific planned order has been identified by the user, the system gathers additional information for the creation of real orders.
4.5.8.4.1 Purchased Part	The following information is gathered to create a Purchase Order for the planned order: ❑ Vendor ❑ Purchase Order ID (if left blank the system automatically assigns the ID) ❑ Order quantity ❑ Release date ❑ Want date ❑ Status (firmed or released) The vendor defaults to the preferred vendor established in the Part Master. A listing of vendors supplying this part (as established in the Part Master), in addition to a listing of

	all vendors, is provided. Pricing information for the Purchase Order is determined by the vendor quote maintained in the Part Master based on the chosen vendor and quantity ordered. Once the Purchase Order is created in the background, the supply and demand information is refreshed to include the newly created real order.
4.5.8.5.2 Fabricated Part	Here the Engineering Master revision is also specified for creation of the Work Order details. All available revisions are listed for ease of selection. The following additional information is gathered to create a Work Order for the planned order: ❑ Work Order ID (if left blank the system automatically assigns the ID) ❑ Release date ❑ Want date ❑ Order quantity (to be overridden if desired) ❑ Forward schedule from release date option ❑ Work Order status (unreleased, firmed, or released)
4.5.8.6 Delete a Planned Order	A planned order can be deleted from the system once identified by the user. Even though the order is deleted it may be regenerated when MRP is run again.
4.5.8.7 Purchase a Service to a Work Order	Once a service has been identified, a Purchase Order is automatically generated for that service. The user is given the option of Dispatching all or a portion of the purchased quantity at the same time of the Purchase Order generation. The system gathers applicable information from the Work Order requirement. The system transports to the standard Purchase Order editor, populates all the applicable information including Work Order links, and waits for the user to finish detailing the Purchase Order. The detailing and saving process is identical to the standard Purchase Order functionality described in section 4.7.
4.5.8.8 Dispatch a Purchased Service	A Purchase Order for an outside service can be Dispatched in whole or part by identifying a service Purchase Order. The system displays the order quantity and the current Dispatched quantity. An additional Dispatch quantity can then be entered. The system gathers all applicable information and then transports to the standard Service Dispatch editor where this information is populated. Additional information can be detailed before the Service Dispatch is saved.

4.6 Throughput Analysis	*Throughput Analysis* is used to implement the Common Sense Throughput strategy that is the cornerstone of the system. Throughput is not theoretical: it is defined as revenue less materials and outside services. Throughput is the value of something that is made. If there is no order from a Customer for the item, then it is zero. In fact, it is a liability: money has been spent to produce it. The throughput value of something that has been sold is defined as its price less the cost of materials and outside services that went into it. Profit is throughput less operating expense. When throughput increases, and operating expenses are unchanged, all of the throughput becomes profit.
4.6.1 General Throughput Analysis Reports	
4.6.1.1 Customer Service Impact Report	The *Customer Service Impact Inquiry Report* is used to view how much money and time the current promise-and-expedite scheduling scheme is costing as a result of schedule lateness. Header: ❑ Company name ❑ Report title Schedule header: ❑ Schedule ID Date Range header: ❑ Date range Line items: ❑ Order ID ❑ Customer name ❑ Unshipped quantity ❑ Part ID ❑ Want date ❑ Allocated quantity ❑ Unit price ❑ Work Order ID ❑ Finish date ❑ Days late ❑ Dollars late ❑ Dollars - days late ❑ Opportunity lost Date Range footer: ❑ Days late total ❑ Dollars late total ❑ Dollars - days late total ❑ Opportunity lost total Schedule footer: ❑ Days late grand total ❑ Dollars late grand total

	❑ Dollars - days late grand total ❑ Opportunity lost grand total
4.6.1.2 Contention Report	The *Contention Inquiry Report* is used to identify bottleneck resources by means of contention. It determines at which resource it is most difficult to schedule work. This is done for a given date range and selected schedule. Contention can be viewed for all resources over the date range or for a single resource by day, week, or month. There are four work load options that consider backward scheduling, on-time order, and that summarize occurrences and severity. Date Options: ❑ Monthly – Gives calendar month and each of the next 12 months. ❑ Weekly – Gives the week and each of the 12 previous weeks. An option is to define the day on which a week ends. ❑ Daily – Gives the day and each on the next 12 days. Load Options: ❑ Can ignore load exists during backward scheduling. ❑ Can ignore load exists for on-time Work Orders. ❑ Can summarize load exists occurrences. ❑ Can summarize load exists severity. Header: ❑ Company name ❑ Report title Resource header: ❑ Resource Date range header: ❑ Date range Line items: ❑ Work Order ID ❑ Attempt ❑ Direction ❑ Attempt start date ❑ Attempt start time ❑ Attempt end date ❑ Attempt end time ❑ Operation start date ❑ Operation start time
4.6.1.3 Material Constraint Report	The *Material Constraint Inquiry Report* identifies bottleneck raw materials and bottleneck purchased parts. It determines which material causes the most changes to the schedule. This is done for a given date range and selected schedule. Material constraint can be viewed for all parts required over the date range or for a single part by day, week, or month. There are four load options that consider backward scheduling, on-time order, and that summarize occurrences and severity. Header: ❑ Company name ❑ Report title Resource header:

	❑ Resource Date range header: ❑ Date range Line items: ❑ Work Order ID ❑ Attempt ❑ Direction ❑ Attempt start date ❑ Attempt start time ❑ Attempt end date ❑ Attempt end time ❑ Operation start date ❑ Operation start time
4.6.1.4 Utilization Report	The *Utilization Inquiry Report* is a way of identifying a bottleneck resource by determining which resource has the least capacity for a given date range. This is done for one schedule and one selected resource or for all resources at a time. The date range for the report output is selected based on one of three options daily, weekly, and monthly. The output will be viewed as a graph with load/capacity ratio (%) on the y-axis and the resource load time on the x-axis. The graph type will be selectable from bar, pie, or line. For all the report date ranges the ending date defaults to the current calendar month. ❑ Monthly – This displays the actual throughput for this calendar month and for each of the previous 12 (including same month last year) months. ❑ Weekly – This displays the actual throughput for a week and for each of the previous 12 weeks. An option is to define the day on which a week ends. ❑ Daily – This displays the actual throughput for the date entered and for each of the previous 12 days. Header: ❑ Company name ❑ Report title ❑ Date range Line items: ❑ Work Order ID ❑ Order ID ❑ Customer name ❑ Ship quantity ❑ Sales ❑ Material cost ❑ Part ID ❑ Part description ❑ Want quantity ❑ Resource
4.6.1.5 Actual Throughput Report	The *Actual Throughput Inquiry Report* measures the actual throughput based on past performance. Actual Invoiced amounts from shipments and actual material and outside service costs from Work Orders. This report gives past performance by one of three choices daily, weekly, or monthly from a given ending date. Monthly – Gives this calendar month and each of the previous 12 months and defaults to the current month if ending date not given.

	Weekly – Gives this week and each of the previous 12 weeks and defaults to the current date if ending date not given. Optionally the day on which a week ends can be defined. Daily – Gives the current day or ending date entered and each of the previous 12 days. Header: ❑ Company name ❑ Report title Date range header: ❑ Date range Line items: ❑ Order ID ❑ Customer name ❑ Packing List ID ❑ Part ID ❑ Ship date ❑ Ship quantity ❑ Sales ❑ Material cost
4.6.1.6 Expected Throughput Report	The *Expected Throughput Inquiry Report* calculates what future throughput will be based on soft allocations to Customer Orders and Work Order finish dates based on the selected shop schedule. The starting or base date is user defined with an option to round up the finish date after a certain time. This report gives expected throughput by one of three date lengths choices daily, weekly, or monthly. ❑ Monthly – This gives expected throughput for the calendar month and each of the next previous 12 months for each schedule ID selected and the starting base date given. ❑ Weekly – This gives the expected throughput for the week and each of the previous 12 weeks each schedule ID selected and the starting base date given. Optionally the day on which a week ends can be defined. ❑ Daily – This gives the expected throughput for the day or specified date and each of the previous 12 days for each Schedule ID selected and the starting base date given. This report gives expected throughput by one of three job completion dates choices of ship date, Work Order scheduled finish date, or later of the two. ❑ Ship date as the throughput date uses scheduled / desired ship date. ❑ Work Order schedule finish date as the throughput date, uses Work Order scheduled finish date. ❑ Later of the two above also allow an option of entering a number of days before ship date as a buffer. Header: ❑ Company name ❑ Report title Date range header: ❑ Date range

	Line items: ❑ Order ID ❑ Customer name ❑ Part ID ❑ Want date ❑ Want quantity ❑ Finish date ❑ Work Order ID ❑ Sales ❑ Material cost
4.6.1.7 Actual Throughput by Resource Report	The *Actual Throughput by Resource Inquiry Report* is intended for use after a bottleneck is recognized to determine which orders in the past have generated maximum throughput for time spent at bottleneck resources. First the resource ID is selected and then date range to review the resource is entered. Then, a viewing option is given to view Work Orders using the selected resource or to view Work Orders not using the selected resource. Header: ❑ Company name ❑ Report title ❑ Date range Line items: ❑ Order ID ❑ Customer name ❑ Packing List ID ❑ Ship date ❑ Ship quantity ❑ Sales ❑ Material cost ❑ Part ID ❑ Part description ❑ Want quantity ❑ Resource
4.6.1.8 Expected Throughput by Resource Report	The *Expected Throughput by Resource Inquiry Report* is intended for use after a bottleneck is identified to determine the orders in the future that should generate maximum throughput for time spent at bottleneck resources. First, the resource ID is selected. Then, two viewing options are given to view Work Orders using the selected resource or to view Work Orders not using the selected resource. Header: ❑ Company name ❑ Report title ❑ Date range Line items: ❑ Work Order ID ❑ Order ID ❑ Customer name ❑ Ship quantity ❑ Sales ❑ Material cost ❑ Part ID ❑ Part description

	❑ Want quantity ❑ Resource
4.6.1.9 Revenue Report	The *Revenue Reports* contain the dollar value of all Customer Orders shipped within each month. The report appears with 12 monthly buckets and Customer Orders appear in the appropriate bucket based on the ship date. The finish date is the finish date of the last operation of the Work Order that is linked to the Customer Order line. If multiple shop schedules are used, separate print lines appear for each schedule. The reports are printed for a user given start date and user selected schedule. There is a summary and detail report options and order configurations as shown in the list below. The reports can be printed, viewed, e-mailed, or sent to a file. Report order configurations: ❑ Customer Orders ❑ Work Orders ❑ Customer Orders and Work Orders Report early / late options: ❑ Early orders under (given) days early ❑ Late orders over (given) days late ❑ Early orders under (given) days early and late orders over (given) days late
4.6.1.9.1 Revenue Summary Report	This is the *Summary Version* of the revenue report. Header: ❑ Company name ❑ Report title ❑ Starting date Schedule header: ❑ Schedule ID Line items: ❑ Label information ❑ Month 1, 2, 3, ..., 12 Revenue(s) ❑ Total Revenue for all 12 months
4.6.1.9.2 Revenue Customer or Work Order Detial Report	This is the *Customer **or** Work Order Detialed Version* of the revenue report. Header: ❑ Company name ❑ Report title ❑ Starting date Schedule header: ❑ Schedule ID Month header: ❑ Month Line items: ❑ Scheduled finish date ❑ Desired want (ship) date ❑ Days late or early ❑ Order ID (customer / Work Order) ❑ Part ID ❑ Quantity remaining ❑ Unit price

	❑ Discount percent ❑ Extended price Month footer: ❑ Extended price total Schedule footer: ❑ Extended price grand total
4.6.1.9.3 Revenue Customer and Work Order Detail Report	This is the *Customer **and** Work Order Detailed Version* of the revenue report. Header: ❑ Company name ❑ Report title ❑ Starting date Schedule header: ❑ Schedule ID Month header: ❑ Month Line items: ❑ Scheduled finish date ❑ Desired want (ship) date ❑ Days late or early ❑ Order ID (customer / Work Order) ❑ Part ID ❑ Work Order quantity remaining to be received into inventory from ❑ Work Order unit price ❑ Work Order extended price ❑ Customer Order quantity remaining to be shipped ❑ Customer Order unit price ❑ Customer Order discount percent ❑ Customer Order extended price Month footer: ❑ Work Order extended price total ❑ Customer Order extended price total Schedule footer: ❑ Work Order extended price grand total ❑ Customer Order extended price grand total
4.6.1.10 Resource Utilization Report	The *Resource Utilization Inquiry Report* is used to identify bottleneck resource(s). It determines which resource has the least capacity. This report is given for a single schedule for a given date range for any or all resources. This report can be viewed, printed, or sent to a file. Header: ❑ Company name ❑ Run comments (utilization inquiry report) Resource ID header: ❑ Resource ID ❑ Resource description

	Date Range header: ❑ Date range Line items: ❑ Want date ❑ Day of week ❑ Load hours ❑ Capacity hours ❑ Load/Capacity ratio Date Range footer: ❑ Sum of load hours ❑ Sum of capacity hours ❑ Sum of Load/Capacity ratio Report footer: ❑ Sum of load hours ❑ Sum of capacity hours ❑ Sum of Load/Capacity ratio
4.6.1.11 Resource Delay Report	The *Resource Delay Reports* show the total amount of delay in days from scheduled operations for shop resources and/or material over a given time period (horizon in days). The report can be printed, viewed or sent to a file. A report starting date is required to give the horizon being. The start date is generated by the system from the date that the physical count was initialized for that physical count. The user needs to be able to change this date if desired. Report setup selection criteria are: ❑ Schedule selection of any or all schedules (default = standard schedule) ❑ Delay(s) selection from any or all of: o Resource(s) causing delay o Material(s) causing delay ❑ Sort order can be done by: o Most to least delayed o Least to most delayed ❑ Resource range selection is used to restrict the report scope (default = full range). ❑ Shop floor views can also be used to restrict the repot scope. ❑ Print options are (as shown below) ❑ Summary ❑ Detail
4.6.1.11.1 Delay Summary Report	This is the *Summary Version* of the resource delay report. This report gives one line of information for each resource and/or material that is delayed for each schedule selected over the horizon time given in days. Page header: ❑ Report Title based on report selection made above. ❑ Report Starting Date (default horizon = 14 days) Schedule header: ❑ Schedule ID / Schedule Description Detail line: ❑ Resource ID (operation and/or material) ❑ Delay quantity per horizon day
4.6.1.11.2 Delay	This is the *Detailed Version* of the resource delay report. This report includes part and

Detail Report	operation information and allows a user to specify a horizon length. Page header: ❑ Report title based on report selection made above. ❑ Report date range, per starting date and horizon (default horizon = 14 days) Schedule header: ❑ Schedule ID / Schedule Description Resource header: ❑ Resource ID / Resource Description Detail line: ❑ Work Order ID / description ❑ Part ID / description ❑ Operation sequence number ❑ Delayed start date (start date with delayed time included) ❑ Could start date (start date if no delay was present) ❑ Delayed time (days) ❑ Delay reason (material or resource causing delay)
4.6.2 Create Soft Allocations	The first step in viewing throughput data is to create soft allocations. Soft Allocations is the process of matching up supply (Work Orders and inventory) with demand (Customer Orders). This function is needed to determine throughput. It determines where to get the material and service cost data to subtract from selling price data for each Customer Order line item. The Soft Allocations run parameters are established, an automatic execution schedule, and then the actual allocation procedure is performed on a regular basis.
4.6.2.1 Setup	There is an option to allocate linked orders first. With this setting all orders going through the allocation process that have a link to another order are processed first leaving the "general pool" of non-linked orders for soft allocation. There is an option to allocate unavailable inventory. The default is to not include unavailable inventory in the soft allocation process. There is an option to allocate on-hold inventory. The default is to not include on-hold inventory in the soft allocation process. The final option is to show a progress meter while the system is calculating the allocations.
4.6.2.2 Execution Schedule	Each day of the week can be chosen exclusive of one another for the soft allocation process to take place. For each selected day the time must also be specified. When the sub-system is running the soft allocations will then take place automatically based on this established schedule.
4.6.2.3 Perform Allocations	The Soft Allocation process can either be performed on demand or according to the execution schedule defined above. In the event that a report or data is requested from the system without the existence of soft allocations, then the system will automatically prompt the user for the need to perform Soft Allocations.
4.6.3 Actual Throughput	*Actual Throughput* is a measurement of past performance. Actual Invoiced amounts from shipments and actual material and outside service costs from Work Orders are used to compute it.
4.6.3.1 Input Parameters	The analysis is centered around the following input parameters: ❑ Ending date ❑ Graph type ❑ Period

4.6.3.1.1 Ending Date	The last date for the analysis.
4.6.3.1.2 Graph Type	The analysis can be displayed in any of the following graph types: ❑ Pie ❑ Line ❑ Bar Each graph type can be displayed in: ❑ 2D ❑ 3D
4.6.3.1.3 Period	The graph can be broken into the following periods: ❑ Monthly - The system shows the actual throughput shown for this calendar month and for each of the previous twelve (including same month last year) months. If an ending date is not supplied, the current calendar month is used as a default. ❑ Weekly - The system shows the actual throughput for a week and for each of the previous twelve weeks. The user can specify which day the week ends. The ending date can also be specified, which defaults to the current calendar date if not specified. ❑ Daily - The system shows the actual throughput for the date entered and for each of the previous twelve days. If an ending date is not specified, it defaults to the current system date.
4.6.3.2 Analysis Output	The output is a graphic depicting actual throughput.
4.6.3.3 Graphic Control Options	The output graphic can be controlled using the following options: ❑ 2D gallery ❑ 3D gallery ❑ Style ❑ Data ❑ Titles ❑ Axis ❑ 3D perspective ❑ Fonts ❑ Markers ❑ Trends ❑ Overlay ❑ Error bar ❑ Background ❑ Legend ❑ Labels ❑ System
4.6.3.3.1 2D Gallery	This controls the type of two dimensional graph that is desired.
4.6.3.3.2 3D Gallery	This controls the type of three dimensional graph that is desired.
4.6.3.3.3 Style	This controls the styles of the selected graph type.
4.6.3.3.4 Data	This is used to create a quick graph.
4.6.3.3.5 Titles	This is used to specify the titles to be displayed on the graph.
4.6.3.3.6 Axis	This is used to specify the X, Y, and Z axes.
4.6.3.3.7 3D Perspective	This controls the perspective of a three dimensional graph.
4.6.3.3.8 Fonts	This controls the fonts used for titles, labels, and legends.
4.6.3.3.9 Markers	This is used to control graph markers.
4.6.3.3.10 Trends	This is used to adjust statistical lines, limit lines, and curve fitting of the graph.
4.6.3.3.11 Overlay	This is used to add additional data on top of the graph.
4.6.3.3.12 Error Bar	This is used to add error bars to the graph.

4.6.3.3.13 Background	This controls the style and color of the text and background of the graph.
4.6.3.3.14 Legend	This specifies the location of the legend and permits renaming.
4.6.3.3.15 Labels	This is used to specify default labeling conventions.
4.6.3.3.16 System	This is used to adjust printing, export, color palette, and the template for the graph.
4.6.4 Expected Throughput	*Expected Throughput* is a way of recognizing what throughput will be in the future. It is driven by soft allocations to Customer Orders and scheduled Work Order finish dates.
4.6.4.1 Input Parameters	The analysis is centered around the following input parameters: ❑ Base date ❑ Graph type ❑ Period ❑ Selected schedules ❑ Throughput date
4.6.4.1.1 Base Date	This is the base date for the analysis. An option is provided to round up the finish date after a specified time of day.
4.6.4.1.2 Graph Type	The analysis can be displayed in any of the following graph types: ❑ Pie ❑ Line ❑ Bar Each graph type can be displayed in: ❑ 2D ❑ 3D
4.6.4.1.3 Period	The graph can be broken into the following periods: ❑ Monthly - The system shows the expected throughput for this calendar month and for each of the next twelve months for each selected schedule. ❑ Weekly - The system shows the expected throughput for the selected week and for each of the twelve previous weeks. ❑ Daily - The system shows the expected throughput for the specified date and for each of the next twelve days for each selected schedule.
4.6.4.1.4 Selected Schedules	One or more schedules are selected as part of the analysis.
4.6.4.1.5 Throughput Date	The throughput date can be either: ❑ Ship date ❑ Work Order schedule finish date ❑ Later of Work Order schedule finish date or a user specified number of days before ship date
4.6.4.2 Analysis Output	The output is a graphic depicting actual throughput.
4.6.4.3 Graphic Control Options	The output graphic can be controlled using the following options: ❑ 2D gallery ❑ 3D gallery ❑ Style ❑ Data ❑ Titles ❑ Axis ❑ 3D perspective ❑ Fonts ❑ Markers ❑ Trends ❑ Overlay ❑ Error bar ❑ Background ❑ Legend ❑ Labels

	❑ System
4.6.4.3.1 2D Gallery	This controls the type of two dimensional graph that is desired.
4.6.4.3.2 3D Gallery	This controls the type of three dimensional graph that is desired.
4.6.4.3.3 Style	This controls the styles of the selected graph type.
4.6.4.3.4 Data	This is used to create a quick graph.
4.6.4.3.5 Titles	This is used to specify the titles to be displayed on the graph.
4.6.4.3.6 Axis	This is used to specify the X, Y, and Z axes.
4.6.4.3.7 3D Perspective	This controls the perspective of a three dimensional graph.
4.6.4.3.8 Fonts	This controls the fonts used for titles, labels, and legends.
4.6.4.3.9 Markers	This is used to control graph markers.
4.6.4.3.10 Trends	This is used to adjust statistical lines, limit lines, and curve fitting of the graph.
4.6.4.3.11 Overlay	This is used to add additional data on top of the graph.
4.6.4.3.12 Error Bar	This is used to add error bars to the graph.
4.6.4.3.13 Background	This controls the style and color of the text and background of the graph.
4.6.4.3.14 Legend	This specifies the location of the legend and permits renaming.
4.6.4.3.15 Labels	This is used to specify default labeling conventions.
4.6.4.3.16 System	This is used to adjust printing, export, color palette, and the template for the graph.
4.6.5 Actual Throughput By Resource	*Actual Throughput by Resource* is used after a bottleneck is recognized. Actual throughput by Resource recognizes which orders in the past have generated maximum throughput for time spent at bottleneck resources.
4.6.5.1 Input Parameters	The analysis is centered around the following input parameters: ❑ Resource ID ❑ Starting date ❑ Ending date ❑ Work Orders using selected resource
4.6.5.1.1 Resource ID	The Shop Resource to be used for the analysis.
4.6.5.1.2 Starting Date	The starting date for the analysis.
4.6.5.1.3 Ending Date	The ending date for the analysis.
4.6.5.1.4 Work Order Using Selected Resource	Two modes are available: ❑ Show Work Orders using the selected resource ❑ Show Work Orders **not** using the selected resource
4.6.5.2 Analysis Output	The output is a table populated with the following information: ❑ Customer Order ID ❑ Customer name ❑ Packing List ID ❑ Packing List line number ❑ Ship date ❑ Part ID ❑ Part description ❑ Quantity shipped ❑ Work Order quantity ❑ Sales amount ❑ Material cost ❑ Service cost ❑ Throughput amount

	❑ Hours at resource ❑ Throughput per hour
4.6.5.2.1 Ship Date	The ship date from the Shipper.
4.6.5.2.2 Quantity Shipped	The total amount shipped from the Customer Order line.
4.6.5.2.3 Work Order Quantity	The quantity from the Work Order.
4.6.5.2.4 Sales Amount	Allocated quantity multiplied by the quantity allocated.
4.6.5.2.5 Material Cost	Material cost from the Work Order or inventory multiplied by the quantity allocated.
4.6.5.2.6 Service Cost	Service cost from the Work Order or inventory multiplied by the quantity allocated.
4.6.5.2.7 Throughput Amount	Sales amount less material cost and service cost.
4.6.5.2.8 Hours at Resource	The total amount of time reported at the resource for the Work Order that was the source of the material and service cost data distributed to the shipment.
4.6.5.2.9 Throughput Per Hour	Throughput amount multiplied by the hours spent at the resource.
4.6.6 Expected Throughput By Resource	*Expected Throughput by Resource* is used after the bottleneck resource has been identified. Expected throughput by Resource determines the orders in the future that should generate maximum throughput for time spent at a bottleneck resource. The analysis is centered around the following input parameters: ❑ Base date ❑ Graph type ❑ Period ❑ Schedule ID
4.6.6.1 Input Parameters	The analysis is centered around the following input parameters: ❑ Resource ID ❑ Work Orders using selected resource
4.6.6.1.1 Resource ID	The Shop Resource to be used for the analysis.
4.6.6.1.2 Work Order Using Selected Resource	Two modes are available: ❑ Show Work Orders using the selected resource ❑ Show Work Orders **not** using the selected resource
4.6.6.2 Analysis Output	The output is a table populated with the following information: ❑ Work Order ID ❑ Customer Order ID ❑ Customer name ❑ Part ID ❑ Part description ❑ Soft allocation quantity ❑ Work Order quantity ❑ Sales amount ❑ Material cost ❑ Service cost ❑ Throughput amount ❑ Hours at resource ❑ Throughput per hour
4.6.6.2.1 Soft Allocation Quantity	Quantity for this Work Order which was computed the last time the soft allocations were created.

4.6.6.2.2 Work Order Quantity	The quantity from the Work Order.
4.6.6.2.3 Sales Amount	Allocated quantity multiplied by the unit price, less discounts and commissions.
4.6.6.2.4 Material Cost	Material cost from the Work Order or inventory multiplied by quantity allocated.
4.6.6.2.5 Service Cost	Service Cost from the Work Order or inventory multiplied by the quantity allocated.
4.6.6.2.6 Throughput Amount	Sales amount less material cost and service cost.
4.6.6.2.7 Hours at Resource	The total amount of time reported at the named resource for the Work Order that was the source of the material and service cost date distributed to the shipment.
4.6.6.2.8 Throughput Per Hour	Throughput amount multiplied by the hours at the resource.
4.6.7 Utilization	*Utilization* is a way of identifying bottleneck resources. It determines which resource has the least capacity.
4.6.7.1 Input Parameters	The analysis is centered around the following input parameters: ❑ Starting date ❑ Ending date ❑ Resource ID ❑ Schedule ID ❑ Shop view ❑ Include planned orders? ❑ Multiple resource options ❑ Single resource options ❑ Graph type
4.6.7.1.1 Starting Date	The starting date for the analysis.
4.6.7.1.2 Ending Date	The ending date for the analysis.
4.6.7.1.3 Resource ID	A single selected resource or all resources for inclusion in the analysis.
4.6.7.1.4 Schedule ID	One or more schedules to be used in the analysis.
4.6.7.1.5 Shop View	A single selected shop view or all shop views for inclusion in the analysis.
4.6.7.1.6 Include Planned Orders?	A flag indicating if planned order are to be included in the analysis. The default is to include them.
4.6.7.1.7 Multiple Resource Options	These options are only available if the all resources option is selected above. Three modes are available: ❑ Show top ‘n’ used resources ❑ Show bottom ‘n’ used resources ❑ Show all resources The value of ‘n’ is supplied by the user with a default of 10. There is also an option to exclude unused resources in the output. The default is to include them.
4.6.7.1.8 Single Resource Options	The following options are available when only one resource is selected above: ❑ Monthly – The system displays the actual throughput for this calendar month and for each of the previous 12 (including same month last year) months. If an ending date is not supplied the current calendar month is used. ❑ Weekly – The system displays the actual throughput for a week and for each of

	the previous twelve weeks. The day can be specified on which the week ends. The ending date can also be specified. If the date is not specified the system defaults to the current calendar date. ❑ Daily – The system displays the actual throughput for the date entered and for each of the previous twelve days. If an ending date is not specified the system defaults to the current date.
4.6.7.1.9 Graph Type	The analysis can be displayed in any of the following graph types: ❑ Pie ❑ Line ❑ Bar Each graph type can be displayed in: ❑ 2D ❑ 3D
4.6.7.2 Analysis Output	The output is a graphic depicting actual throughput.
4.6.7.3 Graphic Control Options	The output graphic can be controlled using the following options: ❑ 2D gallery ❑ 3D gallery ❑ Style ❑ Data ❑ Titles ❑ Axis ❑ 3D perspective ❑ Fonts ❑ Markers ❑ Trends ❑ Overlay ❑ Error bar ❑ Background ❑ Legend ❑ Labels ❑ System
4.6.7.3.1 2D Gallery	This controls the type of two dimensional graph that is desired.
4.6.7.3.2 3D Gallery	This controls the type of three dimensional graph that is desired.
4.6.7.3.3 Style	This controls the styles of the selected graph type.
4.6.7.3.4 Data	This is used to create a quick graph.
4.6.7.3.5 Titles	This is used to specify the titles to be displayed on the graph.
4.6.7.3.6 Axis	This is used to specify the X, Y, and Z axes.
4.6.7.3.7 3D Perspective	This controls the perspective of a three dimensional graph.
4.6.7.3.8 Fonts	This controls the fonts used for titles, labels, and legends.
4.6.7.3.9 Markers	This is used to control graph markers.
4.6.7.3.10 Trends	This is used to adjust statistical lines, limit lines, and curve fitting of the graph.
4.6.7.3.11 Overlay	This is used to add additional data on top of the graph.
4.6.7.3.12 Error Bar	This is used to add error bars to the graph.
4.6.7.3.13 Background	This controls the style and color of the text and background of the graph.
4.6.7.3.14 Legend	This specifies the location of the legend and permits renaming.
4.6.7.3.15 Labels	This is used to specify default labeling conventions.
4.6.7.3.16 System	This is used to adjust printing, export, color palette, and the template for the graph.
4.6.8 Contention	*Contention* identifies bottleneck resources. It determines at which resource it is most

	difficult to schedule work.
4.6.8.1 Input Parameters	The analysis is centered around the following input parameters: ❑ Starting date ❑ Ending date ❑ Resource ID ❑ Schedule ID ❑ Shop view ❑ Graph type ❑ Period ❑ Load options
4.6.8.1.1 Starting Date	The starting date for the analysis.
4.6.8.1.2 Ending Date	The ending date for the analysis.
4.6.8.1.3 Resource ID	A single selected resource or all resources for inclusion in the analysis.
4.6.8.1.4 Schedule ID	One or more schedules to be used in the analysis.
4.6.8.1.5 Shop View	A single selected shop view or all shop views for inclusion in the analysis.
4.6.8.1.6 Graph Type	The analysis can be displayed in any of the following graph types: ❑ Pie ❑ Line ❑ Bar Each graph type can be displayed in: ❑ 2D ❑ 3D
4.6.8.1.7 Period	The graph can be broken into the following periods: ❑ Monthly – Data is displayed for this calendar month and for each of the next twelve months for each selected schedule ❑ Weekly – Data is displayed for the week specified and for each of the twelve previous weeks ❑ Daily – Data is displayed for the entered date and for each of the next twelve days for each schedule selected
4.6.8.1.8 Load Options	The following are options: ❑ Ignore load exists during backward scheduling ❑ Ignore load exists for on time Work Orders ❑ Use first incident only – This only uses the first day of severity only. This reduces the number of days of severity. ❑ Include planned orders One of the following two must also be selected: ❑ Summarize load exists occurrences ❑ Summarize load exists severity
4.6.8.2 Analysis Output	The output is a graphic depicting contention.
4.6.8.3 Graphic Control Options	The output graphic can be controlled using the following options: ❑ 2D gallery ❑ 3D gallery ❑ Style ❑ Data ❑ Titles ❑ Axis ❑ 3D perspective ❑ Fonts

	❑ Markers ❑ Trends ❑ Overlay ❑ Error bar ❑ Background ❑ Legend ❑ Labels ❑ System
4.6.8.3.1 2D Gallery	This controls the type of two dimensional graph that is desired.
4.6.8.3.2 3D Gallery	This controls the type of three dimensional graph that is desired.
4.6.8.3.3 Style	This controls the styles of the selected graph type.
4.6.8.3.4 Data	This is used to create a quick graph.
4.6.8.3.5 Titles	This is used to specify the titles to be displayed on the graph.
4.6.8.3.6 Axis	This is used to specify the X, Y, and Z axes.
4.6.8.3.7 3D Perspective	This controls the perspective of a three dimensional graph.
4.6.8.3.8 Fonts	This controls the fonts used for titles, labels, and legends.
4.6.8.3.9 Markers	This is used to control graph markers.
4.6.8.3.10 Trends	This is used to adjust statistical lines, limit lines, and curve fitting of the graph.
4.6.8.3.11 Overlay	This is used to add additional data on top of the graph.
4.6.8.3.12 Error Bar	This is used to add error bars to the graph.
4.6.8.3.13 Background	This controls the style and color of the text and background of the graph.
4.6.8.3.14 Legend	This specifies the location of the legend and permits renaming.
4.6.8.3.15 Labels	This is used to specify default labeling conventions.
4.6.8.3.16 System	This is used to adjust printing, export, color palette, and the template for the graph.

4.7 Purchasing	This is the sub-system that is used for entering and maintaining Purchase Orders. Purchasing involves the following functionality: ❑ Creating a Purchase Order from a variety of sources automatically ❑ Creating a Request for Quote (RFQ) to solicit vendor proposals ❑ Purchasing inventory, non-inventory, and subcontracted services ❑ Creating and/or linking Work Orders to Purchase Orders ❑ Pricing based on vendor, part number, and quantity ❑ Conversion of unit of measure ❑ Dispatching of subcontracted services ❑ Flexible order lookup and status checking
4.7.1 General Purchasing Reports	
4.7.1.1 Purchase Order Acknowledgement	The *Purchase Order Acknowledgment* report is a hard copy to be sent to the vendor to confirm a Purchase Order. Also provided are three user-defined alternates of the acknowledgment form. The Reports can be printed individually or in batches of Firm status orders based on a "through date" of orders not previously printed. Also, a printing option is to release-status of firmed order(s) after printed. Once printed, the system flags the order(s) printed by a date/time stamp, unless, a "draft-print" mode is selected. Purchase Order Acknowledgments can only be printed – not be viewed. Header: ❑ Company name ❑ Report title ❑ Buy rate ❑ Buyer ❑ Currency extended cost ❑ Currency fixed charge ❑ Currency freight ❑ Currency name ❑ Desired Receive Date ❑ Draft ❑ Free on Board (FOB) ❑ Order date ❑ Printed date ❑ Promise date ❑ Purchase Order number ❑ Purchase Order specification (long description) ❑ Sell rate ❑ Ship-To address ❑ Ship Via ❑ Terms ❑ Vendor address ❑ Vendor contact ❑ Vendor contact fax ❑ Vendor contact phone ❑ Vendor contact position ❑ Vendor ID ❑ Vendor name Line items: ❑ Delivery date ❑ Desired received date ❑ Discount unit price ❑ Drawing ID

	❑ Drawing revision number ❑ Estimated freight ❑ Extended cost ❑ Fixed charge ❑ General Ledger expense account ID ❑ Line number ❑ Linked jobs advice ❑ Long description ❑ Manufacture name ❑ Manufacture part ID ❑ Order quantity ❑ Part description ❑ Part ID ❑ Part long description ❑ Price ❑ Promise date ❑ Purchase unit of measure ❑ Received quantity ❑ Service description ❑ Service ID ❑ Service long description ❑ Trade discount percent ❑ Unit price ❑ Vendor part ID Dimensional inventory information: ❑ Dimensional unit of measure ❑ Height ❑ Length ❑ Width Footer: ❑ Currency grand total
4.7.1.2 Value Added Tax Purchase Order Acknowledgement	The *Valued Added Tax (VAT) Report* for Purchase Order Acknowledgement is the same as the Purchase Order Acknowledgment Report above with the following additional information: Additional header information: ❑ VAT Registration ❑ Vendor VAT Registration Additional line items: ❑ VAT amount ❑ VAT code ❑ VAT percent ❑ VAT receivable amount ❑ VAT receivable percent Additional footer information: ❑ Currency subtotal ❑ Currency VAT receivable subtotal ❑ Currency VAT subtotal
4.7.1.3 Purchase Order List Report	The *Purchase Order List Report* lists all orders and can be printed, viewed, or sent to a file. Orders can be selected individually or printed in batch mode. Batch printing is based on a date range of order entry, and on order status.

	The batch report can be sorted by: ❑ Purchase Order ❑ Vendor When sorted by vendor, the batch report can be further narrowed by a vendor-range, if entered. Output can be summary, detailed, or delivery schedule detailed. For all Reports the system currency is used. Report information: ❑ Detailed report also includes: the order header, and each line item, with: quantity, part/description, unit price, discount percent, order amount, amount shipped. ❑ Delivery detail gives the delivery schedule detail.
4.7.1.3.1 Summary Version	This is the *Summary Version* of the Purchase Order list report. This report gives one line of information for each Purchase Order as follows: Header: ❑ Company name ❑ Report name Order footer: ❑ Purchase Order ID ❑ Vendor ID ❑ Vendor name ❑ Order date ❑ Desired receive date ❑ Status ❑ Total order amount Report footer: ❑ Grand total amount
4.7.1.3.2 Detail Version	This is the *Detailed Version* of the Purchase Order list report. This report very detailed about the vendor and the material or service for each Purchase Order as follows: Header information: ❑ Report name Purchase Order header: ❑ Purchase Order ID ❑ Vendor ID ❑ Vendor name ❑ Order date ❑ Desired receive date ❑ Status ❑ Ship-To address ❑ Vendor address ❑ Vendor contact name ❑ Vendor contact phone ❑ Vendor contact fax ❑ Buyer ❑ Free on Board ❑ Ship Via Line items (note: This detail line can be for a Part or a Service): ❑ Line number ❑ Order quantity

	❑ Received quantity ❑ Part ID or service ID ❑ Unit price ❑ Discount percent ❑ Fixed charge ❑ Order amount ❑ Received amount Purchase Order footer: ❑ Order amount total per Purchase Order ❑ Received amount total per Purchase Order Report footer: ❑ Order amount grand total ❑ Received amount grand total
4.7.1.3.3 Delivery Schedules Version	This is the Delivery Schedules Version of the Purchase Order list report. This report is the same as the detailed report above with the addition of line item delivery schedule information as follows: Additional line items: ❑ Delivery scheduled line number ❑ Delivery scheduled order quantity ❑ Delivery scheduled received quantity ❑ Delivery scheduled desired receive date ❑ Delivery scheduled actual receive date
4.7.1.4 Open Purchase Orders Report	The *Open Purchase Orders Report* is given of all Purchase Orders with a status of firm or release. They can be printed, viewed, or sent to a file. Orders can be selected by a vendor or by all vendors. The report list can be further narrowed by a through-date. The through-date is the Purchase Order's desired receive date up to and including this date. The report can be sequenced by: ❑ Purchase Order ❑ Vendor ❑ Part ❑ Service Each of the report output sequences can optionally include the delivery schedules information with in the line item section as follows: ❑ Delivery scheduled line number ❑ Delivery scheduled order quantity ❑ Delivery scheduled received quantity ❑ Delivery scheduled desired receive date ❑ Delivery scheduled actual receive date
4.7.1.4.1 Open Purchase Orders (sort by: Purchase Order)	This is the *Purchase Order Sorted* version of the open Purchase Order report. Header: ❑ Report title ❑ Sort sequence used Purchase Order header: ❑ Purchase Order ID ❑ Purchase Order vendor ID ❑ Purchase Order vendor name ❑ Purchase Order vendor contact ❑ Purchase Order vendor phone

	❑ Purchase Order date ordered ❑ Purchase Order buyer ❑ Purchase Order Ship Via ❑ Purchase Order desired receive date Line items: ❑ Purchase Order line number ❑ Purchase Order part ID or service ID ❑ Purchase Order part description or service description ❑ Purchase Order vendor part ID ❑ Purchase Order quantity still due = order quantity – received quantity ❑ Purchase unit of measure
4.7.1.4.2 Open Purchase Orders (sort by: Vendor)	This is the *Vendor Sorted* version of the open Purchase Order report. Header: ❑ Report title ❑ Sort sequence used Purchase Order vendor ID header: ❑ Purchase Order vendor ID ❑ Purchase Order vendor name Purchase Order ID header: ❑ Purchase Order ID ❑ Purchase Order date ordered ❑ Purchase Order buyer ❑ Purchase Order Ship Via ❑ Purchase Order desired receive date Line items: ❑ Purchase Order line number ❑ Purchase Order part ID or service ID ❑ Purchase Order part description or service description ❑ Purchase Order vendor part ID ❑ Purchase Order quantity still due = order quantity – received quantity ❑ Purchase unit of measure
4.7.1.4.3 Open Purchase Orders (sort by: Part)	This is the *Part Sorted* version of the open Purchase Order report. Header: ❑ Report title ❑ Sort sequence used Part ID per Purchase Order line header: ❑ Part ID per Purchase Order line ❑ Part Description per Purchase Order line Line items: ❑ Purchase Order ID ❑ Purchase Order vendor ID ❑ Purchase Order vendor name ❑ Purchase Order line number ❑ Purchase Order date ordered ❑ Purchase Order desired receive date ❑ Purchase Order quantity still due = order quantity – received quantity ❑ Purchase unit of measure

4.7.1.4.4 Open Purchase Orders (sort by: Service)	This is the *Service Sorted* version of the open Purchase Order report. Header: ❑ Report title ❑ Sort sequence used Service ID header per Purchase Order items: ❑ Service ID per line item ❑ Service description Line items: ❑ Purchase Order ID ❑ Purchase Order vendor ID ❑ Purchase Order vendor name ❑ Purchase Order line number ❑ Purchase Order date ordered ❑ Purchase Order desired receive date ❑ Purchase Order quantity still due = order quantity – received quantity ❑ Purchase unit of measure
4.7.1.5 Open Linked Purchase Orders	The *Open Linked Purchase Orders Report* prints for all open Purchase Orders that are linked to a Work Order, for a user given Work Order range. The report can be sequenced per the list below. The report can optionally include the delivery schedules and/or bar code information. They can be printed, viewed, e-mailed, or sent to a file. The reports can be sequenced by: ❑ Vendor ❑ Part ❑ Work Order range
4.7.1.5.1 Open Linked Purchase Orders (Sort: Vendor)	This is the *Vendor ID Sorted* version of the open linked Purchase Orders report. Header: ❑ Company name ❑ Report title ❑ Sort sequence used Vendor header: ❑ Vendor ID ❑ Vendor name Work Order header: ❑ Work Order ID Purchase Order header: ❑ Operation sequence number ❑ Required piece number ❑ Purchase Order ID (optional bar code) ❑ Purchase Order date ❑ Buyer ❑ Ship Via ❑ Desired receive date of Purchase Order ❑ Required date scheduled Line items: ❑ Line number (optional bar code) ❑ Part ID (if exists) (optional bar code)

	❑ Part description (if exists) ❑ Service ID (if exists) ❑ Service description (if exists) ❑ Vendor part ID ❑ Quantity due (=quantity ordered - quantity received) ❑ Unit of measure (purchased units) Line items: (optional delivery schedule information) ❑ Delivery schedule line number ❑ Quantity ordered ❑ Quantity received ❑ Desired receive date ❑ Actual received date
4.7.1.5.2 Open Linked Purchase Orders (Sort: Part)	This is the *Part ID Sorted* version of the open linked Purchase Orders report. Header: ❑ Company name ❑ Report title ❑ Sort sequence used Part header: ❑ Part ID (if exists) (optional bar code) ❑ Part description (if exists) Service header: ❑ Service ID (if exists) ❑ Service description (if exists) Work Order header: ❑ Work Order ID Purchase Order header: ❑ Operation sequence number ❑ Required piece number ❑ Purchase Order ID (optional bar code) ❑ Purchase Order date ❑ Buyer ❑ Ship Via ❑ Desired receive date of Purchase Order ❑ Required date scheduled ❑ Vendor ID ❑ Vendor name Line items: ❑ Line number (optional bar code) ❑ Vendor part ID ❑ Quantity due (=quantity ordered - quantity received) ❑ Unit of measure (purchased units) Line items: (optional delivery schedule information) ❑ Delivery schedule line number ❑ Quantity ordered ❑ Quantity received ❑ Desired receive date ❑ Actual received date

4.7.1.5.3 Open Linked Purchase Orders (Sort: Work Order)	This is the *Work Order ID Sorted* version of the open linked Purchase Orders report. Header: ❑ Company name ❑ Report title ❑ Sort sequence used Work Order header: ❑ Work Order ID Purchase Order header: ❑ Operation sequence number ❑ Required piece number ❑ Purchase Order ID (optional bar code) ❑ Purchase Order date ❑ Buyer ❑ Ship Via ❑ Desired receive date of Purchase Order ❑ Required date scheduled ❑ Vendor ID ❑ Vendor name Line items: ❑ Line number (optional bar code) ❑ Part ID (if exists) (optional bar code) ❑ Part description (if exists) ❑ Service ID (if exists) ❑ Service description (if exists) ❑ Vendor part ID ❑ Quantity due (=quantity ordered - quantity received) ❑ Unit of measure (purchased units) Line items: (optional delivery schedule information) ❑ Delivery schedule line number ❑ Quantity ordered ❑ Quantity received ❑ Desired receive date ❑ Actual received date
4.7.1.6 Request for Quote Form	The *Vendor Request for Quote Form* generates a output to be sent to a supplier so that they may quote on requested product by a user given quantity breaks. The form can be generated by quote, vendor, or all requests. Allow three user defined form formats. The form can be viewed, e-mailed, printed, or sent to a file. The form can be printed for: ❑ Print current Request for Quote ❑ Print current request for selected vendor ❑ Print all open requests (unquoted and unexpired) Header: ❑ Request for Quote ID ❑ Vendor ID ❑ Vendor name ❑ Vendor address (street, city, state, zip) ❑ Request date ❑ Ship Via

	❑ Free on Board Part header: ❑ Part ID (if exists) ❑ Part description (if exists) Service header: ❑ Service ID (if exists) ❑ Service description (if exists) Line items: ❑ Line long description ❑ Item (part or service) long description ❑ Quantity break 1 requested for quote ❑ Quantity break 2 requested for quote ❑ Quantity break 3 requested for quote ❑ Quantity break 4 requested for quote
4.7.1.7 Request for Quote Log	The *Request for Quote (RFQ) Log Report* generates a list of quote request activity. The report is generated for a user given RFQ ID range and/or date range. The report can be as formatted per the list below. The form can be viewed, e-mailed, printed, or sent to a file. The reports can be formatted by: ❑ Vendors ❑ Parts/Services ❑ Vendor Quotes
4.7.1.7.1 RFQ Log (sort: Vendors)	This is the *Vendor Formatted* version of the Request for Quote log report. Header: ❑ Company name ❑ Report title ❑ Date range - user given ❑ Request for Quote range - user given ❑ Request for Quote ID ❑ Request date ❑ Customer quote ID ❑ Buyer ❑ Free on Board ❑ Ship Via ❑ Entity ID ❑ Status Line items: ❑ Vendor ID ❑ Vendor name ❑ Quoted date ❑ Follow-up date ❑ Expected date ❑ Expiration date
4.7.1.7.2 RFQ Log (sort: Part / Services)	This is the *Part / Service Formatted* version of the Request for Quote log report. Header: ❑ Company name ❑ Report title ❑ Date range - user given

	❑ Request for Quote range - user given ❑ Request for Quote ID ❑ Request date ❑ Customer quote ID ❑ Buyer ❑ Free on Board ❑ Ship Via ❑ Entity ID ❑ Status Line items: ❑ Line number ❑ Part ID ❑ Part description ❑ Vendor part ID ❑ Manufacture name ❑ Manufacture part ID ❑ Unit of measure purchased in
4.7.1.7.3 RFQ Log (sort: Vendor Quotes)	This is the *Vendor Quotes Formatted* version of the Request for Quote log report. Header: ❑ Company name ❑ Report title ❑ Date range - user given ❑ Request for Quote range - user given Request for Quote header: ❑ Request for Quote ID ❑ Request date ❑ Customer quote ID ❑ Buyer ❑ Free on Board ❑ Ship Via ❑ Entity ID ❑ Status Line items: ❑ Line number ❑ Part ID ❑ Part description ❑ Vendor ID ❑ Vendor name ❑ Vendor status ❑ Quantity break 1, 2, 3, ..., 10 ❑ Unit price 1, 2, 3, ..., 10
4.7.1.8 Purchased Service Dispatch Form	The *Purchased Service Dispatch Form* is created to record information for parts that are sent to an outside service vendor. The report can be viewed, printed, or sent to a file. This report can be printed for a single Service Dispatch or for all Dispatches done on a given date. Header: ❑ Report title ❑ Sort sequence used

	Purchase Order header: ❑ Purchase Order ID ❑ Purchase Order vendor ID ❑ Purchase Order vendor name ❑ Purchase Order date ordered ❑ Purchase Order buyer Dispatch ID header: ❑ Dispatch ID ❑ Purchase Order line Dispatched date Line items: ❑ Line number ❑ Service ID ❑ Service description ❑ Order quantity ❑ Dispatched quantity ❑ Purchase unit of measure ❑ Vendor service ID ❑ Linked job information
4.7.1.9 Purchased Service Dispatch Order Packing Lists Form	The *Purchased Service Dispatch Order Packing List Form* is used to send with the parts going to the outside service provider. Header: ❑ Purchase Order ID ❑ Dispatch ID ❑ Vendor ID ❑ Vendor address ❑ Ship-To address ❑ Ship Via ❑ Free on Board ❑ Buyer Line items: ❑ Order quantity ❑ Dispatched quantity ❑ Service ID ❑ Service description ❑ Part ID ❑ Part description ❑ Unit of measure
4.7.1.10 Transportation Documents	The *Transportation Documents* is a status report of inventory that can be produced on demand which details the location and value of inventory and why it was shipped. This option is only available if Shipment Tracking has been enabled and after an Interbranch Transfer shipment has accrued. Header: ❑ Transportation document ID ❑ Ship date ❑ Shipped by (sending company, receiving company, carrier) ❑ Sending company name and address (street, city, state, zip) ❑ Receiving company name and address (street, city, state, zip) ❑ Shipped to company name and address (street, city, state, zip) ❑ Sending company VAT registration ID

	❑ Receiving company VAT registration ID ❑ Shipped to company VAT registration ID ❑ Ship reason description ❑ Order ID ❑ Order date Line item: ❑ Shipped quantity ❑ Part ID ❑ Part description ❑ Amount Footer: ❑ Package type ❑ Carton count ❑ Weight total ❑ Shipping Terms ❑ Carrier name and address (street, city, state, zip) ❑ Carrier VAT registration ID ❑ Document notes
4.7.1.11 Vendor List Report	The *Vendor List Report* is generated for a given vendor range. This report can be viewed, printed, e-mailed, or sent to a file. This vendor Report outputs information for about a vendor, like name, address(s), and contact(s). vendor ID sorted by default. Barcodes can be included in this report for system using barcode. Header: ❑ Vendor ID range Line items: ❑ Vendor ID ❑ Vendor name ❑ Vendor address ❑ Vendor remit to name ❑ Vendor remit to address ❑ Contact name ❑ Contact phone ❑ Contact fax ❑ Currency ID ❑ Barcode ❑ Buyer Footer: ❑ Count number of vendors printed
4.7.1.12 Vendor Label	The *Vendor Label* is used to print the shipping label for the parts going to the service vendor. Line items: ❑ Vendor name ❑ Vendor address
4.7.1.13 Master Material Availability Report	The *Work Order/Master Material Availability Report* will show all the materials available to a given Work Order/Master . Header: ❑ Work Order/Master ID ❑ Work Order/Master Revision

	❑ Description ❑ Work Order/Master Sub/Lot/Split (if they exist) Line items: ❑ Quantity required ❑ Quantity issued ❑ Required date ❑ Projected quantity ❑ Quantity On-Hand ❑ Open Purchase Order ID ❑ Open Purchase Order Status ❑ Open Purchase Order Desired receive date ❑ Open Purchase Order Promise receive date ❑ Open Purchase Order Quantity Ordered
4.7.2 Create Request for Quote (RFQ)	A Request for Quote (RFQ) can optionally be created to solicit quotes from vendors to start the purchasing process. This is the functionality for creating a vendor Request for Quote (RFQ). It includes: ❑ Source of the RFQ ❑ Creation of the header ❑ Creation of line level detail ❑ Printing the RFQ ❑ Vendor quotes ❑ Approval of the RFQ
4.7.2.1 RFQ Source	The creation of an RFQ can originate from two sources: ❑ From the Quote Master attached to a quote ❑ Manually
4.7.2.1.1 Generate RFQ From Quote	The RFQ can be created directly for materials in the Quote Master. The applicable information is taken from the Quote Master and entered into the RFQ. Materials must either have a vendor directly defined in the Quote Master or have a preferred vendor defined in the Part Master.
4.7.2.1.2 Create RFQ Manually	For this mode, all detail of the RFQ is entered manually.
4.7.2.2 Create RFQ Header	The RFQ header is created with the following required information: ❑ Request ID ❑ Request date ❑ Vendor ID ❑ Vendor name and address ❑ Status ❑ Entity ID ❑ Contact information The following are optional: ❑ Free on Board (FOB) ❑ Ship Via ❑ Buyer ❑ Customer quote ID ❑ Quoted date ❑ Follow up date ❑ Expiration date ❑ Expected date ❑ RFQ notes ❑ RFQ specifications ❑ Vendor notes
4.7.2.2.1 Request	This is the date of the Request for Quote. The default date is the current date and can be

Date	changed at any time.
4.7.2.2.2 Vendor ID	The selected vendor from the Vendor Master for this RFQ. This is not required.
4.7.2.2.3 Vendor Name and Address	If this is a prospect and **not** an existing vendor, this information can simply be entered without the vendor ID. This procedure does **not** add the prospect to the Vendor Master. However, there will be a name associated with the Request for Quote.
4.7.2.2.4 Status	Each RFQ has a status to indicate the progression through the decision cycle. These statuses are: ❑ Active ❑ Closed ❑ Cancelled/Void The order status can be changed from any status to another at any time.
4.7.2.2.5 Entity ID	An entity is associated with each RFQ. The entity defines which financial entity to which the Purchase Order eventually posts. If there is only one entity defined in the system, then that default is used so that no user entry is required.
4.7.2.2.6 Contact Information	The primary contact person with the vendor this Purchase Order. The following information is included: ❑ Title ❑ First name ❑ Middle initial ❑ Last name ❑ Salutation ❑ Position ❑ Phone number ❑ Fax number
4.7.2.2.7 Free on Board	A Free on Board (FOB) Point is optionally associated with each RFQ. The FOB Point is intended as reference information for the vendor and for internal use. There is no functionality behind this FOB Point association. If a vendor is selected for the RFQ and default FOB Point has been associated with that vendor, then that particular FOB Point is automatically entered into the RFQ. This default FOB Point can be over-ridden. However, doing so will not change any records other than the RFQ. The FOB Point can be chosen from a pre-defined list of FOB Points that is maintained by the user. However, free-form text can be stored as the FOB Point. The FOB Point Master contains the following: ❑ ID
4.7.2.2.8 Ship Via	A Ship Via is optionally associated with each RFQ Order The Ship Via is intended as reference information for the vendor and for internal use. There is no functionality behind this Ship Via association. If a vendor is selected for the RFQ and default Ship Via has been associated with that vendor, then that particular Ship Via is automatically entered into the RFQ. This default Ship Via can be over-ridden. However, doing so will not change any records other than the RFQ. The Ship Via can be chosen from a pre-defined list of Ship Via's that is maintained by the user. However, free-form text can be stored as the Ship Via. The Ship Via Master contains the following: ❑ ID
4.7.2.2.9 Buyer	The Buyer is defined using free-form text to identify the internal person responsible for this RFQ. Upon entry into the screen, the default Buyer is the person logged into the system. The Buyer is used primarily for sorting and retrieving messages during the material planning process.
4.7.2.2.10 Customer Quote ID	This is the associated Customer quote from the Estimating and quoting subsystem.
4.7.2.2.11 Quoted Date	This is the date of the returned quote information.
4.7.2.2.12 Followup Date	The date when a follow up call to the vendor is deemed appropriate. Generally this date is set earlier than the expiration date and can be changed as needed.

4.7.2.2.13 Expiration Date	The expiration date for this RFQ.
4.7.2.2.14 Expected Date	The expected response date from the vendor for this RFQ.
4.7.2.3 Create RFQ Line	Each RFQ line is defined by the following: ❑ Part ID ❑ Service ID ❑ Description ❑ Vendor part ID ❑ Manufacturer ❑ Manufacturer part ID ❑ Purchase unit of measure ❑ Quoted quantity 1 ❑ Quoted quantity 2 ❑ Quoted quantity 3 ❑ Quoted quantity 4 ❑ Quoted quantity 5 ❑ Quoted quantity 6 ❑ Quoted quantity 7 ❑ Quoted quantity 8 ❑ Quoted quantity 9 ❑ Quoted quantity 10 ❑ Product code ❑ Commodity code ❑ RFQ Line Specifications
4.7.2.4 Print RFQ	The vendor RFQ can be printed in several ways: ❑ Print current RFQ ❑ Print current RFQ for selected vendor ❑ Print all open RFQ's For each of the above printing options the following options are provided: ❑ Set follow up date ❑ Mark as printed
4.7.2.5.1 Print Current	If an RFQ is currently displayed, selecting this option can print it. If no RFQ is displayed, then this option is not enabled.
4.7.2.5.2 Print Current RFQ for Selected Vendor	
4.7.2.5.3 Print All Open RFQ's	This prints all RFQ's that have not been flagged as printed.
4.7.2.5.4 Set Follow up Date	This prints a Before Shipment Packing List for all released Customer Orders having lines with Ship Dates on or before a date specified by the user. If a Ship Date appears on the order line, that date is used. Otherwise, the Desired Ship Date from the Customer Order is used. Note that the Dated From date does not apply for this option. As with all Before Shipment Packing Lists, only lines that need to be shipped are printed.
4.7.2.5.5 Mark as Printed	This flags the RFQ as having been printed. In addition, it creates the vendor response lines for the RFQ.
4.7.2.6 Vendor Quotes	The following information is entered when a vendor responds to a vendor RFQ: ❑ Quoted quantity 1 –10 ❑ Default quantity ❑ Price 1-10 ❑ Default price ❑ Purchase unit of measure ❑ Quote date ❑ Comments

	❑ Status
4.7.2.6.1 Quantities / Prices	Vendor price quotes can be specified in one of two ways: ❑ Quantity break ❑ Up to quantity Quantity break uses the default price up to the first quantity break. Other quantity breaks will specify the prices used through the final quantity break which is also used against larger quantities. Up to quantities are applied from the lowest level with prices. The default price is applied against any larger quantities.
4.7.2.6.2 Purchase Unit of Measure	This is the unit of measure that is to be used when dealing with this RFQ and vendor. Units ultimately get converted to the stocking unit of measure for internal calculation purposes.
4.7.2.6.3 Quote Date	The date the vendor has provided the response the RFQ.
4.7.2.6.4 Status	The following status values apply to the response by a vendor to the RFQ: ❑ Printed ❑ Quoted ❑ Waiting ❑ Approved
4.7.2.7 Approve the RFQ	A vendor RFQ is approved either from a vendor's perspective or on an individual part perspective. Once an RFQ is closed and all approvals specified, the following can be done: ❑ Copy all responses back to the Customer quote which originated the RFQ for use only by that quote ❑ Copy all responses ❑ Copy all responses to the Part Master vendor/quote tables for general use ❑ Create one or more Purchase Orders During the approval process the following is retrieved: ❑ Vendor ID ❑ Line number ❑ Part ID ❑ Vendor part ID ❑ Manufacturer ❑ Manufacturer part ID Of these retrieved lines, one or more records can be identified for further processing. These lines, taken together, can then: ❑ Create Part Master vendor quotes ❑ Create Quote Master vendor quotes
4.7.3 Manage RFQ	The following features aid in the management of the RFQ: ❑ Re-number lines
4.7.3.1 Renumber Lines	This feature re-numbers the detail lines on the RFQ and is provided for aesthetic purposes only.
4.7.4 Delete RFQ	A Purchase Order can be deleted permanently from the system. Line level detail can be deleted or the entire Purchase Order can be deleted.
4.7.4.1 Delete Line	This deletes individual lines from the Purchase Order. A line cannot be deleted if a receipt transaction has been recorded against it. The transaction would need to be deleted before deleting the line.
4.7.4.2 Delete Header	This deletes the entire Purchase Order. All lines must be eligible for deletion, as specified above, for the Purchase Order to be deleted.
4.7.5 Retrieve	A wide variety of information on purchasing history can be retrieved. This information falls into the following general categories:

Purchasing History	❑ Purchasing history ❑ Service purchasing history ❑ Service Dispatch history ❑ Vendor Service Dispatch history
4.7.6.1 Purchasing History	This retrieves the following information on all Purchase Orders for one selected Part: ❑ Order date ❑ Desired receive date ❑ Promise date ❑ Last receive date ❑ Purchase Order ID ❑ Has delivery schedule? ❑ Vendor ID ❑ Vendor Name ❑ Order quantity ❑ Received quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Fixed cost ❑ Standard unit cost These records can be sorted in one of the following ways: ❑ Order date ❑ Desired receive date ❑ Purchase Order ID The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending There is an option to transport the user to the Purchase Order editor prefilled with the data from a selected line.
4.7.6.2 Service Purchasing History	This retrieves the following information on all Purchase Orders for one selected service ID: ❑ Order date ❑ Desired received date ❑ Promise date ❑ Last Dispatch date ❑ Last receive date ❑ Service part ID ❑ Purchase Order ID ❑ Purchase Order ID line number ❑ Vendor ❑ Order quantity ❑ Received quantity ❑ Dispatched quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Base charge ❑ Minimum charge ❑ Standard unit cost ❑ Linked operations These records can be sorted in one of the following ways: ❑ Order date

	❑ Desired receive date ❑ Service part ID ❑ Purchase Order ID The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending
4.7.6.3 Service Dispatch History	This retrieves the following information on all Dispatches for one selected service ID: ❑ Dispatch date ❑ Desired receive date ❑ Promise date ❑ Dispatch ID ❑ Dispatch ID line number ❑ Service part ID ❑ Order date ❑ Purchase Order ID ❑ Purchase Order ID line number ❑ Vendor ❑ Order quantity ❑ User Dispatch quantity ❑ Dispatched quantity ❑ Dispatch Receiver quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Actual freight ❑ Base charge ❑ Minimum charge ❑ Standard unit cost ❑ Linked operations These records can be sorted in one of the following ways: ❑ Dispatch date ❑ Desired receive date ❑ Dispatch ID ❑ Service part ID ❑ Order date ❑ Purchase Order The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending There is also an option to exclude fully received Dispatches
4.7.6.4 Vendor Service Dispatch History	This retrieves the following information on all Dispatches for one selected vendor: ❑ Service ❑ Vendor service ID ❑ Service part ID ❑ Purchase Order ID ❑ Purchase Order line number ❑ Order quantity ❑ Order date ❑ Purchase Order desired received date ❑ Purchase Order promise date ❑ Dispatch ID

	❑ Dispatch ID line number ❑ user Dispatch quantity ❑ Dispatched quantity ❑ Dispatch date ❑ Dispatch desired receive date ❑ Promise date ❑ Dispatch receive quantity ❑ Unit price ❑ Discount percent ❑ Actual freight ❑ Base charge ❑ Minimum charge ❑ Standard unit cost These records can be sorted in one of the following ways: ❑ Service ID ❑ Vendor service ID ❑ Service part ID ❑ Purchase Order ID ❑ Order date ❑ Promise date ❑ Dispatch ID ❑ Dispatch date ❑ Desired receive date The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending There is also an option to exclude fully received Dispatches
4.7.7 Create Purchase Order	This is the functionality for creating a Purchase Order. It includes: ❑ Source of the Purchase Order ❑ Creation of the header ❑ Creation of line level detail ❑ Printing the Purchase Order
4.7.7.1 Purchase Order Source	The creation Purchase Order can originate from two sources: ❑ Copying an existing Purchase Order ❑ Creating a new Purchase Order
4.7.7.1.1 Existing Purchase Order	If the new order is to be based upon an existing order, then that order is chosen and copied into a new order. The new order number can either be manually keyed or auto-numbered using the next available order number. The order header is copied with the lines being optional. If the lines are copied, then the Work Order links, (if they exist), can be optionally copied and the delivery schedule, (if it exists), can also be optionally copied. All information can be edited after the copying process. A provision is provided to close the existing order after the copying process is complete.
4.7.7.1.2 New Purchase Order	If the new order is to not be based on an existing order, then all information must be manually keyed. The order number can either be manually keyed or auto-numbered using the next available order number.
4.7.7.2 Purchase Order Header	The Purchase Order header is created with the following required information: ❑ Purchase Order ID ❑ Order date ❑ Status ❑ Vendor ID ❑ Desired receive date for lines not otherwise specified ❑ Printed?

	❑ Printed date ❑ Order total ❑ Freight total The following are optional: ❑ Original promise date for lines not otherwise specified ❑ Ship-To address ❑ Free on Board (FOB) ❑ Ship Via ❑ Buyer ❑ Entity ❑ Terms ❑ Contact information ❑ Currency hedging ❑ Electronic Data Interchange (EDI) order? ❑ EDI blanket Purchase Order number ❑ EDI contract number ❑ Dispatch Ship-To address ❑ Dispatch Ship-From address ❑ Currency name ❑ Specification ❑ Purchase Order note ❑ Vendor note
4.7.7.2.1 Order Date	This is the date of the Purchase Order. The default date is the current date and can be changed at any time.
4.7.7.2.2 Status	Each Purchase Order has a status to indicate the progression through the purchasing cycle. These statuses are: ❑ Firm ❑ Released ❑ Closed ❑ Cancelled/Void The order status can be changed from any status to another at any time. The system can be configured to automatically set the status of a newly saved Purchase Order to either Firmed or Released.
4.7.7.2.3 Firm	This status includes the Purchase Order in the material planning process, including MRP. However, the actual Purchase Order document cannot be printed.
4.7.7.2.4 Released	This status allows Purchase Orders to be printed and received.
4.7.7.2.5 Closed	Purchase Orders on this status cannot be received nor printed. Closed Purchase Orders also have no visibility in the material planning process. The system automatically sets a Purchase Order to Closed upon full receipt of all lines. Optionally, the user can set the Purchase Order to Closed to prevent receipt and visibility of remaining supply lines.
4.7.7.2.6 Cancelled/Void	This status is used to cancel a Purchase Order and is used to signify that the document is no longer wanted.
4.7.7.2.7 Printed Date	Upon printing of the Purchase Order, the current date is stored with the Purchase Order header record indicating the date of the printing. A provision is provided to clear this date that allows reprinting and displays no printed date to the user in the Purchase Order header.
4.7.7.2.8 Order Total	The total amount of the Purchase Order is calculated exclusive of the freight charges.
4.7.7.2.9 Freight Total	The total freight charges for all Purchase Order lines are calculated.
4.7.7.2.10 Ship-To Address	By default, the Ship-To address for the Purchase Order is the company name and address globally defined for the system. Alternatively, another Ship-To Address can be used to

	direct the vendor to ship product to an alternate location.
4.7.7.2.11 FOB	A Free on Board (FOB) Point is optionally associated with each Purchase Order. The FOB Point is intended as reference information for the vendor and for internal use. There is no functionality behind this FOB Point association. If a vendor is selected for the Purchase Order and default FOB Point has been associated with that vendor, then that particular FOB Point is automatically entered into the Purchase Order. This default FOB Point can be over-ridden. However, doing so will not change any records other than the Purchase Order. The FOB Point can be chosen from a pre-defined list of FOB Points that is maintained by the user. However, free-form text can be stored as the FOB Point. The FOB Point Master contains the following: ❑ ID
4.7.7.2.12 Ship Via	A Ship Via is optionally associated with each Purchase Order. The Ship Via is intended as reference information for the vendor and for internal use. There is no functionality behind this Ship Via association. If a vendor is selected for the Purchase Order and default Ship Via has been associated with that vendor, then that particular Ship Via is automatically entered into the Purchase Order. This default Ship Via can be over-ridden. However, doing so will not change any records other than the Purchase Order. The Ship Via can be chosen from a pre-defined list of ShipVia's that is maintained by the user. However, free-form text can be stored as the Ship Via. The Ship Via Master contains the following: ❑ ID
4.7.7.2.13 Buyer	The Buyer is defined using free-form text to identify the internal person responsible for this Purchase Order. Upon entry into the screen, the default Buyer is the person logged into the system. The Buyer is used primarily for sorting and retrieving messages during the material planning process.
4.7.7.2.14 Entity	An entity is associated with each Purchase Order. The entity defines which financial entity to which the Purchase Order eventually posts. If there is only one entity defined in the system, then that default is defaulted so that no user entry is required.
4.7.7.2.15 Terms	Each Purchase Order is assigned terms that are used for the subsequent Invoice(s) from the vendor. The terms are defaulted from the Vendor Master if they are defined there. There are several components to the terms: ❑ Net due days/date ❑ Discount available days/date ❑ user defined terms ❑ Freight terms There are four types of net terms: ❑ Age of Invoice, defined by the number of calendar days ❑ Day of month, specified by the day of the month (31 is used to indicate the last day of the month) ❑ Specified date, specified by the exact date payment is due ❑ Invoice age then day of month, specified by the number of months and the day of the month (31 is used to indicate the last day of the month) The discount is expressed as a percent and is available for taking by the vendor based on the following: ❑ Age of Invoice, defined by the number of calendar days ❑ Day of month, specified by the day of the month (31 is used to indicate the last day of the month) ❑ Specified date, specified by the exact date payment is due ❑ Invoice age then day of month, specified by the number of months and the day of the month (31 is used to indicate the last day of the month) A text string can be entered as user specific terms when the predefined terms are not sufficient to define the situation. There is no logic behind this text string throughout the software other than referencing the text string.

4.7.7.2.16 Currency Hedging	When a Purchase Order uses a foreign currency, Purchasing obtains the current exchange rate from the Currency Master. However, if wanted, the exchange rate can be set manually for individual Customer Orders. This allows the exchange rate to be fixed for the life of the Customer Order regardless of the fluctuations in the system exchange rates.
4.7.7.2.17 Contact Information	The primary contact person with the vendor this Purchase Order. The following information is included: ❑ Title ❑ First name ❑ Middle initial ❑ Last name ❑ Salutation ❑ Position ❑ Phone number ❑ Fax number
4.7.7.2.18 EDI Order?	This flag indicates if this Purchase Order is an EDI Blanket Order. A Blanket Order is one placed for a given period of time that stands until the quantities shipped match the total quantity ordered in the blanket order. After the quantities shipped match the total quantity ordered, a new blanket order needs to be placed to continue to receive parts.
4.7.7.2.19 EDI Contract Number	This is the Contract ID for the delivery schedule.
4.7.7.2.20 EDI Blanket Purchase Order Number	This is the authorization number for the total quantity of parts on the blanket order.
4.7.7.2.21 Dispatch Ship-To Address	This is the Ship-To ID for the delivery schedule. The Ship-To ID for the delivery schedule.
4.7.7.3 Purchase Order Line Modes	There are four types of Purchase Order lines: ❑ Stocked ❑ Subcontract service ❑ Misc. parts ❑ Consumable
4.7.7.3.1 Stocked	The *Stocked* Purchase Order Line is used for items that have a Part Master and will be received into stock. Optionally, a Work Order can be linked to the Purchase Order Line that will enable the receiving process to automatically issue the item the associated Work Order from stock upon receipt.
4.7.7.3.2 Subcontract Service	The *Subcontract Service* Purchase Order Line is used for Shop Resources that have been specifically designated as Subcontract Services. A Work Order link must be established with the Purchase Order Line to create the association between the subcontract requirement (Work Order) and its fulfillment (Purchase Order Line).
4.7.7.3.3 Misc. Parts	The *Miscellaneous Parts* line is used for items that are not in the Part Master and are to be expensed upon receipt. A General Ledger account number must be supplied for this Purchase Order Line type.
4.7.7.3.4 Consumable	The *Consumable* part line is used for parts that have been designated as consumable in their Part Master. The consumable part is ordered like stocked part. However, a General Ledger expense account is provided on the Purchase Order Line, similar to a miscellaneous line, to immediately expense the item upon receipt. The consumable part allows the structure and planning ability of a part numbered item while permitting the immediate expensing of the item without additional inventory transactions.
4.7.7.4 Create Purchase Order Line	The following are required for each Purchase Order line: ❑ Part ID or service ID or Description ❑ Quantity In addition, the following information is optional for each order line: ❑ Part ID (for stocked items) ❑ Service ID (for subcontract services)

	❑ Vendor part ID ❑ Manufacturer name ❑ Manufacturer part ID ❑ Purchasing unit of measure ❑ Promise date ❑ Price ❑ Discount percent ❑ Estimated freight ❑ Fixed or base charge (for subcontract services) ❑ Minimum charge (for subcontract services) ❑ General Ledger expense account (for misc. items) ❑ Work Order ID ❑ Work Order piece number ❑ Work Order sequence ❑ VAT code ❑ VAT percent ❑ VAT amount ❑ VAT received percent ❑ VAT received amount ❑ Dimension unit of measure ❑ Length ❑ Width ❑ Height ❑ Number of pieces ❑ Line Ship-To address ID ❑ Line delivery schedule ❑ Warehouse ID ❑ Dispatch quantity ❑ Total quantity dispatched ❑ Material code ❑ HTS code ❑ Country of origin ❑ Duty percent ❑ Link part ID ❑ Stock unit of measure order quantity ❑ Stock unit of measure received quantity ❑ Total quantity allocated ❑ Total quantity fulfilled ❑ Allocate quantity ❑ Demand quantity unallocated ❑ Specification? ❑ Delivery schedule?
4.7.7.4.1 Vendor Part ID	Each Purchase Order line can have a number associated with it that represents the vendor's part number that prints on the Purchase Order Acknowledgement for reference by the vendor. This vendor part ID is retrieved from the database as a default value if a vendor part ID is associated with the internal part ID and vendor combination. This default vendor part ID can be over-ridden. However, doing so will not change any records other than the Purchase Order.
4.7.7.4.2 Manufacturer Name	A manufacturer name can be associated with each Purchase Order line that prints on the Purchase Order Acknowledgement for reference by the vendor. The manufacturer name is retrieved from the database if such a name is associated with the part ID. This default manufacturer name can be over-ridden. However, doing so will not change any records other than the Purchase Order.
4.7.7.4.3 Manufacturer	A manufacturer part number can be associated with each Purchase Order line that prints on the Purchase Order Acknowledgement for reference by the vendor. The manufacturer

Part ID	part ID is retrieved from the database if such a name is associated with the part ID. This default manufacturer part ID can be over-ridden. However, doing so will not change any records other than the Purchase Order.
4.7.7.4.4 Purchasing Unit of Measure	If a unit of measure is defined for the specific part ID and vendor combination, then that unit of measure is retrieved from the database. If no such unit of measure exists, then the stocking unit of measure is used as defined with the Part Master. The purchasing unit of measure can be over-ridden but an appropriate conversion must be predefined. Upon receipt of the Purchase Order line, the unit of measure will be converted to the stocking unit of measure.
4.7.7.4.5 Price	The price for the line is determined by retrieving from the database a predefined vendor quote if it is available. This quote contains part, vendor, quantity range, and pricing information. The appropriate price is retrieved based on the quantity ordered and the vendor chosen for the Purchase Order. If no such data exists, then the price needs to be manually entered.
4.7.7.4.6 Discount Percent	A discount expressed as a percent can be defined for each Purchase Order line. The extended price for the line is discounted by this percent before any freight or fixed charges.
4.7.7.4.7 Estimated Freight	The estimated freight for the line can be entered as a currency amount. This amount does not logically carry forward anywhere in the system and is used exclusively for reference purposes on the Purchase Order and on the printed Purchase Order Acknowledgement.
4.7.7.4.8 General Ledger Expense Account	For items that do not have a part number and that are not linked to a Work Order, a General Ledger account number must be supplied. This account number is used to for debit side of the transaction upon receipt of the Purchase Order line. If a part ID or a Work Order is supplied, a General Ledger account number must not be allowed to obtain entry.
4.7.7.4.9 Work Order ID	For items that are associated with a Work Order. If a part ID is supplied, then the part is received into stock and immediately issued to the specified Work Order as part of the normal receiving functionality. If no part ID is supplied, then the part is simply issued to the specified Work Order. Only one Work Order requirement can be associated with an individual Purchase Order line.
4.7.7.4.10 Work Order Piece Number	This specifies the piece within the Work Order that the Purchase Order line for a part is linked to.
4.7.7.4.11 Work Order Sequence	This specifies the operation within the Work Order that the Purchase Order line for outside services is linked to.
4.7.7.4.12 VAT Code	
4.7.7.4.13 VAT Percent	
4.7.7.4.14 VAT Amount	
4.7.7.4.15 VAT Received Percent	
4.7.7.4.16 VAT Received Amount	
4.7.7.4.17 Dimension Unit of Measure	Used when the purchased item is tracked using dimensional inventory. This specifies the unit of measure for the dimensions.
4.7.7.4.18 Dimension Length	Used when the purchased item is tracked using dimensional inventory. This specifies the length for the dimensions.
4.7.7.4.19 Dimension Width	Used when the purchased item is tracked using dimensional inventory. This specifies the width for the dimensions.
4.7.7.4.20 Dimension Height	Used when the purchased item is tracked using dimensional inventory. This specifies the height for the dimensions.

4.7.7.4.21 Dimension Number of Pieces	Used when the purchased item is tracked using dimensional inventory. This specifies the number of pieces of the specified dimensions.
4.7.7.4.22 Line Ship-To Address	Each Purchase Order line can have its own Ship-To Address associated with it. For those lines with such a definition, the header Ship-To Address is overridden. With this functionality, each line can be potentially shipped to a different address.
4.7.7.4.23 Delivery Schedule	Each Purchase Order line can have its own delivery schedule that overrides the Purchase Order header delivery date and can contain any number of lines for each Purchase Order line. The following information is used in establishing this delivery schedule: ❑ Quantity ❑ Desired receive date ❑ Actual receive date ❑ Quantity received ❑ Release number ❑ Ship-To address ID ❑ Warehouse ID ❑ WIP/VAS required? ❑ Stock order quantity ❑ Quantity allocated ❑ Quantity fulfilled ❑ User defined #1 ❑ User defined #2
4.7.7.4.23.1 Quantity	
4.7.7.4.23.2 Desired Receive Date	
4.7.7.4.23.3 Actual Receive Date	This is the date that the delivery line actually shipped, and is maintained automatically by the system from shipment detail.
4.7.7.4.23.4 Quantity Received	This is the quantity that has shipped for the delivery line and is maintained automatically by the system from shipment detail.
4.7.7.4.23.5 Release Number	
4.7.7.4.23.6 Ship-To Address ID	
4.7.7.4.23.7 Warehouse ID	
4.7.7.4.23.8 WIP/VAS Required?	
4.7.7.4.23.9 Stock Order Quantity	
4.7.7.4.23.10 Quantity Allocated	The portion of the Purchase Order quantity that has been allocated to demand.
4.7.7.4.23.11 Quantity Fulfilled	
4.7.7.4.23.12 User Defined #1	
4.7.7.4.23.13 User Defined #2	
4.7.7.4.24 Warehouse ID	
4.7.7.4.25	

Dispatch Quantity	
4.7.7.4.26 Total Quantity Dispatched	
4.7.7.4.27 Material Code	
4.7.7.4.28 HTS Code	
4.7.7.4.29 Country Of Origin	
4.7.7.4.30 Duty Percent	
4.7.7.4.31 Link Part ID	
4.7.7.4.32 Stock Unit of Measure Order Quantity	
4.7.7.4.33 Stock Unit of Measure Received Quantity	
4.7.7.4.34 Total Quantity Allocated	
4.7.7.4.35 Total Quantity Fulfilled	
4.7.7.4.36 Allocate Quantity	
4.7.7.4.37 Demand Quantity Unallocated	
4.7.7.4.38 Specification?	
4.7.7.4.39 Delivery Schedule?	
4.7.7.5 Print Purchase Order Acknowledgement	The Purchase Order Acknowledgement is printed for delivery to the vendor. The system flags the Purchase Order as printed with the current date and changes the status from Firm to Released. A supplied date directs the system to print and release Purchase Orders up until such date. The Purchase Order acknowledgement can be printed in several ways: ❑ Print current Purchase Order ❑ Print current Purchase Order and then release it ❑ Print all firmed Purchase Orders through a date ❑ Print all firmed Purchase Orders through a date and then release them For each of the printing options, the user is given the choice of including bar codes on the Purchase Order Acknowledgement.
4.7.7.5.1 Print Current	If a Purchase Order is currently displayed, selecting this option can print it. If a Purchase Order is not displayed, then this option is not enabled. This option does not change the status of the Purchase Order.
4.7.7.5.2 Print Current and Release	If a Purchase Order is currently displayed, selecting this option can print it. If a Purchase Order is not displayed, then this option is not enabled. Upon printing, the system changes that status of the Purchase Order to Released.
4.7.7.5.3 Print	This prints all of the firmed Purchase Orders in the system up to a date supplied by the

Firmed Orders	user. This option does not change the status of the Purchase Order.
4.7.7.5.4 Print Firmed Order and Release	This prints all of the firmed Purchase Orders in the system up to a date supplied by the user. Upon printing the system changes that status of all the printed Purchase Orders to Released.
4.7.8 Manage Purchase Order	The following tasks can be performed on a Purchase Order: ❑ Find Purchase Order ❑ Find vendor ❑ Set/Reset exchange rates ❑ Renumber lines ❑ Re-price lines ❑ Set user preferences
4.7.8.1 Find Purchase Order	This provides functionality to quickly locate a particular Purchase Order. The following can be searched: ❑ Purchase Order ID ❑ Vendor ID ❑ Vendor name
4.7.8.2 Find Vendor	This provides functionality to quickly locate a particular Purchase Order. The following can be searched: ❑ Vendor ID ❑ Vendor name
4.7.8.3 Set/Reset Exchange Rates	This is used to set rates for individual Purchase Orders. When a Purchase Order is entered for a vendor that used a foreign currency, the system automatically obtains the current exchange rate from the currency exchange rate tables. By setting the exchange rates here, the rates are fixed for this specific order. The following data are maintained: ❑ Currency ID ❑ Foreign to System Currency amount ❑ System Currency to Foreign amount ❑ Order amount The currently defined system exchange rates can also be looked up and filled into the appropriate fields based on a selected date.
4.7.8.4 Renumber Lines	This function renumbers the line items on the Purchase Order and is useful when lines have been deleted leaving gaps in the numbering. This function is not required and is provided for aesthetics purposes only.
4.7.8.5 Reprice Lines	This assigns the latest part prices from the vendor RFQ.
4.7.8.6 Set user Preferences	The logic of Purchase Orders can be controlled in the following ways: ❑ Default status ❑ Auto Dispatch ❑ Pass part specification
4.7.8.6.1 Default Status	The default status of Purchase Orders can be set as either Firmed or Released. Firmed Purchase Orders exist for planning purposes, but do not have any work performed on them. Released Purchase Orders are orders that are set to begin producing on the scheduled start date.
4.7.8.6.2 Auto Dispatch	This option automatically creates a Dispatch for the service Purchase Order line and sets the Dispatch quantity to the order quantity.
4.7.8.6.3 Pass Part Specification	With this option, the system automatically places the specification from the Part Master in the specification in the respective Purchase Order line.
4.7.8.7 Allocate Demand	Supply can be assigned to a Customer Order line to fulfill the requirements of the line. If a delivery schedule exists for the line then supply can be assigned to these individual lines. The supplying sources must have the same Warehouse ID as the Customer Order line to

	which supply is to be assigned. If the Warehouse ID is different then the allocation cannot be performed. The following information defines the supply allocation: ❑ Demand type ❑ Base ID ❑ Lot ID ❑ Split ID ❑ Sequence / Line number ❑ Piece number ❑ Allocate quantity The following are displayed as the result of the supply allocation: ❑ Demand required date ❑ Allocate quantity ❑ Demand unallocated quantity ❑ Demand required quantity ❑ Demand issued quantity ❑ Link allocated quantity ❑ Link received quantity ❑ Link issued quantity ❑ Demand part ID ❑ Substitute part? ❑ New part/warehouse?
4.7.8.7.1 Demand Type	The source of the demand is specified here. Possible sources of demand are: ❑ Inventory ❑ Customer Order ❑ Customer Order delivery schedule ❑ Interbranch Transfer ❑ Work Order material requirement
4.7.8.7.2 Base ID	This is the specific source depending on the type of demand selected. For inventory this is the warehouse, for other types this is the document number.
4.7.8.7.3 Lot ID	This is the specific lot number when the demand type is a Work Order.
4.7.8.7.4 Split ID	This is the specific split number when the demand type is a Work Order.
4.7.8.7.5 Sequence / Line Number	
4.7.8.7.6 Piece Number	
4.7.8.7.7 Allocate Quantity	
4.7.8.7.8 Demand Required Date	
4.7.8.7.9 Allocate Quantity	
4.7.8.7.10 Demand Unallocated Quantity	
4.7.8.7.11 Demand Required Quantity	
4.7.8.7.12 Demand Issued Quantity	
4.7.8.7.13 Link Allocated Quantity	

4.7.8.7.14 Link Received Quantity	
4.7.8.7.15 Link Issued Quantity	
4.7.8.7.16 Demand Part ID	
4.7.8.7.17 Substitute Part?	
4.7.8.7.18 New Part / Warehouse?	
4.7.9 Delete Purchase Order	A Purchase Order can be deleted permanently from the system. Line level detail can be deleted or the entire Purchase Order can be deleted.
4.7.9.1 Delete Line	This deletes individual lines from the Purchase Order. A line cannot be deleted if a receipt transaction has been recorded against it. The transaction would need to be deleted before deleting the line.
4.7.9.2 Delete Header	This deletes the entire Purchase Order. All lines must be eligible for deletion, as specified above, for the Purchase Order to be deleted.
4.7.10 Create Service Dispatch	A Service Dispatch is used to record information for parts that are sent to outside service vendors. A Service Dispatch is set against a Purchase Order. This is the functionality for creating a Dispatch which includes: ❑ Reviewing Dispatch history ❑ Dispatch modes ❑ Creation of the header ❑ Creation of line level detail ❑ Printing the Dispatch ❑ Printing the Dispatch Packing List
4.7.10.1 Dispatch History	History is available in the following three general categories: ❑ Service purchase history ❑ Service Dispatch history ❑ Vendor Service Dispatches
4.7.10.1.1 Service Purchase History	This retrieves the following information on all Purchase Orders for one selected service ID: ❑ Order date ❑ Desired received date ❑ Promise date ❑ Last Dispatch date ❑ Last receive date ❑ Service part ID ❑ Purchase Order ID ❑ Purchase Order ID line number ❑ Vendor ❑ Order quantity ❑ Received quantity ❑ Dispatched quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Base charge ❑ Minimum charge ❑ Standard unit cost ❑ Linked operations These records can be sorted in one of the following ways: ❑ Order date

	❑ Desired receive date ❑ Service part ID ❑ Purchase Order ID The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending
4.7.10.1.2 Service Dispatch History	This retrieves the following information on all Dispatches for one selected service ID: ❑ Dispatch date ❑ Desired receive date ❑ Promise date ❑ Dispatch ID ❑ Dispatch ID line number ❑ Service part ID ❑ Order date ❑ Purchase Order ID ❑ Purchase Order ID line number ❑ Vendor ❑ Order quantity ❑ user Dispatch quantity ❑ Dispatched quantity ❑ Dispatch Receiver quantity ❑ Currency ❑ Unit price ❑ Discount percent ❑ Actual freight ❑ Base charge ❑ Minimum charge ❑ Standard unit cost ❑ Linked operations These records can be sorted in one of the following ways: ❑ Dispatch date ❑ Desired receive date ❑ Dispatch ID ❑ Service part ID ❑ Order date ❑ Purchase Order The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending There is also an option to exclude fully received Dispatches
4.7.10.1.3 Vendor Service Dispatches	This retrieves the following information on all Dispatches for one selected vendor: ❑ Service ❑ Vendor service ID ❑ Service part ID ❑ Purchase Order ID ❑ Purchase Order line number ❑ Order quantity ❑ Order date ❑ Purchase Order desired received date ❑ Purchase Order promise date ❑ Dispatch ID

	❑ Dispatch ID line number ❑ user Dispatch quantity ❑ Dispatched quantity ❑ Dispatch date ❑ Dispatch desired receive date ❑ Promise date ❑ Dispatch receive quantity ❑ Unit price ❑ Discount percent ❑ Actual freight ❑ Base charge ❑ Minimum charge ❑ Standard unit cost These records can be sorted in one of the following ways: ❑ Service ID ❑ Vendor service ID ❑ Service part ID ❑ Purchase Order ID ❑ Order date ❑ Promise date ❑ Dispatch ID ❑ Dispatch date ❑ Desired receive date The records can also be sequenced in one of the following ways: ❑ Ascending ❑ Descending There is also an option to exclude fully received Dispatches
4.7.10.2 Dispatch Modes	There are four ways that a Service Dispatch can be created: ❑ Direct from a Purchase Order ❑ Direct from a Work Order ❑ Manual line-by-line ❑ Manual all lines enmass
4.7.10.2.1 Direct From a Purchase Order	In this mode, the Dispatch information is entered directly into the Purchase Order. This information, along with the already existing Purchase Order information, in turn creates the Service Dispatch.
4.7.10.2.2 Direct From a Work Order	In this mode, the Dispatch information is entered directly into the Work Order. This information, along with the already existing Work Order information, in turn creates the Service Dispatch.
4.7.10.2.3 Manual Line-By-Line	In this mode, the user enters all the Service Dispatch parameters manually for each line that is to be Dispatched.
4.7.10.2.4 Manual All Lines Enmass	In this mode, all eligible lines are Dispatched for the full ordered quantity.
4.7.10.3 Create Dispatch Header	The Dispatch header contains the following information: ❑ Dispatch ID ❑ Purchase Order ID ❑ Vendor ID ❑ Ship-To address ❑ Ship-From address ❑ Actual Dispatch date ❑ Dispatch on ❑ Buyer ❑ FOB

	❑ Ship Via
4.7.10.3.1 Dispatch ID	This is the unique identifier for the Service Dispatch
4.7.10.3.2 Purchase Order ID	This is the Purchase Order that contains the ordered service associated with the Dispatch.
4.7.10.3.3 Vendor ID	This is the vendor for the Purchase Order.
4.7.10.3.4 Ship-To Address	The address that the parts for outside services are to be shipped to. This is also the purchasing address on the Purchase Order.
4.7.10.3.5 Ship-From address	This is the address that the completed parts are to be returned to. This can either be the main address for the company or another subcontractor's address.
4.7.10.3.6 Actual Dispatch Date	This is the actual date that the parts left the plant.
4.7.10.3.7 Dispatch On	This is the date the parts are scheduled to leave the plant. This is referenced from the Purchase Order and cannot be modified on the Dispatch.
4.7.10.3.8 Buyer	This is the buyer referenced from the Purchase Order. This is referenced from the Purchase Order and cannot be modified on the Dispatch.
4.7.10.3.9 FOB	FOB is the Free on Board point for the outbound shipment to the subcontractor. This defaults from the Purchase Order (the vendor before that) and can be changed as need be on each Dispatch.
4.7.10.3.10 Ship Via	Ship Via is the method for the outbound shipment to the subcontractor. This defaults from the Purchase Order (the vendor before that) and can be changed as need be on each Dispatch.
4.7.10.4 Create Dispatch Line	Each Dispatch line contains the following information: ❑ Reference ❑ Service part ID ❑ Vendor service ID ❑ Quantity ordered ❑ Total quantity Dispatched ❑ Total quantity received ❑ Dispatch quantity ❑ Unit of measure ❑ Actual freight ❑ Last Dispatch date ❑ Desired on ❑ Promise date ❑ Shipping weight ❑ Weight unit of measure ❑ Links
4.7.10.4.1 Reference	If the line is for an inventoried part, then this displays the word Part followed by the description of the part from the Part Master. If the line is linked to a Work Order, then the word Job will be displayed followed by the Work Order ID. For miscellaneous lines, the word Misc is displayed.
4.7.10.4.2 Service Part ID	*Service Part* ID is the part ID for the service being performed. It is taken from the Purchase Order.
4.7.10.4.3 Vendor Service ID	*Vendor Service* ID is the service ID for the service being performed. It is taken from the Purchase Order.
4.7.10.4.4 Quantity Ordered	This is the total quantity ordered for this item on the Purchase Order without regard to received or Dispatched quantities. It is only changeable in the Purchase Order itself.
4.7.10.4.3 Total Quantity Dispatched	This displays the total quantity Dispatched for this line to date. Since the total is calculated from transactional history it is not changeable.
4.7.10.4.4 Total	This is the total quantity received back from the vendor to date. Since the total is

Quantity Received	calculated from transactional history it is not changeable.
4.7.10.4.5 Dispatch Quantity	This is the quantity that is to be Dispatched for this particular Dispatch. Once the Dispatch is created, the appropriate totals listed above will be updated to reflect this quantity.
4.7.10.4.6 Unit of Measure	This is the unit of measure that is on the Purchase Order for this line item and is what will be used for documents and communications with the vendor. All units are converted to stocking units of measure for internal calculations. The unit of measure is only maintainable in the Purchase Order and not in the Dispatch.
4.7.10.4.7 Actual Freight	The actual freight charges for shipping the parts to the subcontractor is entered here. This becomes part of the basis for the service cost of the line on this Dispatch.
4.7.10.4.8 Last Dispatch Date	The last date a Dispatch was created for the Purchase Order line associated with the line. If parts have never been Dispatched, then the field is left blank.
4.7.10.4.9 Desired On	This date comes from the Purchase Order, which in turn received its date from the Scheduler. This is the desired date for shipping the line item out to the subcontractor.
4.7.10.4.10 Promise Date	
4.7.10.4.11 Shipping Weight	This contains the shipping weight for the parts that are being sent out to the subcontractor. It is only used for printing on the Dispatch documents.
4.7.10.4.12 Weight Unit of Measure	This is the unit of measure for the Shipping Weight specified above. It is only used for printing on the Dispatch documents.
4.7.10.4.13 Links	This is a flag that indicates if there is a Work Order linked to the Purchase Order associated with this Dispatch.
4.7.10.5 Print Dispatch	The Dispatch can be printed in several ways: ❑ Print current Purchase Order Service Dispatch ❑ Print order Dispatch on a certain date
4.7.10.5.1 Print Current	If a Dispatch is currently displayed, selecting this option can print it. If a Dispatch is not displayed, then this option is not enabled.
4.7.10.5.2 Print Current RFQ for Selected Vendor	This prints all Dispatches that were created on a certain date.
4.7.10.6 Print Dispatch Packing List	In addition to the Dispatch, it is often desirable to print a Packing List to accompany the Dispatch and the parts being shipped. The Dispatch Packing List can be printed in several ways: ❑ Print current Packing List ❑ Print current Purchase Order ❑ Print all orders Dispatched between two dates
4.7.10.6.1 Print Current	If a Dispatch is currently displayed, selecting this option can print it. If a Dispatch is not displayed, then this option is not enabled. The Packing List can be restricted to only print those lines with a due date less than a user supplied date. Additionally, there is an option to **not** suppress printing any Dispatch Packing List that has been previously printed.
4.7.10.6.2 Print Current Purchase Order	This option prints all Dispatch Packing Lists associated with the Purchase Order that is currently referenced by the Dispatch that is displayed. The Packing List can be restricted to only print those lines with a due date less than a user supplied date. Additionally, there is an option to **not** suppress printing any Dispatch Packing List that has been previously printed.
4.7.10.6.3 Print All Orders	This option prints all Dispatch Packing Lists for Purchase Orders that had Dispatch activity between two dates supplied by the user. The Packing List can be restricted to only print those lines with a due date less than a user

	supplied date. Additionally, there is an option to **not** suppress printing any Dispatch Packing List that has been previously printed.
4.7.11 Manage Dispatch	[nothing!]
4.7.12 Delete Dispatch	A Dispatch can be deleted permanently from the system. Line level detail can be deleted or the entire Dispatch can be deleted.
4.7.12.1 Delete Header	This deletes individual lines from the Dispatch. A line cannot be deleted if a shipment transaction has been recorded against it. The transaction would need to be deleted before deleting the line.
4.7.12.2 Delete Line	This deletes the entire Dispatch. All lines must be eligible for deletion, as specified above, for the Dispatch to be deleted.
4.7.13 Lookup Purchasing Information	Purchase Orders can be searched by a wide variety of parameters. These parameters are: ❑ Purchase Order ID ❑ Vendor ID ❑ Vendor name ❑ Part ID ❑ Service ID ❑ Vendor part/service ID ❑ Work Order ID ❑ Invoice ID ❑ Receiver ID ❑ Dispatch ID ❑ Expense General Ledger ID ❑ Order Status Wildcard characters can be used in any of the parameters. All Customer Orders that match these selection criteria are retrieved for selection of a specific order. Once the specific order is chosen, detail can then be retrieved. There is an option to include separate backorders (orders properly created as separate backorders) in the search.
4.7.13.1 Order Status	The following header information is retrieved on the specific order selected: ❑ Order ID ❑ Vendor ID ❑ Vendor name ❑ Purchase-From address ❑ Ship-To address ❑ Order date ❑ Desired receive date ❑ Original promise date ❑ Last received date ❑ Status ❑ Entity ID ❑ Contact name ❑ Contact phone number ❑ Contact fax number ❑ Free on Board (FOB) point ❑ Ship Via ❑ Buyer ❑ Currency name The following line detail is retrieved:

	❑ Quantity ordered ❑ Quantity Dispatched ❑ Quantity received to date ❑ Part ID ❑ Service ID ❑ Vendor part ID ❑ Purchasing unit of measure ❑ Promise date ❑ Unit price ❑ Discount percent ❑ Extension ❑ Freight ❑ Fixed charge ❑ General Ledger expense account ID ❑ Work Order ID ❑ Work Order operation number ❑ Work Order requirement number
4.7.13.2 Receipts and Invoices	The following information is retrieved: ❑ Receiver ID ❑ Receiver ID line number ❑ Received date ❑ Quantity received ❑ Invoice ID ❑ Invoice date ❑ Amount
4.7.13.3 Backorder Status	The following information is retrieved on all backorders for the Purchase Order chosen: ❑ Order ID ❑ Vendor ID ❑ Vendor name The user has the ability to identify a specific Purchase Order and then transport to the detail of that Purchase Order for purposes of reviewing or editing.
4.7.13.4 Work Order Status	The following information is retrieved on the associated Work Order for specific Purchase Order line: ❑ Want date ❑ Finish date ❑ Start date ❑ Release date ❑ Quantity ❑ Quantity received to date ❑ Status ❑ Percent of total order complete For each operation within the Work Order the following are retrieved: ❑ Leg number ❑ Sequence number ❑ Resource ID ❑ Scheduled finish date ❑ Scheduled start date ❑ Setup complete? (if applicable) ❑ Start quantity into the operation ❑ End quantity out of the operation ❑ Quantity complete ❑ Quantity available ❑ Percentage of completion

	❑ Percentage issued to next operation ❑ Status (firm, released, closed)
4.7.13.5 Vendor MTD/YTD Status	The following information is retrieved for the vendor of the order chosen: ❑ Period ❑ Month-to-date activity ❑ Year-to-date activity
4.7.13.6 Demand Assignments	Just as supply can be assigned to a Purchase Order, other areas in the system can assign supply to the Purchase Order as well. This view shows all allocations for the Purchase Order regardless of the source of their origination.
4.7.14 Maintain Vendor Master	This is where the Vendor Master is maintained. Vendors can be added, changed, and deleted. The following information is part of the Vendor Master: ❑ Vendor ID ❑ Purchase From addresses ❑ Default Purchase From address ❑ Remit To addresses ❑ Default Remit To address ❑ Receive To addresses ❑ Default Receive To address ❑ Vendor Contacts ❑ Default contact ❑ Default carrier ❑ Free on Board (FOB) point ❑ Ship Via ❑ Buyer ❑ Priority ❑ Account open date ❑ Account modified date ❑ Terms ❑ Entity ID ❑ Currency ID ❑ Default transaction currency ❑ Default Accounts Payable account ID ❑ Default expense account ID ❑ Invoice matching criteria ❑ Does this vendor need a 1099-Misc report? ❑ Vendor tax ID number ❑ user defined label set ❑ user defined fields 1-10 ❑ Intrastat information ❑ Payment information ❑ Vendor Notes
4.7.14.1 Purchase From Addresses	Each Vendor can have an unlimited number of associated Purchase From Addresses. This includes the following elements: ❑ Purchase From name ❑ Purchase From address #1 ❑ Purchase From address #2 ❑ Purchase From address #3 ❑ Purchase From city ❑ Purchase From state ❑ Purchase From zip code ❑ Purchase From country ❑ Intrastat information
4.7.14.1.1 Intrastat	Intrastat is the system for collecting statistics on the physical trade in goods (i.e. the actual movement of goods) between the Member States of the European Union (EU). This information includes the following specific elements:

	❑ Port of transshipment ❑ Country ID
4.7.14.1.1.1 Port of Transshipment	Port of transshipment is the location from which goods are shipped.
4.7.14.1.1.2 Intrastat Country ID	Country ID is defined as the Member State of the EU the company belongs to.
4.7.14.2 Default Purchase From Address	This is the address used by default as the vendors main address.
4.7.14.3 Remit To Addresses	Each Vendor can have an unlimited number of associated Remit To Addresses. This includes the following elements: ❑ Remit To name ❑ Remit To address #1 ❑ Remit To address #2 ❑ Remit To address #3 ❑ Remit To city ❑ Remit To state ❑ Remit To zip code ❑ Remit To country
4.7.14.4 Default Remit To Address	This is the address used by default for payments made to a vendor.
4.7.14.5 Receive To Addresses	Their can be an unlimited number of Receiving addresses. This includes the following elements: ❑ Receive To name ❑ Receive To address #1 ❑ Receive To address #2 ❑ Receive To address #3 ❑ Receive To city ❑ Receive To state ❑ Receive To zip code ❑ Receive To country ❑ Receive To Intrastat information
4.7.14.5.1 Intrastat	Intrastat is the system for collecting statistics on the physical trade in goods (i.e. the actual movement of goods) between the Member States of the European Union (EU). This information includes the following specific elements: ❑ Port of arrival ❑ Port of transshipment ❑ Country ID ❑ Nature of transaction ❑ Mode of transport ❑ Siret number
4.7.14.5.1.1 Port of Arrival	Port of arrival is the location from which goods are received.
4.7.14.5.1.2 Port of Transshipment	Port of transshipment is the location from which goods are shipped.
4.7.14.5.1.3 Intrastat Country ID	Country ID is defined as the Member State of the EU the company belongs to.
4.7.14.5.1.4 Nature of Transaction	Nature of transaction is the type of transaction being made used to prevent Value Added Tax and Intrastat discrepancies.
4.7.14.5.1.5 Mode of	Mode of transport method by which goods are delivered.

Transport	
4.7.14.5.1.6 Siret Number	Siret number is a French company ID number.
4.7.14.6 Default Receive To Address	This is the address that is used by default for receipt of product purchased. This is can also be referred to as the address the Vendor would ship product to.
4.7.14.7 Vendor Contacts	This is the list of contacts for a vendor. (i.e. sales representative, engineering, Accounts Payable). Each vendor can have an unlimited number of contacts associated with it.
4.7.14.8 Default Vendor Contact	This is the main or default contact that is used for a vendor.
4.7.14.9 Carrier Code	This specifies a default carrier or courier business used to transport product.
4.7.14.10 Free on Board	This specifies the default point of sale that identifies where ownership passes to the buyer.
4.7.14.11 Ship Via	This is the default desired method to be used when shipping materials or products.
4.7.14.12 Buyer	This is the default buyer responsible for dealing with or setting up a vendor.
4.7.14.13 Priority	The priority of the vendor payment scheduling for use in defining or setting up a schedule.
4.7.14.14 Account Open Date	This is the date that this account was opened.
4.7.14.15 Account Modified Date	This is the date on which this account was last modified.
4.7.14.16 Terms	Terms specifies the standard terms extended by the vendor as used in Accounts Payable invoicing and payment.
4.7.14.17 Entity ID	This specifies the companies financial entity ID that will associated with an order placed. The system will provided the capability for multi-entity tracking. by keeping separate financial information for different entities.
4.7.14.18 Currency ID	This selects the vendor's native currency for this vendor.
4.7.14.19 Default Transaction Currency	The default transaction currency ID that is supplied to the Purchase Order as well as Accounts Payable Invoice.
4.7.14.20 Default Accounts Payable Account	This is the default Accounts Payable account ID associated with the vendor.
4.7.14.21 Default Expense Account	This is the default expense account ID associated with the vendor.
4.7.14.22 Invoice Matching Criteria	This is the default method of Invoice matching used for this vendor. The Invoice matching method can be either: Exact, Range +/- or Not checked as follows: ❑ Exact = Purchase Order must equal A/P voucher ❑ Range +/- = Shows range between Purchase Order and A/P voucher ❑ Not checked = Purchase Order could differ from A/P voucher
4.7.14.23 Report 1099-MISC	This marks a vendor as a 1099-MISC vendor and allows a 1099-MISC report to be generated. Note the vendor's tax identification number or subcontractor's social security number is required to generate the 1099-MISC report.
4.7.14.24 Vendor Tax ID Number	This can be the vendor's Tax ID number or subcontractor's social security number. The Tax ID number is required to generate the 1099-MISC report.
4.7.14.25 User Defined Label Set	This selects which existing user defined label set will be used for a vendor. The elements are as follows: ❑ User defined label set ID ❑ User defined label 1 ❑ User defined label 2 ❑ User defined label 3 ❑ ... ❑ User defined label 10
4.7.14.26 User Defined Fields	These are 10 unique data fields that the user can define their purpose and use. The elements are as follows: ❑ User defined field 1 ❑ User defined field 2 ❑ User defined field 3

	❑ ... ❑ User defined field 10
4.7.14.27 Intrastat	Intrastat is the system for collecting statistics on the physical trade in goods (i.e. the actual movement of goods) between the Member States of the European Union (EU). This information includes the following specific elements: ❑ Port of arrival ❑ Port of transshipment ❑ Country ID ❑ Nature of transaction ❑ Mode of transport ❑ Siret number
4.7.14.27.1 Port of Arrival	Port of arrival is the location from which goods are received.
4.7.14.27.2 Port of Transshipment	Port of transshipment is the location from which goods are shipped.
4.7.14.27.3 Intrastat Country ID	Country ID is defined as the Member State of the EU the company belongs to.
4.7.14.27.4 Nature of Transaction	Nature of transaction is the type of transaction being made used to prevent Value Added Tax and Intrastat discrepancies.
4.7.14.27.5 Mode of Transport	Mode of transport method by which goods are delivered.
4.7.14.27.6 Siret Number	Siret number is a French company ID number.
4.7.14.28 Payment Information	The payment information area is used to enter the bank account information for a vendor. This can also be used to set electronic payment information. This information includes the following specific elements: ❑ Bank account ID ❑ Payment method ❑ Payee reference code ❑ Withholding code ❑ Vendor type ❑ Social security number
4.7.14.28.1 Bank Account ID	This is the vendors bank account ID.
4.7.14.28.2 Payment Method	This is the method used for vendor payment as follows: ❑ File ❑ BACS ❑ Check
4.7.14.28.3 Payee Reference Code	The payee reference code is for use with online bank payments. This number may be used as the vendor bank information when making a payment.
4.7.14.28.4 Withholding Code	This is the vendors withholding code.
4.7.14.28.5 Vendor Type	This is the vendors type code and can be either: ❑ Company ❑ Person For the vendor type of person, additional information is required as followed: ❑ Date of birth ❑ Place of birth ❑ Gender ❑ State of birth
4.7.14.28.5.1 Date of Birth	This is the persons date of birth.
4.7.14.28.5.2 Place of Birth	This is the persons place of birth.

4.7.14.28.5.3 Gender	This is the persons gender or sex.
4.7.14.28.5.4 State of Birth	This is the persons state that they where born in.
4.7.14.28.6 Social Security Number	This is the vendors social security number or tax ID number.
4.7.14.29 Vendor Notes	Vendor notations (notes, for short) are free form text used for internal documentation purposes. Notes have the following aspects: ❑ Notes are exclusively for the internal use of the business. ❑ They are not included on any outgoing paperwork. ❑ Individual note entries are automatically date/time stamped, and maintained as separate entries.

4.8 Receiving	Receiving is the sub-system for processing receipts of inventory into stores. Receiving involves the following functionality: ❑ Creating Purchase Order Receivers ❑ Creating service receipts ❑ Creating inventory transactions ❑ Cost determination ❑ Creating Dimensional inventory transactions
4.8.1 General Receiving Reports	
4.8.1.1 Purchased Part Receiver	The *Purchased Part Receiver* is printed by receiving personnel. The report can be printed individually or in batch mode for all Receivers done on a given date. The report can be viewed, e-mailed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Received date Purchase Order header: ❑ Purchase Order ID (optional bar code) ❑ Purchase Order vendor ID ❑ Purchase Order vendor name ❑ Purchase Order date ordered ❑ Purchase Order buyer Receiver header: ❑ Receiver ID ❑ Date line item received Line items: ❑ Line number (optional bar code) ❑ Part ID ❑ Part description ❑ Location ID ❑ Order quantity (optional bar code) ❑ Received quantity (optional bar code) ❑ Purchase unit of measure ❑ Stock unit of measure (if different then purchase U/M) ❑ Vendor part ID ❑ HTS code ❑ Country of orig ❑ Material code ❑ Linked job information (if linked)
4.8.1.2 Transportation Documents	The *Transportation Documents* is a status report of inventory that can be produced on demand which details the location and value of inventory and why it was shipped. This option is only available if Shipment Tracking has been enabled and after an Interbranch Transfer shipment has accrued. Header: ❑ Transportation document ID ❑ Ship date ❑ Shipped by (sending company, receiving company, carrier) ❑ Sending company name and address (street, city, state, zip) ❑ Receiving company name and address (street, city, state, zip)

	❑ Shipped to company name and address (street, city, state, zip) ❑ Sending company VAT registration ID ❑ Receiving company VAT registration ID ❑ Shipped to company VAT registration ID ❑ Ship reason description ❑ Order ID ❑ Order date Line item: ❑ Shipped quantity ❑ Part ID ❑ Part description ❑ Amount Footer: ❑ Package type ❑ Carton count ❑ Weight total ❑ Shipping Terms ❑ Carrier name and address (street, city, state, zip) ❑ Carrier VAT registration ID ❑ Document notes
4.8.1.3 Intrastat Arrivals Report	The *Intrastat Arrivals Report* details the arrivals by the from country. Header: ❑ Company name ❑ Report comments ❑ VAT registration number ❑ Branch ID ❑ Company name ❑ Company address ❑ Reporting period and year ❑ Number of items ❑ Total Value Line items: ❑ Commodity code ❑ Amount ❑ Nature of transportation ❑ Net weight ❑ From country ID ❑ Mode of transport ❑ Origin country ID ❑ VAT registration number ❑ Excise price ❑ Tariff code ❑ Arrival code ❑ Trans code ❑ To country ID ❑ Region ❑ Reference ID
4.8.1.4 Intrastat Dispatch Report	The *Intrastat Dispatch Report* details the Dispatch by the to country ID. Header: ❑ Company name

	❑ Report comments ❑ VAT registration number ❑ Branch ID ❑ Company name ❑ Company address ❑ Reporting period and year ❑ Number of items ❑ Total Value Line items: ❑ Commodity code ❑ Amount ❑ Nature of transportation ❑ Net weight ❑ To country ID ❑ Mode of transport ❑ Origin country ID ❑ VAT registration number ❑ Excise price ❑ Tariff code ❑ Arrival code ❑ Trans code ❑ From country ID ❑ Region ❑ Reference ID
4.8.1.5 European Sales List Report	The *European Sales List (ESL) Report* details the Value Added Tax informaiton. Header: ❑ VAT registration number ❑ Reporting period and year ❑ Number of items ❑ Total Value Line items: ❑ Customer country ID ❑ VAT registration ❑ Amount
4.8.1.6 Trace ID Label	The *Part Trace Label* is used to identify traced materials. Line items: ❑ Trace ID ❑ Part ID ❑ Part description ❑ Quantity
4.8.1.7 Inter Branch Transfer Receiver Report	The *Interbranch Transfer Receiver Report* prints receipt transactions for a certain date or prints the current Receiver. The report can be viewed, e-mailed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Transaction date Purchase Order header: ❑ Purchase Order ID (optional bar code) ❑ Vendor ID

	❑ Vendor name ❑ Order date ❑ Buyer Receiver header ❑ Receiver ID ❑ Date received Line items: ❑ Line number (optional bar code) ❑ Part ID ❑ Part description ❑ Location ID ❑ Order quantity (optional bar code) ❑ Received quantity (optional bar code) ❑ Stock unit of measure ❑ Vendor part ID ❑ HTS code ❑ Country of orig ❑ Material code ❑ Linked job information (if linked)
4.8.1.8 Purchased Part Receiving Report	The *Purchased Part Receiving Report* provides information on all firm and released Purchase Orders in the system for a given date range. The report can be future limited by any or all of the Purchase Order receipts status(s): scheduled, actual, and/or void. The report can further limited by either a Purchase Order range or a vendor range. The report can be viewed, e-mailed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Date range Purchase Order header: ❑ Purchase Order ID ❑ Status ❑ Vendor ID ❑ Vendor name ❑ Vendor contact ❑ Vendor phone ❑ Order Date ❑ Buyer ❑ Ship Via ❑ Desired receipt Date Line number header: ❑ Line number ❑ Part ID ❑ Part description ❑ Service ID ❑ Service description ❑ Vendor part ID ❑ Order quantity ❑ Due quantity (= order quantity - quantity received) ❑ Desired receive date ❑ Purchase unit of measure

	Line items: ❑ Delivery schedule line ❑ Desired receive date ❑ Order quantity ❑ Total quantity due
4.8.2 Receiver Source	
4.8.2.1 Keyboard	
4.8.2.1.1 Auto Backorder Selection Mode	[OK do we put in configuration options here? Like auto-backorder mode
4.8.2.1.2	[then leave the Receiver creation just the Receiver records and not entry logic
4.8.2.2 Bar Coding	
4.8.2.2.1 Timer Options	
4.8.2 Search and Retrieve Purchase Order Information	Often during receipt operations, packages arrive without referencing the Purchase Order. Purchase Orders need to be looked up within the receiving function by using all the fields contained in a Purchase Order.
4.8.3 Create Receiver	The receipt information is used in connection with information from the Purchase Order **at the time of receipt** to create a document that captures all relevant information about a receipt.
4.8.3.1 Receiver Header	The Receiver Header is created with minimal required information and most comes from the Purchase Order. Most information taken from the Purchase Order is copied into the Receiver allowing modifications as needed without affecting the original data. The following are included in the header: ❑ Receiver ID ❑ Purchase Order ID ❑ Actual received date ❑ Receive on date ❑ Original promise date ❑ Vendor address ❑ Buyer ❑ Free of Board (FOB) ❑ Ship Via ❑ Currency ❑ Purchase Order Status
4.8.3.2 Line Modes	The required information at the line level depends on the type of line that is being received. The Receiver lines are copied from the Purchase Order for those lines that have quantities remaining to be received. The following types of receipts occur: ❑ Stocked ❑ Subcontract service ❑ Misc. parts ❑ Consumable
4.8.3.2.1 Stocked	The *Stocked* Purchase Order Line is used for items that have a Part Master and will be received into stock. Optionally, a Work Order can be linked to the Purchase Order Line that will enable the receiving process to automatically issue the item the associated Work Order from stock upon receipt.
4.8.3.2.2 Subcontract Service	The *Subcontract Service* Purchase Order Line is used for Shop Resources that have been specifically designated as Subcontract Services. A Work Order link must be established with the Purchase Order Line to create the association between the subcontract

	requirement (Work Order) and its fulfillment (Purchase Order Line).
4.8.3.2.3 Misc. Parts	The *Miscellaneous Parts* line is used for items that are not in the Part Master and are to be expensed upon receipt. A General Ledger account number must be supplied for this Purchase Order Line type.
4.8.3.2.4 Consumable	The *Consumable* part line is used for parts that have been designated as consumable in their Part Master. The consumable part is ordered like stocked part. However, a General Ledger expense account is provided on the Purchase Order Line, similar to a miscellaneous line, to immediately expense the item upon receipt. The consumable part allows the structure and planning ability of a part numbered item while permitting the immediate expensing of the item without additional inventory transactions.
4.8.3.3 Receiver Line	The following information is associated with each Receiver line: ❑ Purchase Order line number ❑ Reference ❑ Traceable? ❑ Vendor part ID ❑ Quantity ordered ❑ Purchase Order pieces ❑ Purchase Order length ❑ Purchase Order width ❑ Purchase Order height ❑ Total quantity dispatched ❑ Total quantity received ❑ Quantity received ❑ Receive to inspection? ❑ Stock order quantity ❑ Stock receive quantity ❑ Number pieces received ❑ Length ❑ Width ❑ Height ❑ Dimensions unit of measure ❑ Last received date ❑ Location ❑ Warehouse ❑ Ship-To ❑ Receive on ❑ Promise date ❑ Close short?
4.8.3.3.1 Reference	For stocked lines, the part ID is displayed all with its associated description. For Manufactured lines, the word "Job" is displayed followed by the Work Order number and part ID if there is one. For Miscellaneous items, the word "Misc" is displayed.
4.8.3.3.2 Traceable?	This indicates whether the part on the line is set up for part trace.
4.8.3.3.3 Vendor Part ID	This is taken from the Purchase Order line if it is specified. It is not changeable.
4.8.3.3.4 Quantity Ordered	This is taken from the Purchase Order line and is expressed in terms of the stocking unit of measure.
4.8.3.3.5 Purchase Order Pieces	This is taken from the Purchase Order line if it is specified. It is not changeable.
4.8.3.3.6 Purchase Order Length	This is taken from the Purchase Order line if it is specified. It is not changeable.
4.8.3.3.7 Purchase Order Width	This is taken from the Purchase Order line if it is specified. It is not changeable.
4.8.3.3.8 Purchase Order Height	This is taken from the Purchase Order line if it is specified. It is not changeable.

4.8.3.3.9 Total Quantity Dispatched	This is the cumulative quantity Dispatched to date for the line. It is taken from the Purchase Order line and is not changeable.
4.8.3.3.10 Total Quantity Received	This is the cumulative quantity received to date for the line expressed in terms of the purchase unit of measure. It is derived from inventory transactions and is not changeable by the user.
4.8.3.3.11 Quantity Received	This is the quantity that is currently being received as part of this Receiver expressed in terms of the purchase unit of measure. The default value is set to the remaining quantity to be received.
4.8.3.3.12 Receive to Inspection?	This flag is set if the line contains a part that has it setup for required inspection in the Part Master. The flag can also be manually set here to force the receipt to an inspection location.
4.8.3.3.13 Stock Order Quantity	This is the quantity ordered taken from the Purchase Order line and is expressed in the stocking unit of measure.
4.8.3.3.14 Stock Receive Quantity	This is the cumulative received quantity to date for the line and is expressed in the stocking unit of measure. It is derived from inventory transactions and is not changeable by the user.
4.8.3.3.15 Number Pieces Received	This is the number of pieces being received of one unique dimension. Used for Purchase Order lines containing parts set up for dimensional inventory.
4.8.3.3.16 Length	This is the Length dimension for a group of pieces being received on dimensional inventory Purchase Order lines.
4.8.3.3.17 Width	This is the Width dimension for a group of pieces being received on dimensional inventory Purchase Order lines.
4.8.3.3.18 Height	This is the Height dimension for a group of pieces being received on dimensional inventory Purchase Order lines.
4.8.3.3.19 Dimensions Unit of Measure	This is the unit of measure that dimensional inventory uses for specifying piece dimensions. Taken from the Purchase Order line and is not changeable.
4.8.3.3.20 Last Received Date	This is the last date that receiving activity took place for this line. The system automatically maintains this date and is left blank if the line has never been received.
4.8.3.3.21 Location	The location where the parts are received into.
4.8.3.3.22 Warehouse	The warehouse where the parts are received into.
4.8.3.3.23 Ship-To	This is taken from the Purchase Order line if it is specified. It is not changeable.
4.8.3.3.24 Receive On	This is the Desired Receive Date taken from the Purchase Order line. It is not changeable.
4.8.3.3.25 Promise Date	This is the Promise Date taken from the Purchase Order line. It is not changeable.
4.8.3.3.26 Close Short?	This is a flag indicating that the line is desired to closed short. By using this flag, the remaining requirement for the Purchase Order line is eliminated.
4.8.4 Process Receipt	Once the appropriate information is gathered and the Receiver is created, the system proceeds processing the receipt. These steps are: ❑ Processing modes ❑ Backorder modes ❑ Inspection mode ❑ Create warehouse locations ❑ Calculate transaction costs ❑ Create inventory transactions ❑ Create part trace transactions ❑ Create Dimensional inventory transactions ❑ Allocate receipt quantity to demand links ❑ Update perpetual inventory ❑ Update Purchase Order

4.8.4.1 Processing Modes	Receipts can be processed either on a line-by-line basis or by processing all eligible lines enmasse. In addition, receipts can be made for outside services.
4.8.4.1.1 Line-By-Line	This mode requires the user to enter receipt information for each line that is desired to be received. During receipts processing, the system prompts the user where the parts will be stored.
4.8.4.1.2 All Eligible	This mode assumes that each line is to be received complete. The default warehouse and location is used to receive the inventory into.
4.8.4.1.3 Outside Service	If a Purchase Order line contains an outside service, a service receipt transaction is created instead of a general inventory transaction. This service receipt transaction contains information including the quantity and cost of the receipt. See section XXX below for this process.
4.8.4.2 Backorder Modes	Each line on the Purchase Order that is not received complete as the result of the current receipt must be handled by a backorder procedure. The following are the possible methods of handling incomplete received lines: ❑ Close the line(s) short ❑ Leave the line(s) open ❑ Copy the line(s) the a separate backorder Purchase Order
4.8.4.2.1 Close Short	If wanted, the user can simply close the line short. In this case, the total to-date shipped quantity is still preserved along with the original ordered quantity. However, the line is flagged as closed short to negate any supply or future receipts against the line. This flag should be able to be cleared by the user should a future receipt and visibility of the supply are needed.
4.8.4.2.2 Leave Order Open	This mode leaves the remaining quantity open for a future receipt against the line(s).
4.8.4.2.3 Create Separate Backorder	The lines that have remaining quantities to be received are copied to a new Purchase Order and the original Purchase Order is changed to a status of closed. The new order has the same order ID with a suffix (e.g. –1, -2, -3) for each time this mode was utilized for the Purchase Order. The quantity remaining to be received is entered as the order quantity on the backorder.
4.8.4.3 Inspection Mode	This mode is for parts that are designated as requiring inspection in their Part Master. Parts must be received into a warehouse location that has been designated as In-Inspection.
4.8.4.4 Create Warehousing Locations	If the warehouse/location combination that the item is being received into does not exist, then that location needs to be added to the Warehouse/Location Master. Warehouse/locations are pre-assigned to part numbers to indicate the valid storage places for the specific part number. If the received warehouse/location is not established for the part being received, then the warehouse/location needs to be assigned to the part number during the receipt process.
4.8.4.5 Calculate Costs For Inventory Transactions	Upon receipt, a cost is established as part of the incoming receipt transaction. For standard cost systems, this cost comes from the Part Master. For actual cost systems, the cost comes from the Purchase Order line. For actual cost systems that have a costing source set to Purchase Order, the cost is considered final. For actual cost systems where the costing source is set to AP Invoice, then the cost from the Purchase Order is established as a preliminary cost until such time a permanent cost can be determined from a matched AP Invoice.
4.8.4.6 Create Inventory Receipt Transaction	Each line on a Receiver creates a separate inventory transaction. These inventory transactions are categorized as a “receipt in”. The transaction carries part number, (if one is used), quantity, warehouse/location, Purchase Order reference information, and cost information.
4.8.4.7 Create Part Trace Transaction	For each part number that is designated part trace, an additional transaction type must be created in connection with the general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction.

	Part trace information includes the following: ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3 ❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3 ❑ Numeric property #4 ❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank based on criteria established when part trace was established for the part.
4.8.4.7.1 Quantity	This is the user assigned quantity for the particular lot. The user can enter a different quantity and add additional lot numbers if necessary. This quantity cannot exceed the maximum lot size, if any, specified for the part.
4.8.4.7.2 Label	This nomenclature is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.8.4.7.3 Alpha Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Alpha properties allow alphanumeric input (letters and numbers), and should be used for non-numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.8.4.7.4 Numeric Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Numeric properties allow numeric input (numbers only), and should be used for numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.8.4.7.5 Expiration Date	If a part was setup with a shelf life, then the system calculates an expiration date by adding shelf life to receipt date. This date is then stored as part of the part trace transaction.
4.8.4.8 Create Dimensional Transaction	For a part ID that is designated as dimensionally tracked, an additional transaction type must be created concerning the general inventory transaction. The dimensional transaction contains information specific to one unique dimension including quantity, height, width, and length. There must be a one-dimensional transaction for each unique combination of the dimensions within the general inventory transaction. The transaction contains the following: ❑ Number of pieces ❑ Length ❑ Width ❑ Height ❑ Dimension unit of measure ❑ Warehouse ❑ Location
4.8.4.8.1 Number of Pieces	This is the number of pieces of one unique dimension combination and warehouse/location. This is used in place of the quantity in the regular inventory transaction.

4.8.4.8.2 Dimensions	These are the specific dimensions for the pieces in the transaction.
4.8.4.8.3 Unit of Measure	The unit of measure used to express the dimensions in this transaction.
4.8.4.8.4 Warehouse / Location	The warehouse and location containing the inventory in this transaction.
4.8.4.8 Allocate Receipt Quantity To Demand Links	
4.8.4.9 Update Perpetual Inventory	The on-hand quantity for the part ID is updated along with the on-hand balance for each affected stocking location.
4.8.4.10 Update Purchase Order	Upon receipt, the Purchase Order needs to be updated to include the cumulative quantity received from all Receivers for each Purchase Order. This cumulative receipt information is used for various planning functions throughout the system. If the Purchase Order is received complete, from this Receiver or from cumulative Receivers, then the Purchase Order is to be flagged as closed to prevent further planning and processing of that Purchase Order. Indicating such at the time of receiving can close a Purchase Order line short.
4.8.5 Create Inventory Issue Transactions	Based on the way a Purchase Order is created and various parameters are set for parts, automatic inventory transactions are created upon receipt of the item(s). Neither traceable nor dimensional inventory parts can be automatically issued to Work Orders since each requires manual input from the user at the time of issue. These include: ❑ Issue material to a Work Order ❑ Issue consumable item to an expense account
4.8.5.1 Create Inventory Issue Transaction To Linked Work Order	If a Purchase Order is linked to one or more specific Work Order requirements, then individual issue transactions are created for those materials after the receipt of materials takes place. Each issue transaction is of the exact same nature as if the material were manually issued apart from the receiving process. There is one issue transaction for each Work Order requirement issue.
4.8.5.2 Create Inventory Issue Transaction To Expense Account For Consumables	If an item is established as a consumable part, then the item is adjusted out of inventory upon receipt. The line item is received normally and creates a receipt inventory transaction. After the receipt transaction, an issue transaction is created that is of the exact same nature as if the material were manually adjusted out from stock to an expense account. The expense account number is pulled from the Part Master.
4.8.6 Maintain Receiver	
4.8.6.1 Receiving Inspection	This is used to manage inventory that was received into inspection. Functionality includes: ❑ Displaying all Receivers currently in-inspection ❑ Release from inspection ❑ Return to supplier ❑ Partial return or release ❑ Move to new location
4.8.6.1.1 Display Receivers In-Inspection	The following information is displayed for each Receiver with at least some inventory in-inspection: ❑ Receiver ID ❑ Purchase Order ID

	❑ Vendor ID ❑ Vendor name ❑ Date received
4.8.6.1.2 Release From Inspection	This releases the entire quantity on the Receiver from inspection and moves the quantity from the inspection warehouse/location to the default primary warehouse/location for the part.
4.8.6.1.3 Return to Supplier	This automatically creates a contra Receiver for the entire quantity in-inspection and removes the quantity from inventory.
4.8.6.1.4 Partial Return or Release	This allows the user to enter specific quantities for inspection release and for return to supplier. The system handles each accordingly as in the sections above. If the released quantity and the return quantity total less than the total quantity received, then the Receiver remains in-inspection with the remaining quantity.
4.8.6.1.5 Move to New Location	This is used to move specific quantities from one location to another.
4.8.7 Contra Transactions	This is the same as a regular receiving except the transactional quantities are reversed. A new Receiver is created to reflect this return transaction.
4.8.7.1 Search And Display Original Receiver Information	To facilitate the return of previously received Purchase Orders, the original Receiver needs to be searched and retrieved.
4.8.7.2 Create Receiver	A Receiver is created just as for a normal receipt. However, the received quantity is reversed.
4.8.7.3 Reverse Issue Inventory	Certain Purchase Orders configurations cause received materials to be immediately issued from stock after receipt. These include: ❑ Issue material to a Work Order ❑ Issue consumable item to an expense account As part of the return process, these inventory issues need to be reversed. Each of the inventory transactions (regular, dimensional, part trace, consumable) are processed the same for a return transaction except that the quantities are reversed.
4.8.7.3.1 Create Inventory Reverse Issue Transaction	A reverse issue transaction is created for each original issue transaction.
4.8.7.3.2 Create Part Trace Reverse Transaction	A reverse transaction is created for each original part trace transaction.
4.8.7.3.3 Create Dimensional Reverse Transaction	A reverse transaction is created for each original dimensional transaction.
4.8.7.4 Reverse Receive Inventory	A new inventory transaction is created for each of the receipt inventory transactions originally created as part of the receiving process. These new transactions are essentially the same except that their quantities are reversed. The returned quantity cannot exceed the total quantity shipped for each line. If part trace and Dimensional transactions were part of the original receipt, then these need to be reversed as well.
4.8.7.4.1 Create Inventory Reverse Receipt Transaction	A reverse receipt transaction is created for each original issue transaction.
4.8.7.4.1 Create Part Trace Reverse Transaction	A reverse transaction is created for each original part trace transaction. The user must identify which lots are being returned.

4.8.7.4.3 Create Dimensional Reverse Transaction	A reverse transaction is created for each original dimensional transaction. The user must identify which dimensions are being returned.
4.8.7.5 Update Purchase Order	If the Purchase Order has been closed, it is re-released. The to-date received quantities for each line are updated based on the quantities being returned.
4.8.8 Delete Receiver	A Receiver can be deleted permanently from the system, unless the associated Purchase Order has been vouchered. Deleting a Receiver essentially undoes all the effects of the original receipt. The system resets total quantities received and all inventory transactions that were created are deleted (not reversed) and on-hand inventory balances are adjusted accordingly. Purchase Orders that were closed by the receipt are automatically re-released. Deletion of a Receiver is only recommended to correct a data entry error – a bad Receiver can be deleted and re-entered. Deleting a Receiver when material has actually been received will result in incorrect inventory balances.
4.8.9 Receive an Interbranch Transfer (IBT)	
4.8.9.1 Search and Retrieve IBT Information	
4.8.9.2 Create IBT Receiver Header	
4.8.9.3 Create IBT Receiver Line	
4.11.11.4 Assign Receipt Quantity to Demand Links	
4.11.12 Delete IBT Receiver	
4.8.9 Receive Service	Outside services need to be received to indicate to the system that such services are complete. This information is used by the Scheduler and for costing purposes. In the same way that purchased materials are received into the system, service receipts are logged into the system. The following steps are part of the service receiving process: ❑ Service receipt modes ❑ Display Work Order information ❑ Create service receipt transaction ❑ Cost service receipt and apply to Work Order ❑ Update Work Order status
4.8.9.1 Service Receipt Modes	The receipt of a service can be accomplished by: ❑ Purchase Order based ❑ Non Purchase Order based
4.8.9.1.1 Purchase Order Based	In this mode, the outside service was purchased using a Purchase Order. The receipt process follows standard Purchase Order receiving. However, a service receipt transaction is created rather than the regular inventory transaction.
4.8.9.1.2 Non Purchase Order Based	In this mode, the outside service was not part of the formal purchasing process. A service receipt transaction still needs to be created to indicate the completion of the service and its attendant cost.

4.8.9.2 Display Work Order Information	To create the receipt of a service that is not linked to a Purchase Order, the Work Order and operation must be identified. To facilitate this process, all Work Orders and their outside operations must be searchable. Once the desired service has been identified the system returns the following status information: ❑ Total Dispatched quantity ❑ Total received quantity ❑ Remaining quantity to receive
4.8.9.3 Create Service Receipt Transaction	Information is gathered from the user to create the service receipt transaction. This transaction contains the following: ❑ Transaction date ❑ Work Order ID ❑ Operation sequence number ❑ Service ID ❑ Service part ID ❑ Vendor ID ❑ Vendor service ID ❑ Received good quantity ❑ Received deviated quantity ❑ Unit cost ❑ Base charge ❑ Description
4.8.9.4 Cost Service Receipt And Apply To Work Order	Cost data is derived from the service receipt transaction and applied to the Work Order that contains the received service. Manufacturing Costing will use these costs in valuing the Work Order.
4.8.9.5 Update Work Order Status	The service receipt transaction updates the Work Order that contains the received service to reflect the service completion for the quantity received. If the quantity complete for the operation is now equal to or greater than the required quantity, the system automatically closes the operation.
4.8.10 Delete Service Receipt	This permanently deletes the service receipt transaction from the system. All affects of the original transaction are reversed.

4.9 Inventory Management	Inventory Management is the sub-system for processing inventory into and out from perpetual inventory. Inventory Management involves the following functionality: ❑ Issue of inventory to a job ❑ Receipt of a job into inventory ❑ Adjust Into Inventory ❑ Issue inventory by exception ❑ Transfer inventory between warehouses/locations ❑ Contra transactions ❑ Retrieving inventory transactions created automatically elsewhere in the system ❑ Physical inventory count ❑ Cycle count inventory ❑ ABC analysis
4.9.1 General Inventory Management Reports	
4.9.1.1 Inventory Transaction Report	The *Inventory Transaction Report* is used to output a user selected transaction type and sequenced inventory transactions for a specified date-range and ID-range based on the sorting sequence selected. A blank entry is allowed for any or all range entries giving an open-ended request. The type of transaction to report on changes based on the sequence chosen. Total value change is calculated for the entire reporting period as well as for each sequence group. The reporting period is based on the given date-range and further restricted by the given ID-range. An optional "zero cost only" will be provided to track transactions that have a zero value associated with them. The report can be printed, viewed, or sent to a file. The three types of transaction reporting are: ❑ Receipts ❑ Issues/Shipments ❑ Adjustments The six sorting sequences are by: ❑ Transaction ID (all types) ❑ Part ID (all types) ❑ Customer Order ID (issues/shipments only) ❑ Purchase Order ID (receipts only) ❑ Work Order ID (receipts and issues/shipments) ❑ Warehouse/Location ID (all types)
4.9.1.1.1 Sorted by Transaction	This is the *Transaction Sorted* version of the inventory transaction report. Transaction header: ❑ Transaction ID Line items: ❑ Transaction date ❑ Class type ❑ Part ID ❑ Part description ❑ Warehouse ID ❑ Location ID ❑ Quantity ❑ Unit cost (= material + labor + burden + service) ❑ Total value

	Report footer: ❑ Total amount of inventory change for the given date range
4.9.1.1.2 Sorted by Part	This is the *Part ID Sorted* version of the inventory transaction report. Part header: ❑ Part ID ❑ Part description Line items: ❑ Transaction ID ❑ Transaction date ❑ Class type ❑ Warehouse ID ❑ Location ID ❑ Quantity ❑ Unit cost (= material + labor + burden + service) ❑ Total Value Part footer: ❑ Part ID ❑ Total quantity ❑ Total value per Part Report footer: ❑ Total amount of inventory change for the given date range
4.9.1.1.3 Sorted by Customer Order	This is the *Customer Order ID Sorted* version of the inventory transaction report. Customer Order header: ❑ Customer Order ID Line items: ❑ Transaction ID ❑ Transaction date ❑ Class type (limited to "Issue / Shipments") ❑ Part ID ❑ Part description ❑ Warehouse ID ❑ Location ID ❑ Quantity ❑ Unit cost (= material + labor + burden + service) ❑ Total value Customer Order footer: ❑ Customer Order ID ❑ Total quantity ❑ Total value per Customer Order Report footer: ❑ Total amount of inventory change for the given date range
4.9.1.1.4 Sorted by Purchase Order	This is the *Purchase Order ID Sorted* version of the inventory transaction report. Purchase Order header: ❑ Purchase Order ID

	Line items: ❑ Transaction ID ❑ Transaction date ❑ Class type (limited to "issue / shipments") ❑ Part ID ❑ Part description ❑ Warehouse ID ❑ Location ID ❑ Quantity ❑ Unit cost (= material + labor + burden + service) ❑ Total value Purchase Order footer: ❑ Purchase Order ID ❑ Total quantity ❑ Total value per Purchase Order Report footer: ❑ Total amount of inventory change for the given date range
4.9.1.1.5 Sorted by Work Order	This is the *Work Order ID Sorted* version of the inventory transaction report. Work Order header: ❑ Work Order ID Line items: ❑ Transaction ID ❑ Transaction date ❑ Class type (limited to "Issue / Shipments") ❑ Part ID ❑ Part description ❑ Warehouse ID ❑ Location ID ❑ Quantity ❑ Unit cost (= material + labor + burden + service) ❑ Total value Work Order footer: ❑ Work Order ID ❑ Total value per Work Order Report footer: ❑ Total amount of inventory change for the given date range
4.9.1.1.6 Sorted by Warehouse / Location	This is the *Warehouse / Location ID Sorted* version of the inventory transaction report.. Warehouse header: ❑ Warehouse ID ❑ Warehouse description Location header: ❑ Location ID ❑ Location description Line items: ❑ Transaction ID ❑ Transaction date

	❑ Class type (limited to "Issue / Shipments") ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit cost (= material + labor + burden + service) ❑ Total value Location footer: ❑ Location ID ❑ Total value per location Warehouse footer: ❑ Warehouse ID ❑ Total value per warehouse Report footer: ❑ Total amount of inventory change for the given date range
4.9.1.2 Inventory Part Trace Label Report	The *Inventory Part Trace Label Report* is used to output part trace labels. This can only be done after the transaction is completed (due to when auto-number assignment is completed). Trace labels are printed for all traceable parts on the Receiver. Before printing, display the part ID, part description, transaction ID, and transaction type. Provided will be a standard label format and three user-defined formats. Print one label for each lot number for each part prints. The report can be viewed, printed, or sent to a file. Standard label header: ❑ Lot number ❑ Part ID ❑ Quantity Optional label header information: ❑ Barcode for the lot number ❑ Properties ❑ Comments ❑ Transaction dates ❑ Shelf lives ❑ Maximum lot sizes
4.9.1.3 Inter Branch Transfer Report	The *Inter Branch Transfer (IBT) Report* can be only be printed for a given through date.. A draft mode is required for user setup and test prints. Allow three user defined print formats based on the standard format. Output options are: ❑ Print current IBT ❑ Print current IBT and release ❑ Print all Firmed IBTs through a given date ❑ Print all Firmed IBTs Release through a given date Header: ❑ IBT ID ❑ From warehouse name ❑ From warehouse address (street, city, state, zip) ❑ To warehouse name ❑ To warehouse address (street, city, state, zip) ❑ Order date ❑ Ship Via

	❑ Buyer ❑ Desired ship date ❑ Desired receive date ❑ Shipped date ❑ Received date IBT header: ❑ IBT ID ❑ IBT long description Line item: ❑ Order quantity ❑ Shipped quantity ❑ Received quantity ❑ Part ID ❑ Part description
4.9.1.4 Open Inter Branch Transfer Report	The *Open Inter Branch Transfer (IBT) Report* is printed for a user given through date for sending warehouse, receiving warehouse, or all warehouses. Each report can be sequenced as shown below. The report can be printed, viewed, e-mailed, or sent to a file. Open IBT's by: ❑ Sending warehouse ❑ Receiving warehouse ❑ All warehouses Sequenced by: ❑ IBT ID ❑ Supplying warehouse ID ❑ Receiving warehouse ID ❑ Part ID
4.9.1.4.1 Open IBT Report (sort: IBT)	This is the *IBT Sorted* version of the open inter branch transfer report. The report is printed for a user given through date for sending warehouse, receiving warehouse, or all warehouses. Header: ❑ Company name ❑ Report title ❑ Through date ❑ Warehouse report type (all, sending, receiving) IBT header: ❑ IBT ID ❑ From warehouse ID ❑ From warehouse description ❑ To warehouse ID ❑ To warehouse description ❑ Order date ❑ Ship Via ❑ Desired receive date ❑ Shipped date Line item: ❑ Line number ❑ Part ID ❑ Part description

	Order quantity Unit of measure per IBT item
4.9.1.4.2 Open IBT Report (sort: Supplying Warehouse)	This is the *Supplying Warehouse Sorted* version of the open inter branch transfer report. The report is printed for a user given through date for sending warehouse, receiving warehouse, or all warehouses. Header: ❑ Company name ❑ Report title ❑ Through date ❑ Warehouse report type (all, sending, receiving) From Warehouse header: ❑ From warehouse ID ❑ From warehouse description IBT header: ❑ IBT ID ❑ To warehouse ID ❑ To warehouse description ❑ Order date ❑ Buyer ❑ Ship Via ❑ Desired receive date ❑ Shipped date Line item: ❑ Line number ❑ Part ID ❑ Part description ❑ Order quantity ❑ Unit of measure per IBT item
4.9.1.4.3 Open IBT Report (sort: Receiving Warehouse)	This is the *Receiving Warehouse Sorted* version of the open inter branch transfer report. The report is printed for a user given through date for sending warehouse, receiving warehouse, or all warehouses. Header: ❑ Company name ❑ Report title ❑ Through date ❑ Warehouse report type (all, sending, receiving) To warehouse header: ❑ To warehouse ID ❑ To warehouse description IBT header: ❑ IBT ID ❑ From warehouse ID ❑ From warehouse description ❑ Order date ❑ Buyer ❑ Ship Via ❑ Desired receive date ❑ Shipped date

	Line item: ❑ Line number ❑ Part ID ❑ Part description ❑ Order quantity ❑ Unit of measure per IBT item
4.9.1.4.4 Open IBT Report (sort: Part)	This is the *Part Sorted* version of the open inter branch transfer report. The report is printed for a user given through date for sending warehouse, receiving warehouse, or all warehouses. Header: ❑ Company name ❑ Report title ❑ Through date ❑ Warehouse report type (all, sending, receiving) Part header: ❑ Part ID ❑ Part description IBT header: ❑ IBT ID ❑ From warehouse ID ❑ From warehouse description ❑ To warehouse ID ❑ To warehouse description ❑ Order date ❑ Buyer ❑ Ship Via ❑ Desired receive date ❑ Shipped date Line item: ❑ Line number ❑ Order quantity ❑ Unit of measure per IBT item
4.9.1.5 Transportation Documents	The *Transportation Documents* is a status report of inventory that can be produced on demand which details the location and value of inventory and why it was shipped. This option is only available if Shipment Tracking has been enabled and after an Interbranch Transfer shipment has accrued. Header: ❑ Transportation document ID ❑ Ship date ❑ Shipped by (sending company, receiving company, carrier) ❑ Sending company name and address (street, city, state, zip) ❑ Receiving company name and address (street, city, state, zip) ❑ Shipped to company name and address (street, city, state, zip) ❑ Sending company VAT registration ID ❑ Receiving company VAT registration ID ❑ Shipped to company VAT registration ID ❑ Ship reason description ❑ Order ID

	❑ Order date Line item: ❑ Shipped quantity ❑ Part ID ❑ Part description ❑ Amount Footer: ❑ Package type ❑ Carton count ❑ Weight total ❑ Shipping Terms ❑ Carrier name and address (street, city, state, zip) ❑ Carrier VAT registration ID ❑ Document notes
4.9.1.6 Physical Inventory Count Tags	The *Physical Inventory Count Tags* are printed for individual part tags to record counts and mark inventory. The tags are printed for a given physical count, warehouse and can be sorted by tag number or location/part. Bar code information can be optionally included. The tags can be printed, e-mailed, viewed, or sent to a file. Tag number header: ❑ Tag number Sub Tag number header: ❑ Sub tag number Line items: ❑ Warehouse ID (optional bar code) ❑ Location ID (optional bar code) ❑ Physical count ID (optional bar code) ❑ Tag number (optional bar code) ❑ Sub-Tag number ❑ Part ID (optional bar code) ❑ Part description ❑ Stock unit of measure ❑ Trace ID ❑ Trace label ❑ Blank locations to fill in quantity counted and by whom
4.9.1.7 Physical Inventory Count Tag Lists	The *Physical Inventory Count Tag Lists* prints all tags in report format, for part counts to be recorded on this report. The tag list report is printed for a given physical count, warehouse. The report sequencing and tag type selection is as shown below. Bar code information can be optionally included. The tag list report can be printed, e-mailed, viewed, or sent to a file. Sequence by: ❑ Group number / Tag number ❑ Tag number ❑ Location / Part Tag Type to be printed are: (any or all) ❑ Tags uncounted ❑ Tags counted where quantity change exceeds a given +/- units or percent

	❑ Tags counted where value change exceeds a given +/- value or percent ❑ Tags voided
4.9.1.7.1 Tag List (by Group / Tag Number)	This is the *Group / Tab Number Version* of the physical inventory count tag lists report. Header: ❑ Company name ❑ Report title tag number ❑ Tag types being printed Group header: ❑ Group number Line items: ❑ Tag number (optional bar code) ❑ Part ID ❑ Part description ❑ Stock U/M ❑ Location ID ❑ Sub-Tag number ❑ Sub-Tag total ❑ Trace label ❑ Trace ID ❑ Blank location to fill in quantity counted Page footer: ❑ Blank location to fill in counted by, recounted by, entered by, and checked by.
4.9.1.7.2 Tag List (by Tag number)	This is the *Tab Number Version* of the physical inventory count tag lists report. Header: ❑ Company name ❑ Report title tag number ❑ Tag types being printed ❑ Group number Line items: ❑ Tag number ❑ Part ID ❑ Part description ❑ Stock U/M ❑ Location ID ❑ Blank location to fill in quantity counted Page footer: ❑ Blank location to fill in counted by, recounted by, entered by, and checked by.
4.9.1.7.3 Tag List (by Location/Part)	This is the *Location / Part Number Version* of the physical inventory count tag lists report. Header: ❑ Company name ❑ Report title ❑ Tag types being printed Location header:

	❑ Location ID Line items: ❑ Tag number (optional bar code) ❑ Part ID ❑ Part description ❑ Stock U/M ❑ Group number ❑ Sub-Tag number ❑ Sub-Tag total ❑ Trace label ❑ Trace ID ❑ Blank location to fill in quantity counted Page footer: ❑ Blank location to fill in counted by, recounted by, entered by, and checked by. Report footer: ❑ Physical count ID (optional bar code)
4.9.1.8 Physical Inventory Count Tag Comparison Report	The *Physical Inventory Count Tag Comparison Report* gives a tag-by-tag comparison of on-hand quantities with counted quantities, and the resulting difference between current value and the value of the counted parts. The tag list report can be printed, e-mailed, viewed, or sent to a file. Sequence by: ❑ Tag number ❑ Part ID ❑ Location ID Tag Type to be printed are: (one choice only) ❑ Tags counted ❑ Tags all ❑ Tags where quantity change exceeds a given +/- units or percent ❑ Optionally include uncounted tickets ❑ Tags where value change exceeds a given +/- value or percent ❑ Optionally include uncounted tickets
4.9.1.8.1 Tag Comparison Report (Sorted by Tag Number)	This is the *Tag Number Version* of the physical inventory count tag comparison report. Header: ❑ Company name ❑ Report title ❑ Tag type being printed Line items: ❑ Tag number ❑ Part ID ❑ Part description ❑ Location ID ❑ Location quantity ❑ Previous value (before count) ❑ Quantity counted ❑ New value (after count) ❑ Sub-Tag number ❑ Trace label

	❑ Trace ID ❑ Trace quantity ❑ Sub-Tag count Report footer: ❑ Total previous value (before count) ❑ Total new value (after count)
4.9.1.8.2 Tag Comparison Report (Sorted by Part)	This is the *Part ID Version* of the physical inventory count tag comparison report. Header: ❑ Company name ❑ Report title ❑ Tag type being printed Part header: ❑ Part ID ❑ Part description ❑ Stock unit of measure Location header: ❑ Location ID Line items: ❑ Tag number ❑ Location ID ❑ Location quantity ❑ Previous value (before count) ❑ Quantity counted ❑ New value (after count) ❑ Sub-tag information: ❑ Trace label ❑ Trace ID ❑ Trace count ❑ Sub-Tag count Part footer: ❑ Location quantity total ❑ Previous value total (before count) ❑ Quantity counted total ❑ New value total (after count) Report footer: ❑ Previous value total (before count) ❑ New value total (after count)
4.9.1.8.3 Tag Comparison Report (Sorted by Location)	This is the *Location ID Version* of the physical inventory count tag comparison report. Header: ❑ Company name ❑ Report title ❑ Tag type being printed Location header: ❑ Location ID

	Part header: ❑ Part ID Line items: ❑ Tag number ❑ Part ID ❑ Part description ❑ Location quantity ❑ Previous value (before count) ❑ Quantity counted ❑ New value (after count) ❑ Sub-Tag number ❑ Trace label ❑ Trace ID ❑ Trace count ❑ Sub-Tag count Location footer: ❑ Previous value total (before count) ❑ New value total (after count) Report footer: ❑ Previous value total (before count) ❑ New value total (after count)
4.9.1.9 Physical Inventory Count Part Comparison Report	The *Physical Inventory Count Part Comparison Report* is similar to Tag Comparison, only it shows quantities and values for a part ID, rather than individual tags. The report shows one summarization line for all tags used to count a part. The tag list report can be printed, e-mailed, viewed, or sent to a file. Select parts to be printed by: ❑ Print parts with tags only ❑ Print all parts Parts printed restricted further by: ❑ Parts where quantity change exceeds a given +/- units or percent Optionaly include uncounted tickets ❑ Parts where value change exceeds a given +/- value or percent Optionaly include uncounted tickets Header: ❑ Company name ❑ Report title ❑ Part type being printed Line items: ❑ Part ID ❑ Part description ❑ Stock unit of measure ❑ Quantity on hand ❑ Previous value (before count) ❑ Quantity counted ❑ New value (after count) Report footer:

	❑ Previous value total (before count) ❑ New value total (after count)
4.9.1.10 Part List Information Report	The *Part List Information Reports* are generated for a given part ID range. A summary and detailed versions are available as shown below. Include the option to print bar code information. The reports can be viewed, e-mailed, printed, or sent to a file.
4.9.1.10.1 Part Summary Version	This is the *Summary Version* of the part list information report. Part ID sorted by default. Header: ❑ Company name ❑ Report title ❑ Part ID range Line items: ❑ Part ID (optional bar code) ❑ Part description ❑ Quantity available for issue ❑ Quantity on hand ❑ Stock unit of measure ❑ Unit cost (= unit costs of material + labor + burden + service) Footer: ❑ Count number of parts printed
4.9.1.10.2 Part Detailed Version	This is the *Detailed Version* of the part list information report. Part ID sorted by default. Header: ❑ Company name ❑ Report title ❑ Part ID range Line items: ❑ Part ID ❑ Part description ❑ Quantity available for issue ❑ Quantity on hand ❑ Stock unit of measure ❑ Product code ❑ Commodity code ❑ Purchased ❑ Fabricated ❑ Stocked ❑ Demand history ❑ ABC code ❑ Manufactures name (of given part) ❑ Manufactures part ID ❑ Ordering information ❑ Long description (specification) ❑ Engineering Master ID revision ❑ Drawing ID ❑ Drawing revision ❑ Tool or fixture? ❑ Burden percent ❑ Burden per unit ❑ Planning lead time (days) ❑ Preferred vendor ID

	❑ Weight ❑ Weight unit of measure ❑ Material unit cost ❑ Material unit cost – new ❑ Labor unit cost ❑ Labor unit cost – new ❑ Burden unit cost ❑ Burden unit cost – new ❑ Service unit cost ❑ Service unit cost – new ❑ Fixed cost ❑ Fixed cost – new ❑ Unit price Footer: ❑ Count number of parts printed
4.9.1.11 Part Where Used Report	The *Part Where Used Report* prints a where used list for a user given part range. The report shows where each part is used on any given Engineering Master, Quote Master, and/or Work Order, based selected status. The reports can be viewed, e-mailed, printed, or sent to a file. Where used selection list: ❑ Engineering Master ❑ Quote Master ❑ Work Orders Status checked: ❑ Unreleased ❑ Released ❑ Firmed ❑ Closed ❑ Cancelled Header: ❑ Company name ❑ Report title ❑ Part range being printed Part header: ❑ Part ID ❑ Part description ❑ Part specification ❑ Is part purchased / fabricated? ❑ Stock unit of measure ❑ Order Policy ❑ Lead time Line items: ❑ Type ❑ Base ID ❑ Lot ID ❑ Split ID ❑ Sub ID ❑ Sequence number ❑ Piece number

	❑ Part ID ❑ Part description
4.9.1.12 Warehouse Location Report	The *Warehouse Location Report* prints a list for a user given warehouse range. The report will include the option to print bar code information. The reports can be viewed, e-mailed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Warehouse range being printed Warehouse header: ❑ Warehouse ID ❑ Warehouse description Line items: ❑ Location ID (optionally bar code) ❑ Location description
4.9.1.13 Traceable Part Transaction Report	The *Traceable Part Transaction Report* allows output of trace records and their associated transactions for a given part range. Optional report additions are inventory and/or labor details for a given date range. The report can be viewed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Part range ❑ Date range (optional) Part header: ❑ Part ID ❑ Part description Trace header: ❑ Trace ID ❑ Received quantity ❑ Issue quantity ❑ Reported quantity ❑ Pre-assigned quantity ❑ Expiration date ❑ Property ❑ Comments Inventory detail header: (optional) ❑ Detail type Labor detail header: (optional) ❑ Detail type Line items: (for optional detail information) ❑ Transaction date ❑ Transaction description ❑ Transaction quantity ❑ Work Order ID ❑ Purchase Order (for inventory detail) ❑ Customer Order ID (for inventory detail)

	❑ Warehouse location (for inventory detail) ❑ Employee ID (for labor detail) ❑ Resource ID (for labor detail)
4.9.1.14 Traceable Part Location Report	The *Traceable Part Location Report* summarizes traceable part information by warehouse and location for a given part range. The report can be viewed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Part range Part header: ❑ Part ID ❑ Part description Warehouse header: ❑ Warehouse ID Location header: ❑ Location ID Line items: ❑ Trace ID ❑ Part description ❑ Location quantity ❑ Expiration date ❑ Creation date ❑ Property ❑ Comment
4.9.1.15 Part Inventory Valuation Report, by Posted Value	The *Part Inventory Valuation, by Posted Value Report* is used to output inventory valuation for a user given part-range. This is a manufacturing report and does not include General Ledger transactions. The output can be sequenced by part ID, Product code, or Commodity code. To further reduce the output, allow a selection to show parts with non-zero amounts only. The report can be printed, viewed, e-mailed or sent to a file. For users of the actual costing system, allow the following: The option of using standard part unit cost instead of FIFO actual costs. Sequenced by: ❑ Part ID ❑ Product code ❑ Commodity code
4.9.1.15.1 Sort by Part	This is the *Part Sorted* version of the part inventory valuation report. Line items: ❑ Part ID ❑ Part description ❑ Quantity on hand ❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Total cost (= material + labor + burden + service) Report footer: ❑ Total value

4.9.1.15.2 Sort by Product Code	This is the *Product Code Sorted* version of the part inventory valuation report. Product code header: ❑ Product code Line items: ❑ Part ID ❑ Part description ❑ Quantity on hand ❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Total cost (= material + labor + burden + service) Product code footer: ❑ Product code ❑ Total value (per Product code) Report footer: ❑ Total value (per complete report)
4.9.1.15.3 Sort by Commodity Code	This is the *Commodity Code Sorted* version of the part inventory valuation report. Commodity code header: ❑ Commodity code Line items: ❑ Part ID ❑ Part description ❑ Quantity on hand ❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Total cost (= material + labor + burden + service) Commodity code footer: ❑ Commodity code ❑ Total value (per Commodity code) Report footer: ❑ Total value (per complete report)
4.9.1.16 Part Inventory Valuation Report, by Cost Layer Detail	The *Part Inventory Valuation, by Cost Layer Detail Report* is used to output inventory valuation for a user given part-range. This report provides a breakdown and total value for each part. The output will be sequenced by part ID and a user selected cost layer detail option, shown below. To further reduce the output, allow a selection to show parts with non-zero amounts only. The report can be printed, viewed, e-mailed or sent to a file. Print options - cost layer detail: (select one) ❑ Show all parts in range ❑ Show parts with zero cost layers only ❑ Show parts with negative balance cost layers Header: ❑ Company name ❑ Report title

	❑ Part range Part header: ❑ Part ID ❑ Part description Line items: ❑ Transaction ID ❑ Transaction description ❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Service cost ❑ Quantity ❑ Total cost (= material + labor + burden + service) Part footer: ❑ Part ID ❑ Quantity total ❑ Total value (per part) Report footer: ❑ Total value
4.9.1.17 Work in Process Valuation Report	The *Work in Process (WIP) Valuation Report* is a manufacturing report that does not include General Ledger transactions. A user given Work Order range is used to limit the report output. Work Orders can also be selected by status or posted value. When selected by status the Work in Process costing method is selectable between actual unit cost and projected unit cost (not to exceed actual). These reports can be viewed, e-mailed, printed, or sent to a file. Printing options: ❑ Use Work Order Status ❑ Use Work Order Posted Value Second printing option - WIP costing method for Work Order status report: ❑ Actual unit cost ❑ Projected unit cost (not to exceed actual)
4.9.1.17.1 WIP Work Order Status Report	This is the *Work Order Status* version of the Work in Process valuation report, generated using either actual unit cost or projected unit cost (not to exceed actual). Header: ❑ Company name ❑ Report title ❑ Work Order range ❑ Work Order status(s) (default is: Firm and Released orders) ❑ Work in Process costing method used (actual or projected) Line items: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Desired quantity ❑ Desired release date ❑ Desired want date ❑ Material cost

	❑ Labor cost ❑ Burden cost ❑ Service cost ❑ Total value (sum costs) Report footer: ❑ Material cost total ❑ Labor cost total ❑ Burden cost total ❑ Service cost total ❑ Total value (sum total costs)
4.9.1.17.2 WIP Posted Value Report	This is the *Posted Value* version of the Work in Process valuation report. Header: ❑ Company name ❑ Report title ❑ Work Order range Line items: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Status ❑ Desired want date ❑ WIP issue value (into WIP) ❑ WIP receipt value (from WIP) ❑ WIP value (= WIP issue value – WIP receipt value) Report footer: ❑ Total WIP issue value (into WIP) ❑ Total WIP receipt value (from WIP) ❑ Total WIP value (= WIP issue value – WIP receipt value)
4.9.1.18 Work Order Comparative Material Usage Report	The *Work Order Comparative Material Usage Report* is a manufacturing report that does not include General Ledger transactions. Comparative material usage for Work Orders. A user given Work Order range is used to limit the report output. Work Orders can also be selected by open or closed status. When selected by closed status a user given date range can further limit the report. The report can be viewed, e-mailed, printed or sent to a file. Header: ❑ Company name ❑ Report title ❑ Work Order range ❑ Date range (for closed Work Orders) Work Order header: ❑ Work Order ID ❑ Work Order part ID ❑ Work Order part description Part header: ❑ Part ID ❑ Part description Line items: ❑ Work Order sub ID

	❑ Operation sequence number ❑ Quantity required (calculated) ❑ Quantity issued ❑ Completed quantity (actual quantity run) ❑ Standard cost ❑ Actual cost ❑ Variance (= standard cost – actual cost) Part footer: ❑ Quantity required sum ❑ Quantity issued sum ❑ Standard cost sum ❑ Actual cost sum ❑ Variance sum (= estimated cost – actual cost) Work Order footer: ❑ Standard cost sum ❑ Actual cost sum ❑ Variance sum (= estimated cost – actual cost) Report footer: ❑ Standard cost total ❑ Actual cost total ❑ Variance total (= standard cost – actual cost)
4.9.1.19 Work Order Comparative Labor Cost Report	The *Work Order Comparative Labor Cost Report* is a manufacturing report that does not include General Ledger transactions. Comparative labor usage for Work Orders. A user given Work Order range is used to limit the report output. Work Orders can also be selected by open or closed status. When selected by closed status, a user given date range can further limit the report. The report can be viewed, e-mailed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Work Order range ❑ Date range (for closed Work Orders) Work Order header: ❑ Work Order ID ❑ Work Order part ID ❑ Work Order part description Line items: ❑ Work Order sub ID ❑ Sequence number ❑ Resource ID ❑ Resource description ❑ Calculated end quantity ❑ Completed quantity (actual quantity run) ❑ Standard cost ❑ Actual cost ❑ Variance (= standard cost – actual cost) Work Order footer: ❑ Standard cost sum ❑ Actual cost sum ❑ Variance sum (= estimated cost – actual cost)

	Report footer: ❑ Standard cost total ❑ Actual cost total ❑ Variance total (= standard cost – actual cost)
4.9.1.20 Inventory Out Reports	The *Inventory Out Report* lists the status of all inventory that is still own but has been moved off-site. The report is generated for a user given date range and/or part range and can be sorted as shown below. The report can also display one or both of the transaction types used to ship inventory to other locations and still retain ownership of the shipped materials. The two transaction types are Service Dispatches and Inter Branch Transfers. The report can be viewed, e-mailed, printed, or sent to a file. Printed for user given: ❑ Date range ❑ Part ID range Transaction type selections are: (one or both) ❑ Service dispatches ❑ Inventory transfers Sorted by: ❑ Ship date ❑ Ship reason ❑ Part ID
4.9.1.20.1 Inventory Out (sort: Ship Date)	This is the *Ship Date Sorted Version* of the Inventory Out Report. Header: ❑ Company name ❑ Report title ❑ Part ID range ❑ Date range ❑ Transaction type being printed Document header: ❑ Document ID ❑ Customer ID (if exists) ❑ Customer name (if exists) ❑ Vendor ID (if exists) ❑ Vendor name (if exists) ❑ Value Added Tax registration number ❑ Out date ❑ Ship reason ❑ Order ID Line items: ❑ Line number ❑ Part ID ❑ Part description ❑ Quantity out ❑ Unit cost ❑ Extension value Document footer: ❑ Extension total value

	Footer: ❑ Extension grand total value
4.9.1.20.2 Inventory Out (sort: Ship Reason)	This is the *Ship Reason Sorted Version* of the Inventory Out Report. Header: ❑ Company name ❑ Report title ❑ Part ID range ❑ Date range ❑ Transaction type being printed Ship Reason header: ❑ Ship reason Document header: ❑ Document ID ❑ Customer ID (if exists) ❑ Customer name (if exists) ❑ Vendor ID (if exists) ❑ Vendor name (if exists) ❑ Value Added Tax registration number ❑ Out date ❑ Order ID Line items: ❑ Line number ❑ Part ID ❑ Part description ❑ Document ID ❑ Quantity out ❑ Unit cost ❑ Extension value Ship Reason footer: ❑ Extension total value Footer: ❑ Extension grand total value
4.9.1.20.3 Inventory Out (sort: Part ID)	This is the *Part ID Sorted Version* of the Inventory Out Report. Header: ❑ Company name ❑ Report title ❑ Part ID range ❑ Date range ❑ Transaction type being printed Part header: ❑ Part ID ❑ Part description Document header: ❑ Document ID ❑ Customer ID (if exists) ❑ Customer name (if exists)

	❑ Vendor ID (if exists) ❑ Vendor name (if exists) ❑ Value Added Tax registration number ❑ Out date ❑ Ship reason ❑ Order ID Line items: ❑ Line number ❑ Quantity out ❑ Unit cost ❑ Extension value Part footer: ❑ Extension total value Footer: ❑ Extension grand total value
4.9.2 Inventory Transaction Source	
4.9.2.1 Keyboard	
4.9.2.1.2 Auto Clear After Save	
4.9.2.2 Barcode	
4.9.2.2.1 Timer Options	[need to move issue to a Work Order, receive to inventory, and transfer to below here, then the others..somehow need to indicate that the others don't use barcode]
4.9.2 Issue Inventory to a Work Order	This series of transaction is used to issue material from inventory to a Work Order. The process includes the following activities: ❑ Searching and retrieving a Work Order material requirement ❑ Allocate supply to the requirement ❑ Determining all available inventory ❑ Finding inbound inventory transaction(s) ❑ Creating inventory transaction ❑ Creating part trace transaction ❑ Creating dimensional transaction ❑ Updating perpetual inventory ❑ Updating Work Order
4.9.2.1 Search and Retrieve Requirement	Search for material requirements with a released status in Work Orders with a released status. Retrieve qualified requirements even if the quantity issued to date equals or exceeds the required quantity. This will allow for intentional over-issuing of a requirement.
4.9.2.1 Allocate Supply to the Requirement	
Assign issue quantity to supply links	
4.9.2.2 Determine All	Find all valid stocking locations for the part and determine the quantity on-hand for each

Available Inventory	location.
4.9.2.3 Find Inbound Inventory Transaction(s)	For actual cost systems, the original inbound inventory transactions for the part need to be retrieved. For systems with a global setting of "FIFO by part", the transactions are found by simple first-in-first-out for the part ID based on creation date of the original transaction. For systems with a global setting of "FIFO by part location", the transactions are found by first including only inbound transactions for the part and the stocking warehouse/location. First-in-first-out is used based on the creation date of the original transaction to identify the specific inbound transaction(s). For both scenarios, the inbound inventory records are updated to indicate the quantity applied to the in-process outbound transaction. This updating cascades on a FIFO basis until the entire quantity of the outbound transaction is covered. The cost from each matched inbound transaction is totaled and used as the cost basis for the outbound transaction. Material, labor, burden, and service costs are maintained as separate costs throughout this process. The association between the inbound and outbound transactions and the associated quantities must be preserved for cost updating purposes.
4.9.2.4 Create Inventory Transaction	The issuance of inventory to a job creates one inventory transaction for each warehouse/location combination chosen. This transaction is categorized as an Issue Out. For actual cost systems, the cost is determined from the matched inbound inventory transactions as described above. For standard cost systems, the cost is taken directly from the Part Master. The transaction contains the following: ❑ Transaction ID ❑ Date ❑ Work Order ❑ Part ID ❑ Piece number ❑ Quantity ❑ Warehouse ❑ Location ❑ Unit material cost ❑ Unit labor cost ❑ Unit burden cost ❑ Unit service cost ❑ Fixed cost ❑ user ID
4.9.2.4.1 Transaction ID	The unique identifier for the transaction.
4.9.2.4.2 Warehouse / Location	The warehouse and location where the part was issued from for this transaction.
4.9.2.4.3 Unit Costs	The units costs are obtained from the inbound transaction for FIFO actual cost systems. For standard cost systems, the costs come directly from the Part Master.
4.9.2.4.4 user ID	The user currently logged into the workstation is stored with the transaction as the creator of the transaction.
4.9.2.5 Create Part Trace Transaction	For a part ID that is designated part trace at the time of Work Order issue, an additional transaction type must be created concerning the general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction. This transaction contains the following: ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3

	❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3 ❑ Numeric property #4 ❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank based on criteria established when part trace was established for the part.
4.9.2.5.1Quantity	This is the user assigned quantity for the particular lot. The user can enter a different quantity and add additional lot numbers if necessary. This quantity cannot exceed the maximum lot size, if any, specified for the part.
4.9.2.5.2 Label	This nomenclature is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.9.2.5.3 Alpha Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Alpha properties allow alphanumeric input (letters and numbers), and should be used for non-numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.2.5.4 Numeric Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Numeric properties allow numeric input (numbers only), and should be used for numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.2.5.5 Expiration Date	If a part was setup with a shelf life, then the system calculates an expiration date by adding shelf life to receipt date. This date is then stored as part of the part trace transaction.
4.9.2.6 Create Dimensional Transaction	For a part that is designated as dimensionally tracked, an additional transaction type must be created concerning the general inventory transaction. The dimensional transaction contains information specific to one unique dimension including quantity, height, width, and length. There must be a one-dimensional transaction for each unique combination of the dimensions within the general inventory transaction. The transaction contains the following: ❑ Number of pieces ❑ Length ❑ Width ❑ Height ❑ Dimension unit of measure ❑ Warehouse ❑ Location
4.9.2.6.1 Number of Pieces	The number of pieces of one unique dimension combination and warehouse/location. This is used in place of the quantity in the regular inventory transaction.
4.9.2.6.2 Dimensions	These are the specific dimensions for the pieces in the transaction.
4.9.2.6.3 Unit of Measure	The unit of measure used to express the dimensions in this transaction.
4.9.2.6.4 Warehouse / Location	The warehouse and location containing the inventory in this transaction.

4.9.2.7 Update perpetual Inventory	The on-hand quantity for the part ID is updated along with the on-hand balance for each affected stocking location.
4.9.2.8 Update Work Order	The cost of the inventory transaction is accumulated to the cost-to-date for the Work Order. The cost is maintained in material, labor, burden, and service categories.
4.9.3 Issue Inventory By Exception	This series of transactions is used to issue inventory to a Work Order by only entering exceptions to the defined Bill of Material. The user will have the ability to review the material issues about to take place prior to their actual creation. The process includes the following activities: ❑ Searching and retrieving all requirements for a Work Order ❑ Determining all available inventory ❑ Finding inbound inventory transaction(s) ❑ Creating inventory transaction(s) ❑ Creating part trace transaction(s) ❑ Creating dimensional transaction(s) ❑ Updating perpetual inventory
4.9.3.1 Search and Retrieve All Requirements for a Work Order	Once a user has selected a Work Order for inventory issue, by exception the system retrieves part ID, quantity required, and quantity remaining,
4.9.3.2 Determine All Available Inventory	For each material requirement, the system calculates the inventory on-hand balance and the inventory that is actually available for this demand (not pegged to some other demand). The stocking location of that inventory is also retrieved.
4.9.3.3 Find Inbound Inventory Transaction(s)	For actual cost systems, the original inbound inventory transactions for each part to be issued needs to be retrieved. For systems with a global setting of "FIFO by part", the transactions are found by simple first-in-first-out for the part ID based on creation date of the original transaction. For systems with a global setting of "FIFO by part location", the transactions are found by first including only inbound transactions for the part and the stocking warehouse/location. First-in-first-out is used based on the creation date of the original transaction to identify the specific inbound transaction(s). For both scenarios, the inbound inventory records are updated to indicate the quantity applied to the in-process outbound transaction. This updating cascades on a FIFO basis until the entire quantity of the outbound transaction is covered. The cost from each matched inbound transaction is totaled and used as the cost basis for the outbound transaction. Material, labor, burden, and service costs are maintained as separate costs throughout this process. The association between the inbound and outbound transactions and the associated quantities must be preserved for cost updating purposes.
4.9.3.4 Create Inventory Transaction(s)	The issuance of inventory to a job creates one inventory transaction for each warehouse/location combination chosen. This transaction is categorized as an Issue Out. For actual cost systems, the cost is determined from the matched inbound inventory transactions as described above. For standard cost systems, the cost is taken directly from the Part Master. The transaction contains the following: ❑ Transaction ID ❑ Date ❑ Work Order ❑ Part ID ❑ Piece number ❑ Quantity ❑ Warehouse ❑ Location ❑ Unit material cost ❑ Unit labor cost ❑ Unit burden cost ❑ Unit service cost ❑ Fixed cost

	❑ user ID
4.9.3.4.1 Transaction ID	The unique identifier for the transaction
4.9.3.4.2 Warehouse / Location	The warehouse and location where the part was issued from for this transaction
4.9.3.4.3 Unit Costs	The units costs are obtained from the inbound transaction for FIFO actual cost systems. For standard cost systems, the costs come directly from the Part Master.
4.9.3.4.4 user ID	The user currently logged into the workstation is stored with the transaction as the creator of the transaction.
4.9.3.5 Create Part Trace Transaction(s)	For each part ID that is designated part trace at the time of Work Order issue, an additional transaction type must be created concerning the general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction. This transaction contains the following: ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3 ❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3 ❑ Numeric property #4 ❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank based on criteria established when part trace was established for the part.
4.9.3.5.1Quantity	This is the user assigned quantity for the particular lot. The user can enter a different quantity and add additional lot numbers if necessary. This quantity cannot exceed the maximum lot size, if any, specified for the part.
4.9.3.5.2 Label	This nomenclature is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.9.3.5.3 Alpha Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Alpha properties allow alphanumeric input (letters and numbers), and should be used for non-numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.3.5.4 Numeric Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Numeric properties allow numeric input (numbers only), and should be used for numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.3.5.5 Expiration Date	If a part was setup with a shelf life, then the system calculates an expiration date by adding shelf life to receipt date. This date is then stored as part of the part trace transaction.
4.9.3.6 Create Dimensional Inventory	For a part ID that is designated as dimensionally tracked, an additional transaction type must be created concerning the general inventory transaction. The dimensional transaction

Transaction(s)	contains information specific to one unique dimension including quantity, height, width, and length. There must be a one-dimensional transaction for each unique combination of the dimensions within the general inventory transaction. The transaction contains the following: ❑ Number of pieces ❑ Length ❑ Width ❑ Height ❑ Dimension unit of measure ❑ Warehouse ❑ Location
4.9.3.6.1 Number of Pieces	This is the number of pieces of one unique dimension combination and warehouse/location. It is used in place of the quantity in the regular inventory transaction.
4.9.3.6.2 Dimensions	These are the specific dimensions for the pieces in the transaction.
4.9.3.6.3 Unit of Measure	The unit of measure used to express the dimensions in this transaction.
4.9.3.6.4 Warehouse / Location	The warehouse and location containing the inventory in this transaction.
4.9.3.7 Update Perpetual Inventory	The on-hand quantity for each part ID is updated along with the on-hand balance for each affected stocking location.
4.9.3.8 Update Work Order	The cost of the inventory transaction is accumulated to the cost-to-date for the Work Order. The cost is maintained in material, labor, burden, and service categories.
4.9.4 Auto Issue Inventory to a Work Order	This series of transactions is used to issue inventory to a Work Order automatically based on the quantity Reported complete of the associated operation. A similar function is known in the industry as Backflushing. Auto issue is a more advanced form of backflushing, in that backflushing normally relieves the entire Bill of Material for the Work Order from inventory upon receipt of completed units into stock and is done in a batch mode so that inventory is not maintained in real time. Controlled Point Backflushing improves on this by relieving inventory as operations are completed rather than waiting for the entire Work Order to be complete. However, the process is still done in batch mode. Auto Issue improves on both of these limitations by providing both controlled point inventory relieving and real time inventory transaction creation. Auto issue is established for desired parts in the Part Master. Labor Ticket quantity Reported complete acts as the mechanism to create inventory transactions. Auto Issue cannot be used with parts that are established for part trace or for dimensional inventory since each of these requires manual data input at the time of the inventory transaction. The process includes the following activities: ❑ Establishing Auto Issue for a part ❑ Creating a Labor Ticket ❑ Retrieving all requirements for the Work Order operation ❑ Determining all available inventory ❑ Finding inbound inventory transaction(s) ❑ Creating inventory transaction(s) ❑ Updating perpetual inventory
4.9.4.1 Establish Auto Issue	This is done by setting a switch in the Part Master for each part that Auto Issue is desired. Auto Issue is not possible with part trace and/or dimensional inventory.
4.9.4.2 Create a Labor Ticket	Labor is gathered in any of the standard ways described elsewhere in this document. Once gathered, a Labor Ticket is created. The Work Order, operation, and quantity completed are part of this transaction and are used as the basis for determining which and how many inventory transactions are required
4.9.4.3 Retrieve All	The material requirements that are attached to the operation being Reported on from the

Requirements	Labor Ticket that have Auto Issue enabled will create issue transactions. The quantity in the inventory transaction is determined by the following formula: Issue quantity = Calculated quantity in the Work Order requirement X Reported complete quantity in the Labor Ticket
4.9.4.4 Determine All Available Inventory	Find all valid stocking locations for the part and determine the quantity on-hand for each location.
4.9.4.5 Find Inbound Inventory Transaction(s)	For actual cost systems, the original inbound inventory transactions for the part need to be retrieved. For systems with a global setting of "FIFO by part", the transactions are found by simple first-in-first-out for the part ID based on creation date of the original transaction. For systems with a global setting of "FIFO by part location", the transactions are found by first including only inbound transactions for the part and the stocking warehouse/location. First-in-first-out is used based on the creation date of the original transaction to identify the specific inbound transaction(s). For both scenarios, the inbound inventory records are updated to indicate the quantity applied to the in-process outbound transaction. This updating cascades on a FIFO basis until the entire quantity of the outbound transaction is covered. The cost from each matched inbound transaction is totaled and used as the cost basis for the outbound transaction. Material, labor, burden, and service costs are maintained as separate costs throughout this process. The association between the inbound and outbound transactions and the associated quantities must be preserved for cost updating purposes.
4.9.4.6 Create Inventory Transaction	The issuance of inventory to a job creates one inventory transaction for each warehouse/location combination chosen. This transaction is categorized as an Issue Out. For actual cost systems, the cost is determined from the matched inbound inventory transactions as described above. For standard cost systems, the cost is taken directly from the Part Master. The transaction contains the following: ❑ Transaction ID ❑ Date ❑ Work Order ❑ Part ID ❑ Piece number ❑ Quantity ❑ Warehouse ❑ Location ❑ Unit material cost ❑ Unit labor cost ❑ Unit burden cost ❑ Unit service cost ❑ Fixed cost ❑ user ID
4.9.4.6.1 Transaction ID	The unique identifier for the transaction.
4.9.4.6.2 Warehouse / Location	The warehouse and location where the part was issued from for this transaction.
4.9.4.6.3 Unit Costs	The units costs are obtained from the inbound transaction for FIFO actual cost systems. For standard cost systems, the costs come directly from the Part Master.
4.9.4.6.4 user ID	The user currently logged into the workstation is stored with the transaction as the creator of the transaction.
4.9.4.7 Update Perpetual Inventory	The on-hand quantity for each part ID is updated along with the on-hand balance for each affected stocking location.
4.9.4.8 Update Work Order	The cost of the inventory transaction is accumulated to the cost-to-date for the Work Order. The cost is maintained in material, labor, burden, and service categories.
4.9.5 Receive a Work	This series of transactions is used to receive a finished product from a Work Order into

Order Into Inventory	inventory. The process includes the following activities: ❑ Searching and retrieving Work Orders ❑ Allocate demand to the Work Order ❑ Creating stocking location ❑ Calculating cost ❑ Creating inventory transaction ❑ Creating part trace transaction ❑ Creating dimensional transaction ❑ Updating perpetual inventory ❑ Updating Work Order
4.9.5.1 Search and Retrieve Work Orders	Search for Work Orders with a released status.
4.9.5.1 Allocate Demand to the Work Order	
Assign receipt quanity to demand links	
4.9.5.2 Create Stocking Location	If the warehouse/location combination that the item is being received into does not exist, then that location needs to be added to the Warehouse/Location Master. Warehouse/locations are pre-assigned to part IDs to indicate the valid storage places for the specific part ID. If the received warehouse/location is not established for the part being received, then the warehouse/location needs to be assigned to the part ID during the receipt process.
4.9.5.3 Calculate Cost	Upon receipt, a cost is established as part of the incoming receipt transaction. For standard cost systems, this cost comes from the Part Master. For actual cost systems, the cost comes from the currently accumulated cost for the Work Order. If the global WIP costing parameter is set to actual, then the entire accumulated WIP cost for the Work Order at the time of receipt is used for the inventory transaction. If the global WIP costing parameter is set to Projected, then the entire accumulated WIP cost for the Work Order is divided by the total quantity for the Work Order with the result then multiplied by the actual quantity received. (This later method utilizes a prorata share of cost based on the anticipated receipt quantity.) In actual cost systems, this receipt cost is subject to change based on the cost updating of issue transactions to the Work Order.
4.9.5.4 Create Inventory Transaction	The Work Order receipt creates one inventory transaction. This transaction is categorized as a receipt In. This transaction contains the following: ❑ Transaction ID ❑ Date ❑ Work Order ❑ Part ID (if used on the Work Order) ❑ Piece number ❑ Quantity ❑ Warehouse ❑ Location ❑ Unit material cost ❑ Unit labor cost ❑ Unit burden cost ❑ Unit service cost ❑ Fixed cost ❑ user ID

	❑ Description
4.9.5.4.1 Transaction ID	This is the unique identifier for the transaction.
4.9.5.4.2 Part ID	This is the part ID for the received item, which is the same as the Work Order part ID. If no part ID was used on the Work Order, then this is left blank. In this case, the Work Order is linked to a Customer Order and the receipt transaction is created as part of the shipment of the Customer Order.
4.9.5.4.3 Warehouse / Location	This is the warehouse and location where the parts are received.
4.9.5.4.4 Unit Costs	The costs for this transaction are initially set to standard cost with the option for the user to set specific cost values at the time of receipt. When manufacturing costs are updated these costs are updated.
4.9.5.4.5 user ID	The user currently logged into the workstation is stored with the transaction as the creator of the transaction.
4.9.5.4.6 Description	This is a user-supplied description entered at the time of receipt to be preserved with the inventory transaction.
4.9.5.5 Create Part Trace Transaction	For each part ID that is designated part trace at the time of Work Order issue, an additional transaction type must be created concerning the general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction. This transaction contains the following: ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3 ❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3 ❑ Numeric property #4 ❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank based on criteria established when part trace was established for the part.
4.9.5.5.1Quantity	This is the user assigned quantity for the particular lot. The user can enter a different quantity and add additional lot numbers if necessary. This quantity cannot exceed the maximum lot size, if any, specified for the part.
4.9.5.5.2 Label	This nomenclature is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.9.5.5.3 Alpha Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Alpha properties allow alphanumeric input (letters and numbers), and should be used for non-numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.5.5.4 Numeric Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Numeric properties allow numeric input (numbers only), and should be used for numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade,

	tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.5.5.5 Expiration Date	If a part was setup with a shelf life, then the system calculates an expiration date by adding shelf life to receipt date. This date is then stored as part of the part trace transaction.
4.9.5.6 Create Dimensional Transaction	For a part ID that is designated as dimensionally tracked, an additional transaction type must be created concerning the general inventory transaction. The dimensional transaction contains information specific to one unique dimension including quantity, height, width, and length. There must be a one-dimensional transaction for each unique combination of the dimensions within the general inventory transaction. The transaction contains the following: ❑ Number of pieces ❑ Length ❑ Width ❑ Height ❑ Dimension unit of measure ❑ Warehouse ❑ Location
4.9.5.6.1 Number of Pieces	The number of pieces of one unique dimension combination and warehouse/location. This is used in place of the quantity in the regular inventory transaction.
4.9.5.6.2 Dimensions	These are the specific dimensions for the pieces in the transaction.
4.9.5.6.3 Unit of Measure	The unit of measure used to express the dimensions in this transaction.
4.9.5.6.4 Warehouse / Location	The warehouse and location containing the inventory in this transaction.
4.9.5.7 Update Perpetual Inventory	The on-hand quantity for the part ID is updated along with the on-hand balance for each affected stocking location.
4.9.5.8 Update Work Order	The receipt quantity is updated in the total received to date quantity for the Work Order.
4.9.6 Adjust Inventory	This series of transactions is used to adjust inventory not associated with a Work Order, Customer Order, or Purchase Order. The offsetting entry goes directly to the General Ledger. The process includes the following activities: ❑ Searching and retrieving parts ❑ Creating stocking location ❑ Calculating cost ❑ Creating inventory transaction ❑ Creating part trace transaction ❑ Creating dimensional transaction ❑ Updating perpetual inventory
4.9.6.1 Search and Retrieve Parts	Search on the entire Part Master.
4.9.6.2 Create Stocking Location	If the warehouse/location combination that the item is being received into does not exist, then that location needs to be added to the Warehouse/Location Master. Warehouse/locations are pre-assigned to part IDs to indicate the valid storage places for the specific part ID. If the received warehouse/location is not established for the part being received, then the warehouse/location needs to be assigned to the part ID during the receipt process.
4.9.6.3 Calculate Cost	The cost is entered by the user regarding transactions in categories: material, labor, burden, and service. In the absence of this user-supplied cost, the cost is taken directly from the Part Master in each of these same categories.
4.9.6.4 Create Inventory Transaction	The inventory adjustment creates one inventory transaction. This transaction is categorized as either an Adjustment In or an Adjustment Out . This transaction contains

	the following: ❑ Transaction ID ❑ Direction ❑ Date ❑ Part ID ❑ Quantity ❑ Warehouse ❑ Location ❑ Unit material cost ❑ Unit labor cost ❑ Unit burden cost ❑ Unit service cost ❑ Fixed cost ❑ Adjustment account ❑ user ID ❑ Description
4.9.6.4.1 Transaction ID	The unique identifier for the transaction.
4.9.6.4.2 Direction	The direction of the inventory transaction. Specified as either in or out of inventory.
4.9.6.4.3 Warehouse / Location	The warehouse and location that contains the inventory that is being adjusted.
4.9.6.4.4 Unit Costs	For Adjustment Out transactions, the units costs are obtained from the inbound transaction in FIFO actual cost systems. For standard cost systems, the costs come directly from the Part Master. For Adjustment In transactions in FIFO actual cost systems, the costs are either taken from user supplied values at the time of the inventory adjustment or, as default, from standard cost in the Part Master. For standard cost systems, the costs come directly from the Part Master.
4.9.6.4.5 Adjustment Account	This is the General Ledger account that will be used for "the other side" of the resulting journal entry from this transaction. The "primary side" of the transaction is the inventory account for the part ID. The user is not required to enter a General Ledger adjustment account. The following default chain is employed: ❑ user supplied account, if not supplied then - ❑ Adjustment account in the associated Product code, if not supplied then - ❑ Adjustment account specified in Operations Parameters
4.9.6.4.6 user ID	The user currently logged into the workstation is stored with the transaction as the creator of the transaction.
4.9.6.5 Create Part Trace Transaction	For each part ID that is designated part trace at the time of Work Order issue, an additional transaction type must be created concerning the general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction. This transaction contains the following: ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3 ❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3

	❑ Numeric property #4 ❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank based on criteria established when part trace was established for the part.
4.9.6.5.1Quantity	This is the user assigned quantity for the particular lot. The user can enter a different quantity and add additional lot numbers if necessary. This quantity cannot exceed the maximum lot size, if any, specified for the part.
4.9.6.5.2 Label	This nomenclature is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.9.6.5.3 Alpha Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Alpha properties allow alphanumeric input (letters and numbers), and should be used for non-numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.6.5.4 Numeric Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Numeric properties allow numeric input (numbers only), and should be used for numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.9.6.5.5 Expiration Date	If a part was setup with a shelf life, then the system calculates an expiration date by adding shelf life to receipt date. This date is then stored as part of the part trace transaction.
4.9.6.6 Create Dimensional Transaction	For Work Orders that contain a part ID that is designated dimensional inventory, an additional transaction type must be created concerning the general inventory transaction. The dimensional transaction contains information specific to one unique dimension including quantity, height, width, and length. There must be a one-dimensional transaction for each unique combination of the dimensions within the general inventory transaction. ❑ Number of pieces ❑ Length ❑ Width ❑ Height ❑ Dimension unit of measure ❑ Warehouse ❑ Location
4.9.6.6.1 Number of Pieces	This is the number of pieces of one unique dimension combination and warehouse/location. This is used in place of the quantity in the regular inventory transaction.
4.9.6.6.2 Dimensions	These are the specific dimensions for the pieces in the transaction.
4.9.6.6.3 Unit of Measure	The unit of measure used to express the dimensions in this transaction
4.9.6.6.4 Warehouse / Location	The warehouse and location containing the inventory in this transaction
4.9.6.7 Update Perpetual Inventory	The on-hand quantity for the part ID is updated along with the on-hand balance for each affected stocking location.
4.9.7 Contra Transactions	Certain contra inventory transactions are required to reverse the normal effect of the above transactions. It is desirable to produce a contra transaction rather than simply deleting the original transaction to preserve the audit trail of all inventory activity. The following transactions need contra transactions:

	❑ Issue of inventory to a job (reverse issue) ❑ Receipt of a job into inventory (reverse receipt)
4.9.7.1 Allocations for Contra Receipt of a Job Into Inventory	
4.9.8 Transfer Inventory Between Warehouse/ Locations	The movement of inventory from one stocking location to another is accomplished by creating back-to-back adjust out and adjust in transactions. All information, other than stocking location, must be preserved after the transaction for the resultant inventory. Of particular importance is that the FIFO is **not** followed when costing the adjust out inventory transaction because that could potentially change the value of inventory when only a change in location is wanted. All other inventory procedures, including part trace and dimensional, remain the same as for regular adjustment transactions.
4.9.9 Delete Inventory Transaction	Under normal operations, the deletion of inventory transactions is not permitted. Contra transactions should be used to correct errors, thus preserving an audit trail of all inventory activity. A global parameter allows a delete function to be enabled for those installations where deletion is considered permissible and an audit trail is not required. The entire inventory transaction a long with its optional part trace and dimensional inventory transaction are deleted as a set. Upon deletion the following may need to take place (depending on the type of transaction being deleted): ❑ Update perpetual inventory ❑ Remove allocations ❑ Update Work Order
4.9.9.1 Update Perpetual Inventory	The on-hand quantity for the part ID is updated along with the on-hand balance for each affected stocking location.
4.9.9.2 Remove Allocations	
4.9.9.3 Update Work Order	For Work Order receipt transactions, the receipt quantity is updated in the total received to date quantity for the Work Order.
4.9.10 Review Inventory Transactions	A specific inventory transaction can be searched and retrieved based on the following: transaction ID or a date range of transactions. Upon selection of the specific transaction, the following are returned: ❑ Transaction ID ❑ Transaction date ❑ Work Order ID ❑ Piece number ❑ Part ID ❑ Quantity ❑ user ID ❑ Transaction type ❑ Dimensional inventory parameters ❑ Warehouse ❑ Location ❑ General Ledger account ID ❑ Description ❑ Unit material cost ❑ Unit labor cost ❑ Unit burden cost ❑ Unit service cost ❑ Fixed cost
4.9.10.1 ReviewAllocation Information	[I think this goes here]

4.9.10.1.1 Viewing Work Order Demand Information	
4.9.10 Create Interbranch Transfer (IBT)	
4.9.10.1 Create IBT Header	
4.9.10.2 Create IBT Lines	
4.9.10 Manage IBT	
4.9.10.3 Assign Supply to Outgoing IBT's	
4.9.10 Delete IBT	
4.9.12 Cycle Count Inventory Source	
4.9.12.1 Keyboard	
4.9.12.2 Barcode	
4.9.12.2.1 Timer Modes	
4.9.11 Physical Inventory Count	Physical inventory count is used to manage the process of periodic counts of inventoried parts and the resulting reconciliation. The following functions are provided: ❑ Printing of tags and report to aid in the process ❑ Entry of actual counts and recounts ❑ Analysis of discrepancies by quantity and/or value thresholds ❑ Automatic creation of adjustment transactions to update on-hand balances
4.9.11.1 Initialize Count	Capturing information related to the count activity initializes a Physical Inventory. This information includes the following: ❑ Physical Count ID ❑ Description ❑ Warehouse ID ❑ Start date ❑ Tags per group ❑ Starting tag number ❑ Ending tag number ❑ Extra tags per part ❑ Extra blank tags per group ❑ Adjustment General Ledger ID ❑ Create tags in location/part order? ❑ Create blank tags only?

	❑ Lock each location? ❑ Lock all part inventory? ❑ Process non-zero locations only? ❑ Enable cycle counting? ❑ ABC code ❑ Product code
4.9.11.1.1 Physical Count ID	This is the unique identifier for the physical inventory count. There can only be one active physical count at any time.
4.9.11.1.2 Warehouse ID	This is the warehouse that the physical count activity will take place. Only parts belonging to this warehouse are processed.
4.9.11.1.3 Start Date	The current date is captured when the physical count is initialized.
4.9.11.1.4 Tags Per Group	This allows the printing of tags to be broken into separate groups. This allows each group to be distributed to different counters and generally makes it easier to manage a large number of tags. Each group prints on its own set of pages with an identifying group number.
4.9.11.1.5 Starting / Ending Tag Numbers	A seven-digit number identifies each tag with leading zeros shown. This number uniquely identifies the tag and is not the same as the part ID or location. The user is allowed to specify the starting and ending tag number. The starting tag number defaults to 0000001. The ending tag number can be entered as well. If an ending number is entered that does not allow enough tags to be created, it will be automatically increased. If an ending number is entered that produces more tags than are needed, the extra numbers will be printed as blank tags. This feature is most useful when creating blank tags only (see below). When creating regular tags, the user can just set the ending number to the starting number and enough tags will automatically be created.
4.9.11.1.6 Extra Tags Per Group	A number of extra tags to be printed with each group can be specified. This provides extra tags to cover misplaced ones, or items that may not be currently entered into the inventory system.
4.9.11.1.7 Extra Tags Per Part	A number of extra tags for each part ID can be specified. This provides extra tags to cover misplaced ones, or items that may not be currently entered into the inventory system.
4.9.11.1.8 Adjustment Account	During the End Physical Count phase, there is the option of adjusting inventory levels based on the counts. This ultimately results in General Ledger entries when the journals are processed later. Normally a default General Ledger account would be used here to avoid repetitious keying for the data entry operator, however an account override can be entered for the tag. This is the General Ledger account that will be used for "the other side" of the resulting journal entry from this transaction. The "primary side" of the transaction is the inventory account for the part ID. The user is not required to enter a General Ledger adjustment account. The following default chain is employed: ❑ user supplied account, if not supplied then - ❑ Adjustment account in the associated Product code, if not supplied then - ❑ Adjustment account specified in Operations Parameters
4.9.11.1.9 Create Tags in Location / Part Order?	This switch tells the system to sort the data into location and part order before printing so that the tag numbers follow this sequence. This switch is set if the system is **not** to run a cycle count. The system then runs the inventory count for a specific group rather than all parts.
4.9.11.1.10 Create Blank Tags Only?	This switch tells the system to create blank tags so that the location and part ID is manually written on the tag at the time of count and then manually keyed into the system. This may be easier for some warehouse environments instead of having the location and part ID preprinted. Even without this switch set, blank tags can still be created by specifying extra tags per part or group as described above.
4.9.11.1.11 Lock Each Location?	This switch tells the system to lock each warehouse location that is used in the physical count upon start of the count. This prevents any inventory transactions to those locations until the physical count is complete.

4.9.11.1.12 Lock All Part Inventory	This switch tells the system to lock all inventory in the system during the physical inventory count. This prevents any inventory transactions during the count.
4.9.11.1.13 Process Non-Zero Locations Only?	This switch tells the system to only print tags for location and part combinations that actually contain inventory.
4.9.11.2 Entry of Counts	After parts have been counted and quantities entered on the tags, the information is entered into the system. The following is collected: ❑ Count date ❑ Tag number ❑ Part ID ❑ Quantity ❑ Location ID ❑ Dimensional inventory parameters There is an option to automatically save the tag when all the information is entered. Another option automatically advances the system to the next tag for data entry. These options save keystrokes for the operator.
4.9.11.2.1 Tag Number	This is the unique tag number assigned to the physical tag during the count initialization. It automatically increments to the next tag if the option is chosen by the user. If the tag number is not blank, the following information is automatically filled in: ❑ Part ID ❑ Description ❑ Location ID
4.9.11.2.2 Location ID	If a tag is not blank, the existing location for the part is retrieved. The location can be selected from all available locations for the warehouse being inventoried.
4.9.11.2.3 Dimensional Inventory Parameters	For parts that are defined as Dimensional in the Part Master, one or more dimensions must be supplied. These parameters are used to specify the dimensions in addition to the quantity for the required material. The following dimensions are available: ❑ Length ❑ Width ❑ Height
4.9.11.3 Entry of Recounts	Tag quantities cannot be modified after they are entered. If some quantities need to be re-entered, or an actual recount is being performed, the recount function is used. Recount behaves exactly like the Entry of Counts except: ❑ It can only be used for a tag after an initial count has been entered ❑ A quantity can be re-entered for a tag as many times as necessary
4.9.11.4 Review All Counts	As the count progresses and is completed, the progress as a whole can be reviewed. This feature allows the user to view and manipulate physical inventory count information by tag group. Review All Counts is used to review the current count or a previously saved one. If a count is in progress, the Count ID defaults to the current count. The user can enter the Count ID for a previous count. The Warehouse ID for the count appears. The table displays all tags for one group at a time. When a new count is called in, the Group Number defaults to group one. The user can view different groups by entering the number or selecting it from the drop down menu. The following information is available: ❑ Tag Number ❑ Location ID ❑ Part ID ❑ Description ❑ Count ❑ Status

	❑ user ID
4.9.11.4.1 Location ID	This is the location ID for the part count. Modification is allowed.
4.9.11.4.2 Part ID	This is the part ID that was counted for the location. Modification is allowed but is uncommon.
4.9.11.4.3 Description	This contains the description for the part. It is not editable.
4.9.11.4.4 Count	This is the Quantity entered for the tag in enter counts or enter recounts. This value can be entered or modified here. This is equivalent to using enter counts or enter recounts.
4.9.11.4.5 Status	Tags have two status values: Active or Void. Void is used when the user wants to ignore (tags cannot be deleted) the count for a particular part. A voided tag is essentially ignored in comparisons and adjustments of inventory unless explicitly included. The user cannot enter or re-enter counts for voided tags.
4.9.11.4.6 user ID	This is the ID of the user who entered the Count or Recount.
4.9.11.5 End Count	When a physical inventory count is completed and entered, he user will signal the end of the count and make adjustments as necessary. If more than one tag exists for any part ID/Location ID combination, than the user is to be warned. The user then has the ability to examine those potential duplicates and void or adjust tags as needed. When the count is complete, several events take place: ❑ Update part balances ❑ Keep tag history ❑ Zero locations without tags ❑ Unlock inventory
4.9.11.2.1 Update Part Balances	Upon completion of a physical inventory count, the results are used to create the appropriate inventory adjust in and adjust out transactions. The user is given the choice if these transactions are to be actually carried out upon closure of the physical count. If the user does not choose to have the transactions automatically created, the adjustments will need to be made manually one-by-one.
4.9.11.2.2 Keep Tag History	The user has the option of permanently retaining the counted tags or deleting them when the count is ended. The default is to discard the tags upon completion of the physical count. All of the Reports will still be available for review. However, a count cannot be restarted.
4.9.11.2.3 Zero Locations Without Tags	This option removes inventory for which the user did not print tags. It also removes inventory for which the user did not specify a count quantity on a tag.
4.9.11.2.4 Unlock Inventory Locations	This option unlocks the inventory for all tags.
4.9.11.6 Create Adjustment Transactions	Inventory adjustment transactions are created like other Adjust In or Adjust Out transactions described in this section. The following rules apply to make the transactions automatic: ❑ The General Ledger account ID is first the one defined for the Product code if a Product code is associated with the Physical Count or the account defined as the adjustment default in Operations Parameters. ❑ The cost for Adjust In transactions in an actual cost system is the standard cost for the part as defined in Part Maintenance.
4.9.12 Cycle Count Inventory	Cycle counting is a process of arranging for a cross-section of all parts to be counted periodically. Usually, this is according to their value or level of activity. Details like Warehouse ID, days between counts, and last day of count can be set. The system can

	count the same part in different warehouse locations. If the part is available in multiple locations, the user can make multiple entries by filling the details for each entry.
4.9.12.1 Setup to Cycle Count a Specific Part	This function is used to assign a count frequency for a particular part ID in a specific warehouse only. The information required for each warehouse includes: ❑ Warehouse ID ❑ Warehouse description ❑ Days between counts ❑ Last count date
4.9.12.2 Setup Cycle Counting For All Parts	This function is used to assign a count frequency to all parts in the Part Master. The following information determines the parts that will have count frequency information assigned: ❑ Warehouse range ❑ part ID range ❑ Product code ❑ ABC code The following parameters are stored with the parts in the Part Master for those that meet the above criteria: ❑ Count frequency ❑ Last count date
4.9.12.3 Perform Cycle Counting	The results of a cycle count are entered the same way as a full physical inventory described above. The physical inventory was initialized as a cycle count so the system knows the appropriate tags and parts to require data entry to perform the cycle count. Once the tag count is entered, the ending process is the same for the full physical inventory.
4.9.13 ABC Analysis	ABC analysis classifies part IDs by the value and the usage of the item. Parts that cost the most and/or are used most frequently are "A" items. Parts that cost the least and/or are used least are "C" items. All other parts are "B" items. A part's ABC code determines how often the part should be counted through Cycle Counting. There are four ABC analysis methods: ❑ Projected usage ❑ Forecasted usage ❑ Actual usage ❑ Planned usage In addition, a Product code can be chosen to restrict the parts that will be updated as a result of this analysis. Whichever usage method is chosen, the unit cost used is from the total cost in the Part Master. The system computes a currency amount by multiplying the usage quantity by the unit cost. The part whose value falls into the top A percent of values of all parts chosen for analysis receive an A code. The next B percent receive B codes and the next C percent C codes. ABC codes can also be assigned manually in the Part Master. The user supplies the percent breakdown for each of the A, B, and C categories. These three categories must total to 100%.
4.9.13.1 Projected Usage	Each part has an Annualized Usage parameter in its Part Master. This value reflects the user's estimated or calculated annualized usage of the part.
4.9.13.2 Forecasted Usage	This method used the parts forecast to determine the annualized usage. A date range can be specified to limit the amount of forecast data used in the calculation.
4.9.13.3 Actual Usage	This method uses inventory transactions (actual usage) to determine the annualized usage of the part. The actual data can be restricted in the following ways:

	❑ Year to date usage ❑ Last year usage ❑ Prior 'n' years usage
4.9.13.4 Planned Usage	This method uses requirements to determine the planned usage of the part. A date range can be specified to limit the amount of planned data used in the calculation.
4.9.14 Maintain Part Master	This is where the Part Master is maintained. Parts can be added, changed, and deleted. The following information is part of the Part Master: ❑ Part ID ❑ Part description ❑ Stock unit of measure ❑ Shipping weight ❑ Weight unit of measure ❑ Engineering Master active revision ❑ Product code ❑ Commodity code ❑ Drawing number ❑ Drawing revision ❑ Drawing file ❑ Is this part Fabricated? ❑ Is this part Purchased? ❑ Is this part Consumable? ❑ Is this part Demand History? ❑ Is this part Inventory transactions locked? ❑ Is this part Detail only? ❑ Is this part Stocked? ❑ Is this part Tool or fixture? ❑ Is this part Auto issue? ❑ Is Part Supply used before applying Material Leadtime checks? ❑ Material cost ❑ Labor cost ❑ Burden cost ❑ Service cost ❑ Fixed cost ❑ Total cost ❑ Issue burden percent ❑ Issue burden per unit ❑ Purchase burden percent ❑ Purchase burden per unit ❑ Selling unit price ❑ Selling wholesale unit price ❑ Activity Based Costing (ABC) code ❑ Planner ID ❑ Buyer ID ❑ Safety stock quantity ❑ Lead-time in days ❑ Minimum order quantity ❑ Maximum order quantity ❑ Multiples of ❑ Order policy ❑ Days of supply ❑ Order quantity ❑ Order point quantity ❑ Annualized usage ❑ Demand Fence 1 ❑ Demand Fence 2

	❑ Material inventory General Ledger account ❑ Labor inventory General Ledger account ❑ Burden inventory General Ledger account ❑ Service inventory General Ledger account ❑ Preferred vendor ID ❑ Manufacturer ❑ Manufacturer part ID ❑ Primary warehouse ID ❑ Primary location ID ❑ Auto-issue warehouse ID ❑ Auto-issue location ID ❑ Inspection warehouse ID ❑ Inspection location ID ❑ Default package type ❑ Default National Motor Freight code (NMFC) ID ❑ Shipping dimensions ❑ Is inspection required? ❑ Substitute parts ❑ Cross selling parts ❑ Part aliases ❑ Harmonized Tariff Schedule (HTS) code ❑ Default country of origin for harmonized tariff schedule ❑ Material code for harmonized tariff schedule ❑ Is part inventoried using Piece Tracking? ❑ Part specifications ❑ user defined label ❑ user defined 1-10 ❑ Intrastat Information ❑ Value Added Tax (VAT) Information ❑ Vendors supplying this part ❑ Part warehouse locations ❑ Part unit of measure conversion ❑ Part unit prices by Customer ❑ Part unit prices by discount code ❑ Part cycle count setup
4.9.14.1 Stock Unit of Measure	This is the unit of measure in which this part is stored (i.e. feet, inches, pounds, etc.).
4.9.14.2 Shipping Weight	This is the shipping weight of one unit. It is intended to be used on an acknowledgment or Packing List to give some idea of the shipping weight.
4.9.14.3 Weight Unit Of Measure	This is the weight unit of measure for the part.
4.9.14.4 Engineering Master Active Revision	This specifies the version of Engineering Master that is currently active and is to be used for planning purposes throughout the system.
4.9.14.5 Product Code	This is the user defined code that is used to group parts which is usually used for parts that are sold as products.
4.9.14.6 Commodity Code	This is a user defined commodity code. This can be used to define the class of material, especially in the case of purchased parts.
4.9.14.7 Drawing Number	This is the drawing number of the engineering drawing for this master.
4.9.14.8 Drawing Revision	This is the revision level of the drawing for the given drawing number.
4.9.14.9 Drawing File	This is the file name for the drawing.
4.9.14.10 Fabricated?	This is whether or not the part is manufactured in-house.

4.9.14.11 Purchased?	This is whether or not this part is purchased from a vendor.
4.9.14.12 Consumable?	This whether or not this is a consumable part.
4.9.14.13 Demand History?	This is whether or not this part is to be forecast during demand history.
4.9.14.14 Inventory Transaction Locked?	This is whether or not the inventory for this part is locked.
4.9.14.15 Detail Only?	This whether or not this part is used as a leg detail in quotes, Work Orders, or Engineering Masters. This also determines whether or not this part is a stockable subassembly.
4.9.14.16 Stocked?	This is whether or not the part is normally kept on hand or in one of the stockrooms.
4.9.14.17 Tool Or Fixture?	This is whether or not the part is a tool or fixture used to manufacture a product.
4.9.14.18 Auto Issue?	This is whether or not the part is automatically issued from its primary location, or, if no location is set, from the primary location, when labor transactions are entered for the operation which uses the material.
4.9.14.19 Supply then Lead-time?	This is whether or not a parts supply is used before applying material lead-time checks. This preference tells the Global Scheduler to use all supply before applying lead-times in material checks.
4.9.14.20 Material Cost	This is the per unit cost of the material for a part.
4.9.14.21 Labor Cost	This is the estimated labor cost to produce a part.
4.9.14.22 Burden Cost	This is the estimated cost of the burden to produce a part.
4.9.14.23 Service Cost	This is the estimated cost of outside services necessary to produce a part.
4.9.14.24 Fixed Cost	This is the fixed costs associated with parts. Applied one time regardless of quantity, such as setup charges.
4.9.14.25 Total Cost	This is the total sum of all costs for a part.
4.9.14.26 Issue Burden Percent	Issue burden is the cost of handling parts in house and is applied when a part is issued. Percent is a percentage per unit value of material handled.
4.9.14.27 Issue Burden Per Unit	Issue burden is the cost of handling parts in house and is applied when a part is issued. Per Unit is a cost per unit value of material handled.
4.9.14.28 Purchase Burden Percent	Purchase burden is the cost of handling parts in house and is applied when a part is purchased. Percent is a percentage per unit value of material handled.
4.9.14.29 Purchase Burden Per Unit	Purchase burden is the cost of handling parts in house and is applied when a part is purchased. Per Unit is a cost per unit value of material handled.
4.9.14.30 Selling Unit Price	The price per unit sold is the default amount to charge when a part is sold.
4.9.14.31 Selling Wholesale Unit Price	The wholesale unit price per unit sold it the default wholesale amount to charge when a part is sold.
4.9.14.32 ABC Analysis Code	This is the identifier for ABC analysis to be preformed, used for cycle counting.
4.9.14.33 Planner	Planner user ID is a unique identifier for the planner of this part.
4.9.14.34 Buyer	Buyer user ID is a unique identifier for the buyer of this part.
4.9.14.35 Safety Stock Quantity	Safety stock quantity is the extra amount of parts that is kept on hand to cover fluctuations in demand.
4.9.14.36 Lead-time in days	Lead-time is the number of days required to replenish parts.
4.9.14.37 Minimum Order Quantity	This is the minimum suggested quantity used by material requirement planning when placing a planned order.
4.9.14.38 Maximum Order Quantity	This is the maximum quantity used by material requirement planning when processing a planned order.

4.9.14.39 Multiples Of	The quantity of a planned order is a multiples of this user given value. Or it can be said that the quantity on the planned order will be divisible by this user given value.
4.9.14.40 Order Policy	Order policy controls how material requirement planning generates planned orders for a part. The order policies types are: ❑ Discrete ❑ Fixed ❑ Economic ❑ Master Schedule ❑ Period Supply ❑ Not Planned
4.9.14.40.1 Policy Discrete	Discrete order policy replenish exactly the quantity that is needed for each demand.
4.9.14.40.2 Policy Fixed	Fixed order policy always replenish using the order quantity specified for a part.
4.9.14.40.3 Policy Economic	Economic order quantity order policy always replenish using the order quantity specified for a part, just like the fixed order policy. But this indicated that the part order quantity specified for a part is based on an economic order quantity.
4.9.14.40.4 Policy Master Schedule	Master Schedule order policy generates planned orders to meet quantities and dates specified in the Master Production Schedule.
4.9.14.40.5 Policy Period Supply	Period supply order policy always replenish for a specified number of days. May be used for perishable supplies.
4.9.14.40.6 Policy Not Planned	Not planned order policy will not generate any planned orders.
4.9.14.41 Days Of Supply	Days of supply is the quantity used by material requirement planning when the order policy calls for the replenishment of parts to cover a number of days of manufacturing.
4.9.14.42 Order Quantity	Order quantity is the quantity used by material requirement planning when the order policy calls for a fixed order quantity or economic order quantity to replenish a pending out of stock condition.
4.9.14.43 Order Point Quantity	Order point quantity is the quantity used by material requirement planning to trigger a planned order.
4.9.14.44 Annualized Usage	Annualized usage is the estimated or calculated annual usage of a part.
4.9.14.45 Demand Fence 1	Demand Fence 1 is for repetitive manufacturing and determines the number of days in real demand period for parts whose product code does not specify a Demand Fence.
4.9.14.46 Demand Fence 2	Demand Fence 2 is for repetitive manufacturing and determines the number of days in real demand period for parts whose product code does not specify a Demand Fence.
4.9.14.47 Material Inventory G/L Account	This is the inventory General Ledger account that the per unit cost of the material for a part is posted to.
4.9.14.48 Labor Inventory G/L Account	This is the inventory General Ledger account that the estimated labor cost to produce a part is posted to.
4.9.14.49 Burden Inventory G/L Account	This is the inventory General Ledger account that the estimated cost of the burden to produce a part is posted.
4.9.14.50 Service Inventory G/L Account	This is the inventory General Ledger account that the estimated cost of outside services necessary to produce a part is posted.
4.9.14.51 Preferred Vendor	Preferred vendor ID is used to identify the main vendor supplying this part. This feature is used to establish a relationship between a part and the vendors that supply this part.
4.9.14.52 Manufacturer	This is the name of the manufacturer of a part.
4.9.14.53 Manufacturer Part	This is the identification of the part as specified by the manufacturer.
4.9.14.54 Primary Warehouse	This is the default warehouse ID that is used to receive and/or issue the part.
4.9.14.53 Primary Location	This is the default warehouse location ID that is used to receive and/or issue the part.

4.9.14.54 Auto-Issue Warehouse	When auto-issue is used, this is the warehouse ID where the part is automatically issued from.
4.9.14.55 Auto-Issue Location	When auto-issue is used, this is the warehouse location ID where the part is automatically issued from.
4.9.14.56 Inspection Warehouse	This is the warehouse ID where inspections are done.
4.9.14.57 Inspection Location	This is the warehouse location ID where inspections are done.
4.9.14.58 Default Package Type	This is the default packaging method to be used.
4.9.14.59 Default National Motor Freight Code	This is the default National Motor Freight Classification (NMFC) ID used as a pricing tool that provides a comparison of commodities moving in interstate and Intrastate transport. Based on an evaluation of density, storability, ease of handling and liability, the commodities are grouped into one of 18 classes.
4.9.14.60 Shipping Dimensions	This is the packaged size of the part used to aid in shipping.
4.9.14.61 Inspection Required?	This will trigger the system to require the part to be inspected when received.
4.9.14.62 Part Inventoried Usage Piece Tracking?	This will trigger the system to require piece tracking to inventory this part. The elements of piece tracking that can be used, any or all, are: ❑ Dimensional length required? ❑ Dimensional width required? ❑ Dimensional height required? ❑ Dimensions unit of measure used for piece tracking
4.9.14.62.1 Dimensional Length Required?	If piece tracking is used this option, when selected, requires the length of the part for dimensional inventory.
4.9.14.62.2 Dimensional Width Required?	If piece tracking is used this option, when selected, requires the width of the part for dimensional inventory.
4.9.14.62.3 Dimensional Height Required?	If piece tracking is used this option, when selected, requires the height of the part for dimensional inventory.
4.9.14.62.4 Dimensions Unit Of Measure	This is the unit of measure to be used for dimensional inventory.
4.9.14.63 Part Specifications	Part specifications (specs, for short) are free form text. This text can be printed and can document special needs, notes, and agreements for the part.
4.9.14.64 user Defined Label Set	This selects which existing user defined label set will be used for a part. The elements are as follows: ❑ user defined label set ID ❑ user defined label 1 ❑ user defined label 2 ❑ user defined label 3 ❑ ... ❑ user defined label 10
4.9.14.65 user Defined Fields	These are 10 unique data fields that the user can define their purpose and use. The elements are as follows: ❑ user defined field 1 ❑ user defined field 2 ❑ user defined field 3 ❑ ... ❑ user defined field 10
4.9.14.66 Intrastat	Intrastat is the system for collecting statistics on the physical trade in goods (i.e. the actual movement of goods) between the Member States of the European Union (EU).

	This information includes the following specific elements: ❑ Tariff code ❑ Originating country ID ❑ Net weight ❑ Gross weight ❑ Weight unit of measure ❑ Volume ❑ Volume unit of measure ❑ Excise unit price
4.9.14.66.1 Tariff Code	Tariff code defines the class of goods being transported. This is similar to a commodity code.
4.9.14.66.2 Originating Country ID	Originating Country ID is defined as the Member State of the EU the part's company belongs to.
4.9.14.66.3 Net weight	This is the net weight of each part.
4.9.14.66.4 Gross weight	This is the gross weight of each part as packaged.
4.9.14.66.5 Weight unit of measure	This is the unit of measure used for the part's weight.
4.9.14.66.6 Volume	This is the volume of each part.
4.9.14.66.7 Volume unit of measure	This is the unit of measure used the volume of each part.
4.9.14.66.8 Excise unit price	This is the price (statistical value) used by customs and excise in system currency.
4.9.14.67 Value Added Tax	This is the Value Added Tax (VAT) used for the part.
4.9.14.68 Vendors Supplying This Part	This is a list of vendors that can used to supply this part. This feature is used to establish a relationship between a part and the vendors that supply this part. This information includes the following specific elements: ❑ Vendor ID ❑ Vendor name ❑ Vendor part ID ❑ Preferred vendor mark (only one can be so marked) ❑ Each vendor supplying a part can have quote information attached to them. The quote information includes the following specific elements: ❑ Vendor ID ❑ Vendor part ID ❑ Manufacture name ❑ Manufacture part ID ❑ Part ID ❑ Quote date ❑ Purchase unit of measure ❑ Quote quantity up to value for 10 levels ❑ Quantity quoted ❑ Unit price at given quantity
4.9.14.69 Part Warehouse Locations	This is a list of warehouse locations that can used to stock this part. This feature is used to establish a relationship between a part and the locations that stock this part. This information includes the following specific elements:

	❑ Warehouse ID ❑ Location ID ❑ Status of warehouse location ❑ Locked marker ❑ Primary warehouse marker for a part ❑ Auto-issue warehouse marker for a part ❑ Inspection warehouse marker for a part ❑ Transit marker for a part ❑ Hold reason for a part ❑ Quantity of parts at a given location ❑ Location description
4.9.14.70 Part Unit Of Measure Conversion	This is a part specific unit of measure conversion. (i.e. 1000 resistors to a box)
4.9.14. 71 Part Unit Prices by Customer	This is a part specific list of selling unit of measure and quantities per customer. This feature is used to establish a relationship between a part and the customers that purchase this part. This information includes the following specific elements: ❑ Customer ID ❑ Customer part ID ❑ Selling unit of measure Each customer can have quote information attached to them. The quote information includes the following specific elements: ❑ Quote quantity up to value for 10 levels ❑ Quantity quoted ❑ Unit price at given quantity
4.9.14.72 Part Unit Prices by Discount Code	This is a part specific list of selling unit of measure and quantities per discount code. This feature is used to establish a relationship between a part and the discount for this part. This information includes the following specific elements: ❑ Discount code ❑ Description ❑ Selling unit of measure Each discount code can have quote information attached to them. The quote information includes the following specific elements: ❑ Quote quantity up to value for 10 levels ❑ Quantity quoted ❑ Unit price at given quantity
4.9.14.73 Part Cycle Count Setup	This is a part specific list of cycle counting frequencies per warehouse location per a user specified frequency per part. This feature is used to establish a relationship between a part and the cycle count done per location for a part. This information includes the following specific elements: ❑ Warehouse ID ❑ Description ❑ Days between counts ❑ Date of Last Count
4.9.15 Maintain Unit of Measure Master	This is where the Unit of Measure Master is maintained. Units of Measure can be added, changed, and deleted. The following information is part of the Unit of Measure Master: ❑ Unit of measure ❑ Description ❑ Scale

	❑ Conversion factor ❑ Convert to unit of measure
4.9.15.1 Unit of Measure	This is the short name used to identify the unit of measure.
4.9.15.2 Description	This is the full name or long version of the items description.
4.9.15.3 Scale	This is the number of places to the right of the decimal place used for calculations.
4.9.15.4 Conversion Factor	Conversion factor is the numeric value used to multiply on unit by to arrive at the value of another unit of measure. The conversion factor is what gives the system the ability to convert from one unit of measure to another.
4.9.15.5 Convert To Unit of Measure	This is the unit of measure that the base unit of measure is converted to.
4.9.16 Maintain Warehouse Master	This is where the Warehouse Master is maintained. Warehouses and warehouse locations can be added, changed, and deleted. The following information is part of the Warehouse Master: ❑ Warehouse ID ❑ Warehouse description ❑ Warehouse address ❑ Warehouse country ID ❑ Warehouse region ID ❑ Is work in progress/value added sales tax (WIP/VAS) supported for this location? ❑ If yes, WIP/VAS information ❑ Location ID's ❑ Location description ❑ Locations type ❑ Default transit time between warehouses information ❑ Parts that can be stored in a location information
4.9.16.1 Warehouse ID	This is the short name used to identify the given warehouse.
4.9.16.2 Warehouse Description	This is the full name or long version of the warehouse description.
4.9.16.3 Warehouse Address	This is the address for the given warehouse.
4.9.16.4 Warehouse Country ID	This is the country ID for the given warehouse.
4.9.16.5 Warehouse Region ID	This is the region ID for the given warehouse.
4.9.16.6 WIP/VAS supported?	This indicates if work in progress/value added sales tax (WIP/VAS) is supported for this warehouse? If so then additional WIP/VAS information is required.
4.9.16.7 WIP/VAS Information	When work in progress/value added sales tax (WIP/VAS) is supported for a given warehouse ID the following information is required: ❑ Part ID's ❑ WIP/VAS ID per part ❑ Unit price per part
4.9.16.7.1 Part ID	The part ID in the warehouse that is being marked eligible for the performance of the value added service.
4.9.16.7.2 WIP/VAS ID	The ID of the value added service or Work in Process that is assigned to the part.
4.9.16.7.3 Unit Price	The price per part of the value added service. This uses the default unit price established globally for this WIP/VAS ID.
4.9.16.8 Location ID's	This is the short name used to identify the location with in the given warehouse.
4.9.16.9 Location Description	This is the full name or long version of the locations description.
4.9.16.10 Location Type	Location type is used to type or classify the warehouse location as follows:

	❑ Regular ❑ Floor ❑ In Transit
4.9.16.11 Warehouse Transit Time	Transit times sets the number of days it takes to move parts form one warehouse to another. These are default values for the system. This information includes the following specific elements: ❑ From warehouse ID ❑ From warehouse description ❑ Transit time in days ❑ To warehouse ID ❑ To warehouse description
4.9.16.11.1 Transit Time	The number of days it takes to move parts from one warehouse to another.
4.9.16.12 Parts per Location Information	This is the list of Parts that can be placed into a specific warehouse location. This information includes the following specific elements: ❑ Part ID ❑ Status ❑ Locked? ❑ Description of part/location ❑ Quantity ❑ Primary location? ❑ Auto issue location? ❑ Inspection location? ❑ Hold reason ID
4.9.16.12.1 Part ID	This is the Part ID for the part to be associated with this warehouse location.
4.9.16.12.2 Status	This is the part availability status for the given location. This status selections are: ❑ Available ❑ Unavailable ❑ On Hold
4.9.16.12.3 Locked	Lock is used to lock the part for a particular warehouse location.
4.9.16.12.4 Description Part/Location	This is the description of the part and/or the location for the part in a given location.
4.9.16.12.5 Quantity	This is the quantity of a part in this location only.
4.9.16.12.6 Primary Location	The primary location is used as the default location for issuing and receiving the part, if no other location is specified.
4.9.16.12.7 Auto Issue	The auto issue warehouse location is used by the system to automatically issue parts from this location, for parts setup to use auto issue.
4.9.16.12.8 Inspection	This indicates if this location is an inspection location for the part.
4.9.16.12.9 Hold Reason ID	This indicates if ***all*** the parts in this location are to be placed on hold, and if so what the hold reason is.

4.10 Shop Floor Control	*Shop Floor Control* is the subsystem for preparing paperwork for the shop floor and collecting Work Order data. *Shop Floor Control* involves the following functionality: ❑ Generating Work Order Traveler ❑ Generating shop management Reports ❑ Creating Labor Tickets from several sources ❑ Gather Employee time and attendance ❑ Updating Work Order progress ❑ Costing labor and factory burden ❑ Creating an export file for payroll Labor Tickets are used to record labor transactions for the following purposes: ❑ Record the accumulation of direct labor hours expended against a Work Order. If using actual costing, the system uses this data to calculate actual labor costs and resource burdens for the Work Order. If using standard costing, the system uses this data to report the accumulation of cost and in computing the variance between standard and actual costs. ❑ Record the current Work Order status. Labor Ticket transactions for direct labor indicate whether the setup and/or run for a given operation of a Work Order is completed, and also the current number of pieces completed. Thus, the correctness of the system's knowledge of current shop status depends upon timely entry of Labor Ticket transactions. ❑ Records the accumulation of indirect labor hours. This includes the time logged for meals, breaks, meetings, or other time not specific to a Work Order. These costs can be transferred to a special indirect labor journal during Manufacturing Costing. While Labor Collection is not a intended to enter Employee payroll information, an export of time and attendance can be performed for interface to another payroll system.
4.10.1 General Shop Floor Control Reports	
4.10.1.1 Labor Ticket Detail Report	The *Labor Ticket Detailed* report is generated based on a given Employee range and date range. The given date range can be used to display the shift date or transaction date. This report displays one line entry per Labor Ticket per Employee. The report calculates subtotals for each Employee and provides a grand total for the entire period. Employee ID sorts the Labor Ticket detailed report only. The report can be viewed, printed, or sent to a file. Header: ❑ Employee ID range ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) Employee ID header: ❑ Employee ID ❑ Employee name Line items: ❑ Transaction date ❑ Work Order ID ❑ Operation sequence number ❑ General Ledger account ID ❑ Break hours ❑ Vacation / Holiday / Sick hours

	❑ Regular hours (worked) ❑ Over time hours Employee ID footer: ❑ Break hours totals (per employee) ❑ Vacation / Holiday / Sick hours totals (per employee) ❑ Regular hours totals (worked per employee) ❑ Over time hours totals (per employee) Report footer: ❑ Break hours grand total ❑ Vacation / Holiday / Sick hours grand total ❑ Regular hours (worked) grand total ❑ Over time hours grand total
4.10.1.2 Employee Labor Ticket Summary Reports	The *Employee Labor Ticket Summary* report is generated based on a given Employee range and date range. The given date range can be used to display the shift date or transaction date. This report summarizes all tickets within a major and minor sort sequence and totals by Employee within the specified date range as shown below. The report calculates subtotals for each major sequence and gives a grand total for the entire period. The reports can be viewed, printed, or sent to a file. The employee Labor Ticket summary report, can be sequenced by: ❑ Transaction date ❑ General Ledger account ID ❑ Resource ID ❑ Work Order ID ❑ Department ID
4.10.1.2.1 Employee Labor Ticket Summary Report (sort: Transaction Date)	This is the *Transaction Date Sorted* version of the employee Labor Ticket summary report. Header: ❑ Employee ID range ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Employee ID header: ❑ Employee ID ❑ Employee name Transaction date header: ❑ Transaction date or shift date (based on display option) Line items: (not used) Transaction date footer: (totals per transaction) ❑ Break hours total ❑ Vacation / holiday / sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Employee ID footer: (totals per employee) ❑ Break hours total

	❑ Vacation / holiday / sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / holiday / sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.2.2 Employee Labor Ticket Summary Report (sort: General Ledger Account)	This is the *General Ledger Account Sorted* version of the employee Labor Ticket summary report. Header: ❑ Employee ID range ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Employee ID header: ❑ Employee ID ❑ Employee name General Ledger header: ❑ General Ledger account ID Line items: (not used) General Ledger footer: (totals per General Ledger account) ❑ Break hours total ❑ Vacation / holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Employee ID footer: (totals per employee) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total

4.10.1.2.3 Employee Labor Ticket Summary Report (sort: Resource ID)	This is the *Resource ID Sorted* version of the employee Labor Ticket summary report. Header: ❑ Employee ID range ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Employee ID header: ❑ Employee ID ❑ Employee name Resource header: ❑ Resource ID Line items: (not used) Resource footer: (totals per resource) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Employee ID footer: (totals per employee) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.2.4 Employee Labor Ticket Summary Report (sort: Work Order ID)	This is the *Work Order Sorted* version of the employee Labor Ticket summary report. Header: ❑ Employee ID range ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Employee ID header: ❑ Employee ID ❑ Employee name Work Order header: ❑ Work Order ID

	Line items: (not used) Work Order footer: (totals per Work Order) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Employee ID footer: (totals per employee) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.2.5 Employee Labor Ticket Summary Report (sort: Department ID**)**	This is the *Department Sorted* version of the employee Labor Ticket summary report. Header: ❑ Employee ID range ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Employee ID header: ❑ Employee ID ❑ Employee name Department header: ❑ Department ID Line items: (not used) Department footer: (totals per department) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Employee ID footer: (totals per employee) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total

	❑ Cost amount total ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.3 Labor Ticket Summary Reports	The *Labor Ticket Summary* report is generated based on a given Employee range and date range. The given date range can be used to display the shift date or transaction date. This report summarizes all tickets for each sort sequence. This summary report is just like the employee summary report, but **without** the employee information. The report calculates subtotals for each major sequence and gives a grand total for the entire period. The reports can be viewed, printed, or sent to a file. The Labor Ticket summary report, can be sequenced by: ❑ Transaction date ❑ General Ledger account ID ❑ Resource ID ❑ Work Order ID ❑ Department ID
4.10.1.3.1 Labor Ticket Summary Report (sort: Transaction Date)	This is the *Transaction Date Sorted* version of the Labor Ticket summary report. Header: ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Transaction date header: ❑ Transaction date or Shift date (based on display option) Line items: (not used) Transaction date footer: (totals per transaction) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.3.2 Labor Ticket Summary Report	This is the *General Ledger Account Sorted* version of the Labor Ticket summary report. Header:

(sort: General Ledger Account)	❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information General Ledger header: ❑ General Ledger account ID Line items: (not used) General Ledger footer: (totals per General Ledger account) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.3.3 Labor Ticket Summary Report (sort: Resource ID)	This is the *Resource ID Sorted* version of the Labor Ticket summary report. Header: ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Resource header: ❑ Resource ID Line items: (not used) Resource footer: (totals per resource) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.3.4 Labor Ticket Summary	This is the *Work Order Sorted* version of the Labor Ticket summary report.

Report (sort: Work Order ID)	Header: ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Work Order header: ❑ Work Order ID Line items: (not used) Work Order footer: (totals per Work Order) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.3.5 Labor Ticket Summary Report (sort: Department ID)	This is the *Department Sorted* version of the Labor Ticket summary report. Header: ❑ Date range (displayed by: shift date or transaction date) ❑ Over time multiplier (over 40 hrs) ❑ Sorting information Department header: ❑ Department ID Line items: (not used) Department footer: (totals per department) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total (sum of above hours) ❑ Burden total Report footer: (totals per period) ❑ Break hours total ❑ Vacation / Holiday / Sick hours total ❑ Regular hours total (worked) ❑ Over time hours total ❑ Cost amount total ❑ Burden total
4.10.1.4 Employee List	This is the *Employee List Report* that is generated for a given Employee ID range. This

Report	report can be viewed, printed, or sent to a file. Barcodes can be included in this report for system using barcode. This report outputs basic employee information. Sorted by employee ID by default. Header: ❑ Employee ID range Line items: ❑ Employee ID ❑ Employee name ❑ Barcode Footer: ❑ Count number of employees printed
4.10.1.5 Work Order Traveler Report	The *Work Order Traveler Report* provides paperwork to shop operators. This report provides a succinct report of all pertinent Work Order, Customer, and operation information for a Work Order. It is specifically designed to accompany in-process material as it travels through the shop. Thus, it includes all information needed to manufacture the part, including drawing numbers and revisions, specifications, part IDs and quantities. Additionally, barcodes can be generated. The report can be viewed, printed, or sent to a file. Header: ❑ Company name ❑ Report title ❑ Work Order ID ❑ Work Order base ID ❑ Work Order sub ID ❑ Work Order lot ID ❑ Work Order split ID ❑ Date range for earliest and/or latest release Work Order type header: (for sorting) Work Order base ID header: (for sorting) Work Order lot ID header: (for sorting) Work Order split ID header: (for sorting) Work Order Sub ID header: ❑ Work Order ID ❑ Work Order base ID ❑ Work Order sub ID ❑ Work Order lot ID ❑ Work Order split ID ❑ Work Order part ID ❑ Work Order part description ❑ Work Order release date ❑ Work Order want date ❑ Work Order start date ❑ Work Order finish date ❑ Work Order desired quantity ❑ Work Order drawing ID ❑ Work Order drawing revision ❑ Work Order engineered by (name of Eng.) Additional header information for Co-Products (if it exists): ❑ Co-Product part ID

	❑ Co-Product part description ❑ Co-Product desired quantities Complete Customer information (if it exists): ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Customer address (Bill-To and Ship-To) ❑ Customer Order date ❑ Customer Ship Via ❑ Customer Purchase Order number ❑ Customer contact phone ❑ Customer contact fax ❑ Customer part ID Operation Sequence Number header: ❑ Operation resource ID ❑ Operation sequence number ❑ Operation end quantity (calculated) ❑ Operation start quantity (calculated) ❑ Operation setup hours ❑ Operation run hours ❑ Operation start date ❑ Operation finish date ❑ Operation drawing ID ❑ Operation drawing revision ❑ Operation alternate resources (optional backup systems) ❑ Operation type Additional header information for barcode (optional per user) ❑ Barcode for Operation Line items: ❑ Required part ID ❑ Required part description ❑ Sub ID (Work Order) ❑ Required piece number ❑ Date required ❑ Unit of measure (stock part) ❑ Required quantity ❑ Quantity due ❑ Required dimensions Additional line item information (optional by user) ❑ Part locations ❑ Part trace information
4.10.1.6 Work Order Material Picking List Reports	The *Work Order Material Picking List Report* provides material requirement paperwork to material handling personnel. This report provides a material picking list for issuing material to a Work Order. All pertinent part information is included in the report including part ID, unit of measure, specifications, warehouse locations, and traceability information. Additionally, the barcodes for a part ID can be generated. The report can be viewed, printed, or sent to a file. Sequence by: ❑ Piece number ❑ Warehouse / Location

	Optional information: ❑ Material barcodes ❑ Part locations ❑ Traceability information
4.10.1.6.1 Material Picking List (sort: Piece Number)	This is the *Piece Number Sorted* version of the material picking list report. Header: ❑ Company name ❑ Report title ❑ Work Order ID ❑ Work Order Base ID ❑ Work Order Sub ID ❑ Work Order Lot ID ❑ Work Order Split ID ❑ Date range for earliest and/or latest release Work Order Type header: (for sorting) Work Order Base ID header: (for sorting) Work Order Lot ID header: (for sorting) Work Order Split ID header: ❑ Work Order ID ❑ Work Order Base ID ❑ Work Order Sub ID ❑ Work Order Lot ID ❑ Work Order Split ID ❑ Work Order part ID ❑ Work Order part description ❑ Work Order release date ❑ Work Order want date ❑ Work Order start date ❑ Work Order finish date ❑ Work Order desired quantity ❑ Work Order drawing ID ❑ Work Order drawing revision ❑ Work Order engineered by (name of engineer) Additional header information for Co-Products (if it exists): ❑ Co-Product part ID ❑ Co-Product part description ❑ Co-Product desired quantities Line items: ❑ Required part ID ❑ Required part description ❑ Work Order Sub ID ❑ Operation sequence number ❑ Required piece number ❑ Date required ❑ Unit of measure (stock part) ❑ Required quantity ❑ Quantity due ❑ Required dimensions Additional line item information (optional by user)

	❑ Part locations ❑ Part trace information ❑ Bar code (of required part)
4.10.1.6.2 Material Picking List (sort: Location)	This is the *Location Sorted* version of the material picking list report. This report is the same as the report above with the addition of 2 sub-headers which are Part Primary Warehouse ID sub-header and Part Primary Location ID sub-header, as shown below. Header: ❑ Company name ❑ Report title ❑ Work Order ID ❑ Work Order Base ID ❑ Work Order Sub ID ❑ Work Order Lot ID ❑ Work Order Split ID ❑ Date range for earliest and/or latest release Work Order Type header: (for sorting only) Work Order Base ID header: (for sorting only) Work Order Lot ID header: (for sorting only) Work Order Split ID header: ❑ Work Order ID ❑ Work Order Base ID ❑ Work Order Sub ID ❑ Work Order Lot ID ❑ Work Order Split ID ❑ Work Order part ID ❑ Work Order part description ❑ Work Order release date ❑ Work Order want date ❑ Work Order start date ❑ Work Order finish date ❑ Work Order desired quantity ❑ Work Order drawing ID ❑ Work Order drawing revision ❑ Work Order engineered by (name of engineer) Additional header information for Co-Products (if it exists): ❑ Co-Product part ID ❑ Co-Product part description ❑ Co-Product desired quantities Part Primary Warehouse ID header: ❑ Primary warehouse ID (for given part) Part Primary Location ID header: ❑ Primary Location ID (for given part) Line items: ❑ Required part ID ❑ Required part description ❑ Work Order Sub ID ❑ Operation sequence number ❑ Required piece number ❑ Date required

	❑ Unit of measure (stock part) ❑ Required quantity ❑ Quantity due ❑ Required dimensions Additional line item information (optional by user) ❑ Part locations ❑ Part trace information ❑ Barcode (of required part)
4.10.1.7 Shop Resource Dispatch Report	The *Shop Resource Dispatch Report* is for firmed and/or released operations scheduled for each Shop Resource. Each resource is printed on a separate page for independent distribution. The report is printed for a given Shop Resource range and can be further limited by Work Orders that are scheduled to be either late or early by a given number of days. The report includes the option of printing the projected Throughput amounts. The report can be printed, viewed or sent to a file. The Foreman's Dispatch Report is a more detailed version of the Shop Dispatch Report. Status selections: (any or all) ❑ Firm ❑ Released Filter selections: (any or all) ❑ Scheduled to be late by 'n' days ❑ Scheduled to be early by 'n' days ❑ Horizon 'n' days Resource types: (any or all) ❑ Work center ❑ Individual / Team ❑ Contractor Scheduling messages: ❑ Late! = Work Order is now late - This is when the want date is previous to the current date. ❑ 'n' Late = Work Order is scheduled late by 'n' days - This is when the scheduled finish date is after the want date. ❑ 'n' Early = Work Order is scheduled early by 'n' days - This is when the schedule finish date is greater than its want date. ❑ N/S = Not scheduled - run Global Scheduler ❑ E = Operation has a pending ECN ❑ E/L = Operation is locked by a pending ECN
4.10.1.7.1 Shop Dispatch Report	This is the *Shop Dispatch* report. Header: ❑ Company name ❑ Report title ❑ Resource range Resource ID header: ❑ Resource ID ❑ Resource description Line items: ❑ Operation scheduled start date ❑ Operation scheduled finish date

	❑ Operation ID ❑ Part ID ❑ Part description ❑ Setup hours ❑ Run hours ❑ Calculated end quantity ❑ Completed quantity ❑ Scheduling message ❑ Bar code information (user option)
4.10.1.7.2 Shop Dispatch Report with Throughput	This is the *Throughput Version* of the shop dispatch report. Header information: ❑ Company name ❑ Report title ❑ Run comments Resource ID header: ❑ Resource ID ❑ Resource description Line items: ❑ Operation scheduled start date ❑ Operation scheduled finish date ❑ Operation ID ❑ Part ID ❑ Part description ❑ Setup hours ❑ Run hours ❑ Calculated end quantity ❑ Completed quantity ❑ Scheduling message ❑ Throughput amount ❑ Bar code information (user option)
4.10.1.8 Work Order Schedule Status Report	The *Work Order Schedule Status Report* shows the schedule status for a given range of firmed and/or released Work Orders. The report can be sequenced by want date, finish date, or days late. The report can be further limited by a given number of days the Work Order will be scheduled to be late and/or early. The report can be viewed, printed, or sent to a file. Scheduling messages: (possible) ❑ Late! = Work Order is now late ❑ 'n' Late = Work Order is scheduled late by 'n' days ❑ 'n' Early = Work Order is scheduled early by 'n' days ❑ N/S = Not scheduled - run Global Scheduler ❑ E = Operation has a pending ECN ❑ E/L = Operation is locked by a pending ECN Header: ❑ Company name ❑ Run comments ❑ Work Order ID / Revision range ❑ Sequenced by (want date, finish date, or days late) ❑ Status of Work Order shown (firm and/or released) ❑ Filter used – optional (''n'' days scheduled to be late and/or early)

	Line items: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Customer (if any) ❑ Desired want date, ❑ Scheduled Finish Date (if scheduled) ❑ Desired quantity required ❑ Status (released, or firmed) ❑ Scheduling message (per Work Order)
4.10.1.9 Foreman's Dispatch Report	The *Foreman's Dispatch Report* for firm or released Work Orders. The report is generated for a given resource range and a given horizon in days. The optional resource types that can be included in the report are Work Center, Individual/Team, or Contractor. The Foreman's Dispatch Report is a more detailed version of the Dispatch Report. The report can be viewed, printed, or sent to a file. Scheduling messages: (possible) ❑ Late! = Work Order is now late ❑ 'n' Late = Work Order is scheduled late by 'n' days ❑ 'n' Early = Work Order is scheduled early by 'n' days ❑ N/S = Not scheduled - run Global Scheduler ❑ E = Operation has a pending ECN ❑ E/L = Operation is locked by a pending ECN Header: ❑ Company name ❑ Run comments ❑ Resource range ❑ Horizon (days) ❑ Status selected (firm and/or released) ❑ Resource type selected (Work Center, Individual/Team, and/or Contractor) Resource header: ❑ Resource ID ❑ Resource description Line items: ❑ Work Order ID ❑ Operation ID ❑ Part ID ❑ Part description ❑ Scheduled operation start date ❑ Scheduled operation finish date ❑ Setup hours ❑ Run hours ❑ Available quantity (from previous operation) ❑ End quantity (calculated) ❑ Completed quantity ❑ Completed percentage ❑ Previous resource ID ❑ Next resource ID ❑ Scheduling message (per Work Order) ❑ Calculated end quantity ❑ Completed percentage (completed quantity/end quantity)

4.10.1.10 Shop Capacity Calendar	The *Shop Capacity Calendar* gives the amount of time (hours) of available capacity currently planned by a schedule for a Shop Resource for each day of a specified year. Capacities are to be printed in a standard calendar format, one month to a page, for an entire year. The report can be printed, viewed or sent to a file. The capacity is determined by examining: ❑ The weekly schedule ❑ Resource capacity for each shift ❑ Exception days Header information: ❑ Schedule ID ❑ Resource ID/description ❑ Calendar year being printed ❑ Calendar month being printed Line items: ❑ Day's of the month ❑ Calculated capacity per day
4.10.1.11 Employee Efficiency / Utilization Report	This is the *Employee Efficiency / Utilization Reports* that are printed for a given date range and optional employee range. These reports can also include resource types of work center and/or individual/team. Their is a detail and summary version of this report. The detailed version can optionally include projected Throughput amounts. The reports can be viewed, printed, or sent to a file. Formula's: ❑ Efficiency percentage = 100 x Estimated Hours / Actual Hours
4.10.1.11.1 Summary Version	This is the *Summary Version* of the employee efficiency / utilization report. Header: ❑ Date range ❑ Employee range Employee footer: ❑ Employee ID ❑ Employee name ❑ Hours worked (actual hours) ❑ Estimated hours ❑ Efficiency
4.10.1.11.2 Detail Version	This is the *Detailed Version* of the employee efficiency / utilization report. Header: ❑ Company name ❑ Report title ❑ Date range ❑ Employee range Employee ID header: ❑ Employee ID ❑ Employee name Line items: ❑ Work Order ID ❑ Part ID ❑ Part description

	❑ Transaction date ❑ Resource ID ❑ Hours worked (actual hours) ❑ Estimated hours ❑ Efficiency ❑ Transaction type Employee footer: ❑ Hours worked (actual hours) total ❑ Estimated hours total ❑ Efficiency total
4.10.1.11.2 Detail Version with Throughput	This is the *Throughput Detailed Version* of the employee efficiency / utilization report. Header: ❑ Company name ❑ Report title ❑ Date range ❑ Employee range Employee ID header: ❑ Employee ID ❑ Employee name Line items: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Transaction date ❑ Resource ID ❑ Hours worked (actual hours) ❑ Estimated hours ❑ Efficiency ❑ Transaction type ❑ Throughput amount (projected) Employee footer: ❑ Hours worked (actual hours) total ❑ Estimated hours total ❑ Efficiency total
4.10.1.12 Resource Efficiency / Utilization Report	The *Resource Efficiency / Utilization Reports* are printed for a given date range and optional resource range. These Reports can also include resource types of Work Center and/or Individual/Team. The detailed version and the summary version with Work Order information can include projected throughput amounts optionally. The reports can be viewed, printed, or sent to a file. Formula's: ❑ Efficiency percentage = 100 x Estimated Hours / Actual Hours ❑ Efficiency percentage = 100 x Estimated Hours / Actual Hours ❑ Actual Utilization percentage = 100 x Actual Hours / Capacity ❑ Estimated Utilization percentage = 100 x Estimated Hours / Capacity
4.10.1.12.1 Summary Version	This is the *Summary Version* of the resource efficiency / utilization report. Header: ❑ Company name ❑ Date range

	❑ Resource range ❑ Resource type(s) included (work center and/or individual/team) Resource header: (for sorting) Work Order header: (for sorting) Sequence header: (for sorting) Resource footer: ❑ Resource ID ❑ Resource description ❑ Resource capacity ❑ Hours worked (actual) ❑ Estimated hours ❑ Efficiency ❑ Utilization (actual) ❑ Utilization (estimated)
4.10.1.12.2 Summary Version (with Work Order information)	This is the expanded *Summary Version with Work Order Information* for the resource efficiency / utilization report. Header: ❑ Company name ❑ Date range ❑ Resource range ❑ Resource type(s) included (work center and/or individual/team) Resource header: ❑ Resource ID ❑ Resource description ❑ Resource capacity Work Order header: (for sorting) Sequence header: (for sorting) Work Order footer: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Hours worked (actual) ❑ Estimated hours ❑ Efficiency Resource footer: ❑ Hours worked (actual) ❑ Estimated hours ❑ Efficiency ❑ Utilization (actual) ❑ Utilization (estimated)
4.10.1.12.3 Detail Version	This is the *Detailed Version* of the resource efficiency / utilization report. For each resource, all Labor Tickets in the date range appear in date order. Header: ❑ Company name ❑ Date range ❑ Resource range ❑ Resource type(s) included (work center and/or individual/team)

	Resource header: ❑ Resource ID ❑ Resource description ❑ Resource capacity Work Order header: (for sorting) Sequence header: (for sorting) Line items: ❑ Work Order ID ❑ Sequence number ❑ Part ID ❑ Part description ❑ Transaction date (Labor Ticket) ❑ Employee ID ❑ Hours worked (actual per Labor Ticket) ❑ Estimated hours (from Work Order operation) ❑ Efficiency (estimated hours / actual hours) ❑ Transaction type (setup or run) Work Order footer: ❑ Hours worked (actual) ❑ Estimated hours ❑ Efficiency Resource footer: ❑ Hours worked (actual) ❑ Estimated hours ❑ Efficiency ❑ Utilization (actual) ❑ Utilization (estimated)
4.10.1.13 Shipping Performance Report	The *Customer Shipping Performance Reports* are for Customer Orders and is generated for a given shipping date range. The report can be viewed, printed or sent to file. The report can be sequenced by: ❑ Ship date ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Part ID ❑ Work Order ID ❑ Product Code
4.10.1.13.1 Shipping Performance (sort: Ship Date)	This is the *Ship Date Sorted* version of the customer shipping performance report. Header: ❑ Ship date range Ship Year header: ❑ Ship year Ship Month header: ❑ Ship month Customer Order header:

	❑ Customer Order ID or Work Order ID (based on order existence) ❑ Customer Name ❑ Part ID (from the Customer Order line) ❑ Description ❑ Product code (for part) ❑ Quantity (per line item) Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Order footer: ❑ Average days late or early (per order) ❑ Shipped quantity Ship month footer: ❑ Average days late or early (per month) Report footer: ❑ Average days late or early (per report period)
4.10.1.13.2 Shipping Performance (sort: Order ID**)**	This is the *Order ID Sorted* version of the customer shipping performance report. Header: ❑ Ship date range ❑ Customer Order ID range Customer Order header: ❑ Customer Order ID ❑ Work Order ID ❑ Customer name Customer Order line header: ❑ Line number ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Quantity Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Order footer: ❑ Average days late or early (per order) ❑ Shipped quantity ❑ Percent shipped (shipped quantity / order quantity) report footer: ❑ Average days late or early (per report period and Customer Order range)

4.10.1.13.3 Shipping Performance (sort: Customer ID)	This is the *Customer ID Sorted* version of the customer shipping performance report. Header: ❑ Ship date range ❑ Customer ID range Customer ID header: ❑ Customer ID ❑ Customer name Customer Order header: ❑ Customer Order ID or Work Order ID (based on order existence) ❑ Line number ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID (per line) ❑ Product code (per part) ❑ Quantity (per line) Customer Order line header: (used for sorting purpose only) Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Customer Order footer: ❑ Average days late or early (per order) ❑ Shipped quantity ❑ Percent shipped (shipped quantity / order quantity) Customer ID footer: ❑ Average days late or early (per report period and Customer Order range) Report footer: ❑ Average days late or early (per report period and Customer Order range)
4.10.1.13.4 Shipping Performance (sort: Customer Name)	This is the *Customer Name Sorted* version of the customer shipping performance report. Header: ❑ Ship date range ❑ Customer ID range Customer Name header: ❑ Customer name ❑ Customer ID Customer Order header: ❑ Customer Order ID or Work Order ID (based on order existence) ❑ Line number ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID (per line) ❑ Product code (per part) ❑ Quantity (per line)

	Customer Order line header: (used for sorting purpose only) Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Customer Order footer: ❑ Average days late or early (per order) ❑ Shipped quantity ❑ Percent shipped (shipped quantity / order quantity) Customer Name footer: ❑ Average days late or early (per report period and Customer Order range) Report footer: ❑ Average days late or early (per report period and Customer Order range)
4.10.1.13.5 Shipping Performance (sort: Part / Job ID)	This is the *Part ID / Job ID Sorted* version of the customer shipping performance report. Header: ❑ Ship date range ❑ Part ID range Part ID header: (for sorting) Reference header: ❑ Part ID, or Description reference, or Work Order ID (based on existence) Customer Order ID header: ❑ Customer Order ID or Work Order ID (based on existence) ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Product code (per part) ❑ Quantity (per line) Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Customer Order ID footer: ❑ Average days late or early (per order) ❑ Shipped quantity Part ID footer: ❑ Average days late or early (per report period and Customer Order range) Report footer: ❑ Average days late or early (per report period and Customer Order range)

4.10.1.13.6 Shipping Performance (sort: Work Order)	This is the *Work Order ID Sorted* version of the customer shipping performance report. Header: ❑ Ship date range ❑ Work Order ID range Work Order ID header: ❑ Work Order ID ❑ Customer Order ID ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Product code (per part) ❑ Quantity (per line) Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Work Order ID footer: ❑ Average days late or early (per order) ❑ Shipped quantity Report footer: ❑ Average days late or early (per report period and Customer Order range)
4.10.1.13.7 Shipping Performance (sort: Product Code)	This is the *Product Code Sorted* version of the customer shipping performance report. Header: ❑ Ship date range ❑ Product code (all or one as selected) Product code header: ❑ Product code ❑ Customer Order ID or Work Order ID (based on order existence) ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Quantity (per line) Line items: ❑ Packing List ID ❑ Desired ship date ❑ Ship date ❑ Days late or early ❑ Shipped quantity Product code footer: ❑ Average days late or early (per order) ❑ Shipped quantity Report footer:

	❑ Average days late or early (per report period and Customer Order range)
4.10.1.14 Shop Floor Status Report	The *Shop Floor Status Report* displays the Work Order status associated with resource details in the shop floor for the given sequence. Work Order ID or part ID can sequence the report. The report can also be limited by Work Order status(s). The report can be viewed, printed, or sent to a file. Sequenced by: ❑ Work Order ID ❑ Part ID Status selected: (any or all) ❑ Unreleased ❑ Firmed ❑ Released ❑ Closed Scheduling messages: ❑ Late! = Work Order is now late - This is when the want date is previous to the current date. ❑ 'n' Late = Work Order is scheduled late by 'n' days - This is when the scheduled finish date is after the want date. ❑ 'n' Early = Work Order is scheduled early by 'n' days - This is when the schedule finish date is greater than its want date. ❑ N/S = Not scheduled - run Global Scheduler ❑ E = Operation has a pending ECN ❑ E/L = Operation is locked by a pending ECN
4.10.1.14.1 Shop Floor Status (sort: Work Order)	This is the *Work Order ID Sorted* version of the shop floor status report. Header information: ❑ Work Order ID range ❑ Work Order revision sub-range ❑ Work Order status(s) selected (unreleased, firmed, released, closed) Resource ID header: ❑ Resource ID ❑ Resource description Line items: ❑ Operation start date ❑ Operation finish date ❑ Work Order ID ❑ Sequence number ❑ Part ID ❑ Part description ❑ Setup hours ❑ Run hours ❑ Calculated end quantity ❑ Completed quantity ❑ Scheduled messages (per Work Order)
4.10.1.14.2 Shop Floor Status (sort: Part)	This is the *Part ID Sorted* version of the shop floor status report. Header information: ❑ Part ID range ❑ Work Order status(s) selected (unreleased, firmed, released, closed)

	Line items: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Customer name ❑ Desired want date ❑ Finish date ❑ Desired quantity ❑ Status ❑ Scheduled messages (per Work Order)
4.10.2 Print Work Order Traveler	The Work Order Traveler is printed for each job that is being released to the shop floor. There are many formatting options for this document to accommodate a wide variety of manufacturing activity. There are also several mechanisms to control the printing of this document to ensure the proper documents get to the shop floor at the correct time. These options consist of the following categories: ❑ Print eligibility ❑ General format ❑ Status control ❑ Write-ins ❑ Print inclusions ❑ Actions
4.10.2.1 Print Eligibility	A report can be printed for a single Work Order or for multiple Work Orders meeting certain selection criteria.
4.10.2.1.1 Single Work Order	For this mode, the user must supply a Work Order ID. The user can then select one leg in that Work Order or choose to print all legs. This selection effectively manages the legs as independent Work Orders from a shop floor control perspective.
4.10.2.1.2 Multiple Work Orders	For this mode, multiple Work Orders will be potentially printed. To determine print eligibility a date range is supplied: ❑ Earliest date ❑ Latest date The dates in this range refer to either of the following user selectable values: ❑ Work Order release date ❑ Work Order scheduled start date
4.10.2.2 General Format	The report can be printed in two basic formats: ❑ Traveler format ❑ Picking List format Either or both of these formats can be printed for the Work Orders eligible in the printing run. For some shops both formats are desirable.
4.10.2.2.1 Traveler Format	The traveler format is operation centric and is generally best suited for shops where materials move from one work center to the next.
4.10.2.2.2 Picking List Format	The Picking List format is material centric and is best suited for shops where the focus is on the materials rather than the Shop Resources. This format also has the option of how the materials are to be sorted on the document. The sort can be either: ❑ Piece number ❑ Location
4.10.2.3 Status Control	Either Work Orders currently on Firmed or Released status can be selected to be printed. The Firmed selection would typically be used with an action to release the order as described below.
4.10.2.4 Write-Ins	Operation write-ins provide four data entry areas for each operation printed. These can be used by various shop personnel to record information as work moves through each operation. The labels for these four data entry areas are defined here. The labels can be saved as default for future ease in printing Work Order Travelers. Defaults can also be created as an Operations Parameter.

4.10.2.5 Print Inclusions	There are several pieces of information that can be optionally printed on the document. These include: ❑ Print already closed operations ❑ Print operation barcodes ❑ Print material barcodes ❑ Print Customer Order information ❑ Print operation write-ins ❑ Print part locations ❑ Print only locations with quantity ❑ Print traceability information
4.10.2.5.1 Operation Barcodes	This is for systems where a form of barcode labor collection is being used. Barcodes will print on the document for the Work Order ID and each operation. It assumed that the appropriate bar code font is installed on the workstation where this report will print from.
4.10.2.5.2 Material Barcodes	Similar to operation barcodes, this is used for systems where a form of barcode collection is being used for material transactions.
4.10.2.5.3 Customer Order Information	This includes information about the Customer Order that may be linked to the Work Order. The following information prints in the header portion of the document: ❑ Customer Order ID ❑ Order date ❑ Ship Via ❑ Customer Purchase Order number ❑ Phone ❑ Fax ❑ Customer part ID ❑ Customer name ❑ Customer address ❑ Ship-To address ❑ Drawing number from Customer Order line ❑ Drawing revision from Customer Order line
4.10.2.5.4 Operation Write-Ins	This prints a space on the document by each operation for the write-ins. Each write-in field is labeled using the information from Write-Ins above.
4.10.2.5.5 Part Locations	This prints all valid part locations for the part ID. If a part is established as Auto Issue, then that fact is noted as well.
4.10.2.5.6 Locations Only Quantity	This option is only available if Part Locations are being printed for each material. This option prevents the printing of all valid locations for the part ID and only prints those locations that contain a quantity greater than zero.
4.10.2.5.7 Traceability Information	This option prints part trace information for each part in the document that is established as traceable.
4.10.2.6 Actions	The system can automatically perform one or more of the following actions as part of the printing process: ❑ Release firm Work Orders ❑ Auto release Work Order details ❑ Print new releases only
4.10.2.6.1 Release Firm Work Orders	This option changes the status of a Work Order with a Firm status to Released upon printing.
4.10.2.6.2 Auto Release Work Order Details	This option changes the status of all subordinate legs, operations, and materials to Released upon printing of the Work Order. This is useful when the concurrent engineering feature of the system is used where various Work Order components have multiple statuses and the assumption is made that all components are ready for production upon release of the Work Order.
4.10.2.6.3 Print New Releases	This option effectively prevents the reprinting of a Work Order Traveler that has been previously printed. Only Work Orders that are currently at a Firm status and will be

Only	released as part of this printing process will be printed. This option is used in connection with Release Firm Work Orders above.
4.10.3 Labor Ticket Source	Labor is collected in three different ways: ❑ Manually keyed ❑ Wedge barcode reader ❑ Network barcode entry
4.10.3.1 Keyboard	For this source, all data is entered manually by the user via the keyboard and mouse. The following parameters control the manner in which shop personnel may enter data: ❑ Automatically compute overtime ❑ Use decimal time format ❑ Edit quantity complete vs. standard
4.10.3.1.1 Automatically Compute Overtime	This switch causes the quantity complete to be automatically calculated based on elapsed time.
4.10.3.1.2 Use Decimal Time Format	This switch causes the system to recognize the entry of a quick four-digit time format. If the switch is set, the second two digits are interpreted as hundredths of an hour. Otherwise, they're interpreted as minutes.
4.10.3.1.3 Edit Quantity Complete vs. Standard	If this switch is set, the system warns the operator if the quantity being Reported on a Labor Ticket is above the system calculated operation quantity plus the allowable percent over standard. When this option is selected, the allowable percent over standard field is populated with the desired percent.
4.10.3.2 Wedge	For this source, all data is entered via a wedge bar code reader that emulates a keyboard without any other special equipment. Since this is the primary application for shop floor personnel, certain Work Order information can be displayed without the need to navigate elsewhere in the system. The following information is retrieved for the Work Order: ❑ Picture ❑ Operation specifications The following parameters control the manner in which shop personnel may enter data: ❑ Duration threshold ❑ Default Indirect ID ❑ Multiple jobs? ❑ Prorate hours spent on work ❑ Confirmation before save? ❑ Automatically compute quantity complete? ❑ Operation sequence must be scanned in? ❑ Operator is allowed to change Resource ID? ❑ Announce transaction accepted? ❑ Edit quantity complete vs. standard ❑ Employee ID must be scanned?
4.10.3.2.1 Duration Threshold	This number, specified in hours, represents the longest transaction allowed for an operator to enter. When an operator tries to complete an in-process transaction with a longer elapsed time than this threshold (up to a maximum of 24 hours), the system rejects the transaction. In this case the transaction must be completed using manual method of entering Labor Tickets.
4.10.3.2.2 Default Indirect ID	This is the Indirect ID that the system uses to cover all non-direct time that is not specifically logged using the Indirect action. An Indirect ID is used to establish categories for labor that does not get charged directly to a Work Order. Each Indirect ID has the following information associated with it: ❑ Description ❑ General Ledger account ❑ Code indicating if of the general category: ❑ Vacation

	❑ Holiday ❑ Sick ❑ Miscellaneous
4.10.3.2.3 Multiple Jobs?	This switch controls whether a single Employee is allowed to simultaneously have multiple in-process transactions. There are two choices in allowing multiple jobs: ❑ Prorate Hours Spent on Work - For each overlapping ticket for the same Employee, this option divides elapsed time by the total number of simultaneous tickets and adjusts the elapsed hours accordingly. For example, if two jobs (run simultaneously) begin at 1:00 and end at 3:00, the actual clock times on each job ticket will show as 1:00 – 3:00 but the hours worked will be 1.0 for each (2 hours / 2 jobs). ❑ Prorate Cost of Work – The system adjusts the multiplier of overlapping tickets to a value less than one, based on the amount of overlapping time. Using the example above but under this proration method, hours worked are 2.0 hours for each ticket and the multiplier for each is .5 (calculated as 1 divided by the number of jobs = ½ or .5). This multiplier can be viewed in the 'Multiplier 2' field of manual Labor Ticket Entry. Only if the Detail or Summary Labor Report is looked at, will the hours calculated include the multiplier, showing hours worked as 1 hour for each job (2 hours x .5 = 1 hour). The option chosen partially depends on if tickets are to accurately reflect the real elapsed time. If so then Prorate Cost of Work should be chosen.. Both options will result in the same labor costs but not burden costs. Prorate by Cost assigns burden without regard for other jobs in process, i.e., it does not prorate burden. Prorate by Hours assigns burden based on the prorated hours. For example, assume Job A and Job B have a resource burden costing $20 an hour and the Employee running the jobs is paid $10 an hour. Job A and B are run simultaneously for one hour. Prorate by Cost assigns $5 for labor (($10/hour x 1 hr.) / 2 jobs) for each job and $20 for burden on each job ($20/hour x 1 hour), totaling $10 for labor and $40 for burden during that one hour. Prorate by Hours calculates $5 for labor (($10/hour x 1 hr.) / 2 jobs) and $10 for burden (($20/hour x 1 hour) / 2 jobs) on each job, totaling $10 labor and $20 for burden for the one hour. Typically, a machine-intensive shop will prorate by cost to assign full burden to each machine. Labor-intensive, assembly-oriented shops typically use prorate by hours. Efficiency ratings (under production schedule Reports) will be meaningful using this method.
4.10.3.2.4 Confirmation Before Save?	This switch instructs the system to present a confirmation to the user before saving a transaction.
4.10.3.2.5 Automatically Compute Quantity Complete?	This switch controls whether the system should compute quantity complete based on elapsed time. The resource in the Work Order must be set to Pieces Per Hour for this switch to work.
4.10.3.2.6 Operation Sequence Must Be Scanned In?	This switch controls whether the system forces the operation sequence number to be only scanned in. If this switch is not set, then the operator has the option of using the keyboard to enter this information. This option is generally for security and data integrity purposes.
4.10.3.2.7 Operator is Allowed to Change Resource ID?	This switch controls whether the operator can change a Resource ID to any other valid Resource ID.
4.10.3.2.8 Announce	This switch causes the system to inform the operator of transaction success or failure after each transaction entry.

Transaction Accepted?	
4.10.3.2.9 Edit Quantity Complete vs. Standard	This switch controls if the system is to enforce an allowable percent over amount remaining to produce. If enabled, then the allowable percent is entered. After this option is set, users are not allowed to enter any value over the allowable percent.
4.10.3.2.10 Employee ID Must Be Scanned	This switch controls whether the Employee ID must be scanned into the system and not allow optional keyboard entry (the default). This setting is an effective security measure to prevent other Employees from clocking in as (or for) someone else.
4.10.3.3 Network	For this source, data collection is done using devices potentially far from the computer. A small text display provides the instructions and feedback required to make the entries. A series of these devices are connected to a host computer that periodically uploads Labor Ticket data to the system. The data is collected in a temporary queue on the host computer. On a scheduled basis, this data is uploaded as regular Labor Tickets into the system and the temporary queue is deleted. The following parameters control the manner in which shop personnel may enter data: ❑ Duration threshold ❑ Default Indirect ID ❑ Multiple jobs? ❑ Automatically compute quantity complete? ❑ Edit quantity complete vs. standard ❑ Retain committed labor transactions for 'n' days ❑ Multiple jobs?
4.10.3.3.1 Duration Threshold	This number, specified in hours, represents the longest transaction allowed for an operator to enter. When an operator tries to complete an in-process transaction with a longer elapsed time than this threshold (up to a maximum of 24 hours), the system rejects the transaction. In this case the transaction must be completed using manual method of entering Labor Tickets.

4.10.3.3.2 Default Indirect ID	This is the Indirect ID that the system uses to cover all non-direct time that is not specifically logged using the Indirect action. An Indirect ID is used to establish categories for labor that does not get charged directly to a Work Order. Each Indirect ID has the following information associated with it:
	❑ Description
	❑ General Ledger account
	❑ Code indicating if of the general category:
	  ❑ Vacation
	  ❑ Holiday
	  ❑ Sick
	  ❑ Miscellaneous

4.10.3.3.3 Automatically Compute Quantity Complete?	This switch controls whether the system should compute quantity complete based on elapsed time. The resource in the Work Order must be set to Pieces Per Hour for this switch to work.
4.10.3.3.4 Edit Quantity Complete vs. Standard	This switch controls if the system is to enforce an allowable percent over amount remaining to produce. If enabled, then the allowable percent is entered. After this option is set, users are not allowed to enter any value over the allowable percent.
4.10.3.3.5 Retain Committed Labor Transactions for 'n' Days	This is the number of days that committed labor transactions are saved in their intermittent form. Committed transactions are no longer necessary but it may be desirable to retain them for a period of time to aid in troubleshooting.
4.10.3.3.6 Multiple Jobs?	This switch controls whether a single Employee is allowed to simultaneously have multiple in-process transactions. There are two choices in allowing multiple jobs:

	❑ Prorate Hours Spent on Work - For each overlapping ticket for the same Employee, this option divides elapsed time by the total number of simultaneous tickets and adjusts the elapsed hours accordingly. For example, if two jobs (run simultaneously) begin at 1:00 and end at 3:00, the actual clock times on each job ticket will show as 1:00 – 3:00 but the hours worked will be 1.0 for each (2 hours / 2 jobs). ❑ Prorate Cost of Work – The system adjusts the multiplier of overlapping tickets to a value less than one, based on the amount of overlapping time. Using the example above but under this prorated method, hours worked are 2.0 hours for each ticket and the multiplier for each is .5 (calculated as 1 divided by the number of jobs = ½ or .5). This multiplier can be viewed in the 'Multiplier 2' field of manual Labor Ticket Entry. Only if the Detail or Summary Labor Report is looked at, will the hours calculated include the multiplier, showing hours worked as 1 hour for each job (2 hours x .5 = 1 hour). The option chosen partially depends on if the tickets are wanted to accurately reflect the real elapsed time. If so, choose Prorate Cost of Work. Both options will result in the same labor costs but not burden costs. Prorate by Cost assigns burden without regard for other jobs in process, i.e., it does not prorate burden. Prorate by Hours assigns burden based on the prorated hours. For example, assume Job A and Job B have a resource burden costing $20 an hour and the Employee running the jobs is paid $10 an hour. Job A and B are run simultaneously for one hour. Prorate by Cost assigns $5 for labor (($10/hour x 1 hr.) / 2 jobs) for each job and $20 for burden on each job ($20/hour x 1 hour), totaling $10 for labor and $40 for burden during that one hour. Prorate by Hours calculates $5 for labor (($10/hour x 1 hr.) / 2 jobs) and $10 for burden (($20/hour x 1 hour) / 2 jobs) on each job, totaling $10 labor and $20 for burden for the one hour. Typically, a machine-intensive shop will prorate by cost to assign full burden to each machine. Labor-intensive, assembly-oriented shops typically use prorate by hours. Efficiency ratings (under production schedule Reports) will be meaningful using this method.
4.10.4 Create Labor Ticket	The Labor Ticket contains the following information: ❑ Transaction ID ❑ Transaction date ❑ Employee ID ❑ Transaction type ❑ Earning code ❑ Clock-in time ❑ Clock-out time ❑ Elapsed hours ❑ Indirect code ❑ Work Order ID ❑ Operation sequence number ❑ Resource ID ❑ Indirect ID ❑ Account ID ❑ Break hours ❑ Description ❑ Quantity completed ❑ Quantity deviated ❑ Setup complete? ❑ Run complete? ❑ Part trace information ❑ Hourly rate cost ❑ Multiplier 1

	❑ Multiplier 2 ❑ Unit rate
4.10.4.1 Transaction ID	The unique transaction identifier.
4.10.4.2 Transaction Date	The date of the Labor Ticket.
4.10.4.3 Transaction Type	There are three different types of labor transactions: ❑ Run ❑ Setup ❑ Indirect *Run* and *Setup* are used for Labor Tickets that are associated with a Work Order. *Indirect* is used for labor that is not associated with a Work Order. Entry of one of the types is required.
4.10.4.3.1 Run	This is for Labor Tickets that contain direct labor to be applied against the run time for the operation.
4.10.4.3.2 Setup	This is for Labor Tickets that contain direct labor to be applied against the setup time for the operation.
4.10.4.3.3 Indirect	This is for Labor Tickets that contain indirect labor that is not associated with any Work Order. The time is assigned an Indirect ID that directs the cost to the appropriate General Ledger account.
4.10.4.4 Earning Code	This is an attribute associated with an Employee ID that is brought into the Labor Ticket upon selection of the Employee. The Earning code is optionally used for classification purposes if payroll is derived from Labor Tickets.
4.10.4.5 Clock-In Time	This is the time the Employee clocks in for the Labor Ticket. In manual mode, this defaults to the previous Labor Tickets clock out time. Furthermore, overlapping times cannot be specified for the same Employee.
4.10.4.6 Clock-Out Time	This is the time the Employee clocks out for the Labor Ticket. It is possible to create an in-process Labor Ticket by entering a clock in and clock out time that are the same, and leaving Elapsed Hours blank (**not** zero). A ticket of this type represents a clocked in Employee, who will later clock out to complete the operation. Recalling the ticket and modifying the clock out time and any other fields that need completion, such as quantity complete and description does clocking out. Note: since overlapping time tickets aren't allowed, each Employee can only have one in-process ticket.
4.10.4.7 Elapsed Hours	This is the amount of time of the Labor Ticket. In manual entry, mode two of the following is all that needs to be entered and the system will compute the third: ❑ Clock in time ❑ Clock out time ❑ Elapsed hours Only elapsed time is actually required for a Labor Ticket. If Labor Tickets are entered this way, then actual start and end times will not be historically available.
4.10.4.8 Account ID	This is the General Ledger account that is used to override the default account for indirect Labor Tickets only. The default is specified in the definition of the Indirect ID. If no Indirect ID is assigned to an indirect Labor Ticket, than the Account ID must be supplied.
4.10.4.9 Break Hours	This time is deducted from the Elapsed Hours for the Labor Ticket. In effect, it is as if the Employee clocked-in, clocked-out for break, clocked-in from break, and then clocked-out.
4.10.4.10 Description	The system stores this information with the Labor Ticket; it appears in various Reports. The description field is useful for descriptions of indirect labor, deviated pieces, over/under production, and other exceptions.
4.10.4.11 Quantity Completed	If the transaction type is run, this contains the number of pieces completed during the specified elapsed time. Fractional values are permissible, as are negative values. An entry in this field causes the system to do the following:

	❑ Feed status information to the Work Order ❑ Trigger material auto issue
4.10.4.11.1 Feed Status Information to the Work Order	The Work Order receives its progress information by the collection of the quantity complete on Labor Tickets. This process is described in detail below.
4.10.4.11.2 Trigger Material Auto Issue	If any of the material requirements feeding the operation are for parts established as Auto Issue, then the system automatically issues the material to the Work Order operation from the Auto Issue warehouse location in proportion to the quantity completed. This functionality is described in detail in the Inventory Control Sub-System. For example, if the Work Order or Leg quantity is 10, quantity completed is 5, and Quantity Per for an Auto Issue part is 3 feet, then 15 feet is issued to the operation 15 = (5 x 3). Auto issuing is done for the specified operation, as well as for any Automatic Reporting operations. This allows material back flushing for materials that aren't explicitly issued to Work Orders but are pulled as needed.
4.10.4.12 Quantity Deviated	This contains any unusable pieces produced during the elapsed time. In general, these are pieces that are scrapped or rejected by quality control. This field provides a historical analysis of completion data. This quantity does not contribute to the total quantity completed for the operation, but is recorded as part of the total incoming quantity for the operation.
4.10.4.13 Setup Complete?	If the transaction type is setup, and setup for the operation was completed by this Labor Ticket, then the operator sets this flag. This flag is automatically set the first time a run Labor Ticket is entered for the operation.
4.10.4.14 Run Complete?	If this Labor Ticket completes the operation, then the operator sets this flag. Setting this flag does the following: ❑ Closes the operation ❑ Closes previous operations that use Shop Resources set for automatic Reporting
4.10.4.15 Part Trace Information	Traceability information is recorded as part of the Labor Ticket and is associated with the Reporting of completed parts for an operation. This shifts the start of traceability to the point where pieces are completed rather than when they are received into finished goods inventory. Each Engineering Master for a traceable fabricated part has one operation that is specially marked Begin Traceability At This Operation. When completed pieces are Reported for this operation, traceability information is required. Part trace information on a Labor Ticket is required if the following conditions are true: ❑ Reporting against a Work Order for a fabricated part that is traceable ❑ Reporting labor for the Work Order operation that is marked Begin Traceability At This Operation ❑ Reporting run labor (not setup) ❑ Reporting a Quantity Completed Part trace information includes the following: ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3 ❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3 ❑ Numeric property #4

	❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank based on criteria established when part trace was established for the part.
4.10.4.15.1 Quantity	This is the user assigned quantity for the particular lot. The user can enter a different quantity and add additional lot numbers if necessary. This quantity cannot exceed the maximum lot size, if any, specified for the part.
4.10.4.15.2 Label	This is the nomenclature that is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.10.4.15.3 Alpha Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Alpha properties allow alphanumeric input (letters and numbers), and should be used for non-numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.10.4.15.4 Numeric Property 1-5	Properties record additional pieces of information that are tracked with a specific lot number. Numeric properties allow numeric input (numbers only), and should be used for numeric information. One use of properties is to record variable characteristics of materials. A material with a single part ID might have a variable strength, grade, tolerance, color, or other characteristic that does not make it a separate part, but must be recorded and may affect production.
4.10.4.15.5 Expiration Date	If a part was setup with a shelf life then the system calculates an expiration date by adding shelf life to receipt date. This date is then stored as part of the part trace transaction.
4.10.4.16 Hourly Rate Cost	Normally the hourly rate for an Employee is taken directly from the Employee Master. If desired, however, this value can be overridden on a Labor Ticket by entering the amount here. An override is only possible if the system is set to use actual costing. By definition, standard costing always uses the standard cost established in the Employee Master.
4.10.4.17 Mulitplier 1	*Multiplier 1* indicates overtime and is always greater than or equal to 1. This is useful for entering Labor Tickets known to be eligible for overtime. A multiplier can be used rather than overriding the actual hourly rate.
4.10.4.18 Mulitplier 2	*Multiplier 2* indicates a prorated Labor Ticket and is always less than or equal to 1. This is typically used when a Labor Ticket is to have its cost divided between more than one simultaneous job. For example, an operator may operate two machines at the same time, which would make dividing the cost between the two jobs being worked on.
4.10.4.19 Unit Rate	The Per Unit Cost in the Work Order can be overridden by entering a Unit Rate here. This is multiplied by quantity completed **and** quantity deviated when computing labor costs.
4.10.5 Calculate Session Total	During the entry of Labor Tickets the total activity entered can be accumulated by any of the following: ❑ Employee ❑ Work Order ❑ Shop Resource The total is cleared each time the Employee, Work Order, or Shop Resource is changed. When totaling by Employee, the daily or weekly totals for the current Employee can be recalled at any time. The current transaction date will be used to compute the day or week.
4.10.6 Calculate Overtime	Overtime is normally accounted for by using the Multiplier 1 override for Labor Tickets known to require overtime pay. Alternatively, or as a corrective measure, the system will calculate overtime by examining all Labor Tickets for a given Employee and reset the multiplier based on accumulated hours. The following parameters are required to define overtime criteria: ❑ Last date ❑ Premium 1 multiplier

	❑ Premium 2 multiplier The system processes all Labor Tickets for the specific week and determines new overtime multipliers. Jobs worked at the end of the week receive the overtime. If a Labor Ticket crosses the overtime hour limit, it is broken into two tickets so that overtime only applies to the time over the specified limit. Overtime is calculated in this manner: 1. For each Employee, the system considers all direct Labor Tickets for the specified week. Additionally, it also considers indirect tickets with an indirect code of Miscellaneous. 2. The system calculates overtime based on tickets with the value of the multiplier. Therefore, all tickets with a value of greater than 1 are reset to 1. If a ticket has a multiplier of less than 1, it is prorated. Multiplying hours worked by the multiplier and resetting the elapsed time accordingly does recalculation of overtime. Evaluation of this type of Labor Ticket in overtime calculations is questionable because the elapsed time does not represent real clock time. These tickets keep a multiplier of 1 regardless of whether they fall in overtime or not. 3. The system totals the hours for all tickets. If one ticket overlaps the overtime boundary, the system splits it into two tickets, with clock in and clock out time adjusted accordingly. Quantities completed and deviated are prorated between the tickets. 4. The system applies Premium 1 to all tickets over the Over hours specified. If the day matches one of the weekdays specified for Premium 2, the system uses Premium 2 instead.
4.10.6.1 Last Date	This is the last date of the week for which overtime is to be calculated. The default is the Sunday of the previous week.
4.10.6.2 Premium 1 Multiplier	*Premium 1* calculates overtime on anything **over** a specified number of hours per week. The system uses the multiplier entered here to perform the overtime calculation. The default multiplier is 1.5 for time over 40 hours.
4.10.6.3 Premium 2 Multiplier	*Premium 2* indicates that a constant multiplier to arrive at the overtime value multiplies hours Reported on certain days of the week.
4.10.7 Update Work Order Status	Status information is updated for the Work Order on a real time basis when a Labor Ticket is entered into the system. This status information includes: ❑ Completion meters ❑ Operation quantity completed ❑ Operation status
4.10.7.1 Completion Meters	Completion meters are updated for the four viewing modes of the Work Order. These are horizontal bars that indicate the percent complete for each operation. This is determined by comparing Quantity Completed to the total Work Order or leg quantity. For example, if Work Order or Leg Quantity is 10 units, and a Quantity Completed of 5 is Reported, then that operation displays a bar half the total width of the box, indicating 50% completion. It is important to realize that Quantity Completed entries are the only entries that update these completion meters. Elapsed time or indication of run completion does not affect completion meters.
4.10.7.2 Operation Quantity Completed	Any previous operations that use a Shop Resource that is setup to perform automatic Reporting will have their Quantity Completed set to the same quantity completed as the specified operation. If the parameter Automatically Compute Quantity Complete is set for Labor Tickets, then the system uses Elapsed Hours to compute an estimated quantity complete by comparing to total estimated time.
4.10.7.3 Operation	If this ticket causes the total quantity completed to meet or exceed the quantity required,

Status	the system automatically changes the status of the operation to Closed.
4.10.8 Update Work Order Cost	As Labor Tickets are created, the system automatically accumulates cost to the appropriate Work Order in real-time. While the posting of labor to the General Ledger is done in a controlled, batch approach, the costs throughout the manufacturing portions of the system are instantly current. Direct labor costs can accumulate to a Work Order in two ways: ❑ Based on hours worked ❑ Based on quantity produced If a Labor Ticket calculates to zero, the system issues a warning. However, the Labor Ticket is still created. Zero-value tickets may be valid when using Labor Tickets to report quantities for piece work, when entering an in-process Labor Ticket that will later be completed, and in other cases where a ticket is being entered for Reporting purposes only.
4.10.8.1 Based on Hours Worked	An hourly rate is multiplied by the elapsed time to get a labor cost for the Labor Ticket. If the system is set to use actual costing, the Employee's pay rate is used (unless overridden on the Labor Ticket). The system also uses this method for all indirect transactions. If the system is set to use standard costing, the hourly cost in the Shop Resource (setup or run, as appropriate) is used. In both of these cases, the elapsed time is used to compute the labor cost. A cost per unit can also be specified. This is always defined in the Shop Resource Master; there are separate costs per unit for setup and run. Additionally, the system multiplies the hourly rate by Multiplier 1 and Multiplier 2 (see above). The system uses both of these values in assigning the cost. As a simple example, if an operation costs $5 per hour, and $1 per piece, then a Reported elapsed time of 1 hour for 5 pieces produces a direct labor cost of $10 (1 hour x 5 + 5 pieces x 1).
4.10.8.2 Based on Quantity Completed	This option is only available for systems set to use standard costing. The labor cost is computed solely on the quantity completed. The system uses quantity completed (both good and deviated) to calculate an effective hourly rate, and uses this hourly rate, along with the original quantity completed, to calculated the cost. Additionally the system multiplies the hourly rate by Multiplier 1 and Multiplier 2 (see above).
4.10.9 Modify Labor Ticket	A limited amount of information can be modified on a Labor Ticket to preserve a proper audit trail. The following can be modified depending on the type of Labor Ticket being edited: ❑ Transaction Date ❑ Employee ID ❑ Department ❑ Indirect ID ❑ Account ID ❑ Clock-in ❑ Clock-out ❑ Elapsed hours ❑ Break hours ❑ Quantity completed ❑ Quantity deviated ❑ Hourly rate ❑ Multiplier 1 ❑ Multiplier 2

	❑ Unit rate A function is provided to quickly retrieve an in-process Labor Ticket for an Employee. Since only one in-process Labor Ticket is permitted at a time for each Employee, the system can quickly identify the desired Labor Ticket by only the Employee ID. This is useful when Labor Tickets are started and then finished at a later time and avoids searching through potentially a large quantity of Labor Tickets.
4.10.10 Delete Labor Ticket	Labor Tickets can be permanently deleted from the system if they have not been posted to the General Ledger. Deleting a Labor Ticket immediately updates the appropriate Work Order cost and status (based on quantity completed). Since the Work Order is affected, deletion should not be used as a means of purging the system.
4.10.11 Create Payroll Export File	An external text file of Labor Ticket information can be created for the purpose of feeding either VISUAL Payroll or a third party payroll package. This is most practical if all Employee time is accounted for by fully utilizing the indirect labor mode of Labor Tickets. The external file is comma delimited ASCII and contains all Labor Ticket transaction information for a user supplied date range.
4.10.12 Maintain Employee Master	This is where the Employee Master is maintained. Employees can be added, changed, and deleted. The following information is part of the Employee Master: ❑ Employee ID ❑ Active? ❑ Employee name information ❑ Address Information ❑ Phone number ❑ Pay type ❑ Pay rate ❑ Department ❑ Default Earning code ❑ Default shift ID
4.10.12.1 Employee ID	A unique alphanumeric identifier for the employee.
4.10.12.2 Active?	This indicated if an employee is providing active services to the company or not. Also an inactive employee cannot have transactions applied to them.
4.10.12.3 Name Information	The employee name information includes the following specific elements: ❑ Last Name ❑ First Name ❑ Middle initial
4.10.12.4 Address Information	The employee address information includes the following specific elements: ❑ Address line #1 ❑ Address line #2 ❑ Address line #3 ❑ City ❑ State ❑ Zipcode ❑ Country
4.10.12.5 Phone	The employee home phone number.
4.10.12.6 Pay Type	The type of pay determines if an employee wage is exempt or not as follows: ❑ Hourly ❑ Salary
4.10.12.7 Pay Rate	This is the hourly pay rate of the employee.
4.10.12.8. Department	This is the employee's group or department they belong to.
4.10.12.9 Default Earning Code	This is the default code that is automatically used for and employee for earning calculations.
4.10.12.10 Default Shift	This is the default ID of the shift the employee works on.

4.10.13 Maintain Shop Resource Master	This is where the Shop Resource Master is maintained. This refers to the input and tracking of the resources necessary to the manufacturing process. Shop Resources can be added, changed, and deleted. The following information is part of the Shop Resource Master: ❑ Resource ID ❑ Resource description ❑ Resource type ❑ Resource capacity information ❑ Resource group type schedule information ❑ Schedule normally? ❑ Schedule discontinuous? ❑ Automatic reporting? ❑ Costs to setup per hour ❑ Costs to run per hour ❑ Costs to run per unit ❑ Costs General Ledger account ID ❑ Burden costs to setup per hour ❑ Burden costs of setup percent ❑ Burden costs to run per hour ❑ Burden costs of run percent ❑ Burden costs to run per unit ❑ Burden costs Fixed ❑ Burden costs General Ledger account ID
4.10.13.1 Resource ID	This is the identification of the work center or individual resource.
4.10.13.2 Description	This is the full description of the resource.
4.10.13.3 Type	This defines the type of resource per the following selection: ❑ Work center ❑ Individual / Team ❑ Contractor ❑ Group
4.10.13.3.1 Work Center	The Work Center resource type is used to define a resource as a physical machine or work station.
4.10.13.3.2 Individual / Team	The Individual / Team resource type is used to define a resource as a individual person, skill level, or team.
4.10.13.3.3 Contractor	The Contractor resource type is used to define a resource as an outside service.
4.10.13.3.4 Group	The Group resource type is used to define a resource as part of a group center. This in turn is used to set up Shop Groups.
4.10.13.4 Capacity	The resource capacity defines the maximum number of complete functions / process per shift that this resource can perform at one time. This does not apply to the group resource type.
4.10.13.5 Group Scheduling	Group scheduling is used for the group resource type. The group schedule indicates how subordinate resources will be scheduled. The scheduling options are: ❑ Exclusively ❑ Inclusively
4.10.13.6 Schedule Normally?	Schedule normally indicates that this resource will be scheduled with finite capacity. Otherwise unlimited capacity is used.
4.10.13.7 Schedule Discontinuous?	Schedule discontinuous indicates that this resource scheduled run times can be broken into multiple discontinuous runs. Note, when this option is selected a minimum run time is required.
4.10.13.7.1 Minimum Run	Minimum run size is the minimum run hours that should be scheduled in one segment for this resource. Note, this is required for discontinuous scheduling.
4.10.13.8 Automatic Reporting?	Automatic reporting identifies a resource that is reported automatically by another subsequent resource.
4.10.13.9 Costs/ Setup	The cost per hour for setting up the resource.

Hour	
4.10.13.10 Costs/ Run Hour	The cost to run the resource for one hour.
4.10.13.11 Costs/ Run Unit	The cost to use the resource to produce one unit.
4.10.13.12 Costs G/L Account	This is the override General Ledger (G/L) Account ID to which Work in Process labor costs will be posted for this resource. Note, this is optional, the default Work in Process labor General Ledger accounts will be used, if this override account is not specified.
4.10.13.13 Burden Costs/ Setup Hour	The cost burden charged per hour of setup for the resource.
4.10.13.14 Burden Costs/ Setup Percent	The cost burden charged per hour of setup for the resource, expressed as a percent of setup cost, as specified above.
4.10.13.15 Burden Costs/ Run Hour	The cost burden charged per hour to run the resource for one hour.
4.10.13.16 Burden Costs/ Run Percent	The cost burden charged per hour to run the resource for one hour, expressed as a percent of run cost, as specified above.
4.10.13.17 Burden Costs/ Run Unit	The cost burden charged to use the resource to produce one unit.
4.10.13.18 Burden Costs/ Fixed	This is a one-time fixed cost burden charged when this resource is used.
4.10.13.17 Burden Costs/ G/L Account	This is the override General Ledger (G/L) Account ID to which Work in Process burden costs will be posted for this resource. Note, this is optional, the default Work in Process burden General Ledger accounts will be used, if this override account is not specified.
4.10.14 Maintain Outside Service Master	This is where the Service Master is maintained. Services can be added, changed, and deleted. The following information is part of the Service Master: ❑ Service ID ❑ Service description ❑ Service part ID ❑ Preferred vendor ❑ Usage unit of measure ❑ Cost per unit ❑ Base charge per service ❑ Minimum charge ❑ Specification ❑ Transit days ❑ Run type ❑ Run quantity per type ❑ Load size ❑ Vendors supplying this service information ❑ Unit of measure conversion
4.10.14.1 Service ID	This is the unique identification of the service.
4.10.14.2 Description	This is the full description of the service.
4.10.14.3 Service Part ID	This is the unique identification for the service part.
4.10.14.4 Preferred Vendor	This is sets the vendor that is preferred to supply this service.
4.10.14.5 Usage Unit of Measure	Usage unit of measure is an optional specification that will override the default stocked unit of measure. Note, conversion factors must be specified.
4.10.14.6 Cost per Unit	This is the purchased cost per unit.
4.10.14.7 Base Charge per Service	This is the cost for the basic service performed. (i.e. setup or lot charge)
4.10.14.8 Minimum Charge	This is the minimum cost to perform the service.
4.10.14.9 Specification	Service specifications are free form text. This text can be printed and can document special needs, notes, and agreements for the service.

4.10.14.10 Transit Days	Transit days is the total time the sub-contractor requires between the start to the time the material is back in house and ready for the next operation.
4.10.14.11 Run Type	The Run Type is used to determine how the run time will be expressed. The information includes the following specific elements: ❑ Days / Piece ❑ Pieces / Day ❑ Days / Load ❑ Loads / Day
4.10.14.12 Run Quantity per Type	This specifies the run quantity to be used for the selected run type as specified above.
4.10.14.13 Load Size	Load Size is used in the scheduling process, when the run type is set to load per time or time per load.
4.10.14.14 Vendors Supplying Service	This is a list of vendors can be used specifically to supply this service. The information includes the following specific elements: ❑ Vendor ID ❑ Vendor name ❑ Is this the preferred vendor for this service? ❑ Vendor service ID ❑ Description ❑ Purchase unit of measure ❑ Cost per unit ❑ Base charge per service ❑ Minimum charge ❑ Transit days ❑ Run type ❑ Run quantity per type ❑ Load size ❑ Vendor week ❑ Vendor calendar
4.10.14.15 Unit of Measure conversion	This is a service specific unit of measure conversion. (i.e. 10 plated parts to a box)

4.11 Shipping	Shipping is the subsystem for processing Customer Order shipments and process returns. Shipping involves the following functionality: ❑ Recording shipment of materials order, ship date, quantity shipped vs. quantity ordered, and actual freight charges ❑ Processing returns of previously shipped materials, recording return dates and quantities ❑ Printing shipping paperwork ❑ Performing automatic inventory transactions to issue material to orders, or return material to stock ❑ Creating Bill of Lading
4.11.1 General Shipping Reports	
4.11.1.1 Bill of Lading Form	A *Bill of Lading* is a legal document that defines ownership of goods being transported via a commercial carrier and is given to the carrier during shipment. A Bill of Lading is generated per Customer, per shipping destination. Header: ❑ Bill of lading ID ❑ Advance shipping notice ID ❑ Carrier ID ❑ Shipping instructions ❑ Ship date and time ❑ Expected delivery date and time ❑ Freight terms ❑ Declared value ❑ Packing List ID (which gives the Ship-To address and line item information) ❑ COD information (options – not COD, consignee, Shipper, amount, fee) ❑ Carrier information (ship instructions, route, and vehicle number) Line items: ❑ NMFC ID ❑ Weight and unit of measure ❑ Package type ❑ Package count ❑ Full truck ❑ Hazardous ❑ Article ❑ Sub-classification ❑ Rate class ❑ Shipment description.
4.11.1.2 Packing List Form	This *Packing List Form* outputs the Customer Order shipping information for both before and after shipment modes (Picking List / Packing List). Also, provided are three user defined alternates of the Packing List form. These outputs allow for optional printing of traceable part properties. The Reports can be printed individually or in batches. The three batch types are: ❑ All Packing Lists for a given Customer Order, ❑ All released Customer Orders with a user-supplied due through-date (for before shipments only), ❑ All Customer Orders shipped between a user-supplied date-range (for after shipments only). All the printed Packing List Reports can be further limited/filtered by a line due through-date. Also, allow an option to suppress zero quantity lines that have already been shipped or are not shipping. Packing Lists can only be printed, not viewed.

	Header: ❑ Packing List ID ❑ Customer ID ❑ Customer name ❑ Customer address ❑ Customer Ship-To address ❑ Customer Purchase Order number ❑ Invoice ❑ Shipping via ❑ Free on Board ❑ Terms ❑ Order specifications ❑ Customer user-defined fields ❑ Sales representative Packing List header: (for sorting) Customer ID header: (for sorting) Line items: ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Descriptions ❑ Order quantity ❑ Shipped quantity ❑ Back order quantity ❑ Freight ❑ Shipping weight ❑ Taxes
4.11.1.3 Packing List Report	The *Packing List Report* gives a complete listing of Packing List activity, for a selected Customer Order or for all Customer Orders, between an optional date-range. The three choices for the date-range are: ❑ Created, ❑ Desired-ship, ❑ Actual-ship dates. When printing all Customer Orders, the user must choose the status of the Packing Lists to print that have shipped or have-not shipped. The report can be printed, viewed, or sent to a file. Provide a summary and a detail report.
4.11.1.3.1 Report Summary Version	The *Summary Packing List Report* prints a single line for each Packing List as follows. Header: ❑ Date range (created, desired-ship, or actual-ship dates) ❑ Status (shipped or not shipped) Packing List ID header: (for sorting) Customer Order ID header: (for sorting) Packing List ID footer: ❑ Packing List ID ❑ Customer Order ID ❑ Customer name ❑ Customer Purchase Order number ❑ Invoice ID (if Invoiced) ❑ Order shipped date (actual, if shipped)

	❑ Order status ❑ Shipped amount Report footer: ❑ Total shipped amount
4.11.1.3.2 Report Detail Version	The *Detail Packing List Report* prints information for the order and Packing List. Header: ❑ Date range (created, desired-ship, or actual-ship dates) ❑ Status (shipped or not shipped) Packing List header: ❑ Packing List ID ❑ Customer ID/name/address/ship address ❑ Order ID ❑ Customer Purchase Order number ❑ Order date/desired date/ship date ❑ Contact information ❑ Free on Board (FOB) ❑ Ship Via ❑ Sales representative. Customer Order ID header: (for sorting) Line items: ❑ Line number ❑ Quantity ordered ❑ Quantity shipped ❑ Part ID ❑ Part description (or user description if entered) ❑ Unit price ❑ Discount ❑ Amount ordered ❑ Amount shipped ❑ Customer part ID Packing List footer: ❑ Amount ordered (total / Packing List) ❑ Amount shipped (total / Packing List) Report footer: ❑ Amount ordered (total / report date range) ❑ Amount shipped (total / report date range)
4.11.1.4 Shipping Label Form	The *Shipping Label Form* is used to generate mailing labels with Customer name and shipping address information. Multiple-container shipment is possible. Provide one standard format and up to three user-defined label formats modified from the standard. Line items: ❑ Customer name ❑ Customer Ship-To address information (street, city, state, zip code) ❑ Customer Purchase Order number ❑ Product part number / description ❑ Work Order ID (if linked to a Work Order)
4.11.1.5 Intrastat Arrivals Report	This *Intrastat Arrival Report* details the arrivals by the From Country ID.

	Header: ❑ VAT registration number ❑ Branch ID ❑ Company name ❑ Company address ❑ Reporting period and year ❑ Number of items ❑ Total Value Line items: ❑ Commodity Code ❑ Amount ❑ Nature of transportation ❑ Net weight ❑ From country ID ❑ Mode of transport ❑ Origin country ID ❑ VAT registration number ❑ Excise price ❑ Tariff code ❑ Arrival code ❑ Trans code ❑ To country ID ❑ Region ❑ Reference ID
4.11.1.6 Intrastat Dispatch Report	This *Intrastat Dispatch Report* details the Dispatch by the To Country ID. Header: ❑ VAT registration number ❑ Branch ID ❑ Company name ❑ Company address ❑ Reporting period and year ❑ Number of items ❑ Total Value Line items: ❑ Commodity code ❑ Amount ❑ Nature of transportation ❑ Net weight ❑ To country ID ❑ Mode of transport ❑ Origin country ID ❑ VAT registration number ❑ Excise price ❑ Tariff code ❑ Arrival code ❑ Trans code ❑ From country ID ❑ Region ❑ Reference ID
4.11.1.7 European Sales List Report	This is the *European Sales List Report*. Header:

	❑ VAT registration number ❑ Reporting period and year ❑ Number of items ❑ Total Value Line items: ❑ Customer country ID ❑ VAT registration ❑ Amount
4.11.1.8 Part Trace Label	This *Part Trace Label* report is used to output part trace labels. This can only be done after the transaction is completed (due to when auto-number assignment is completed). Trace labels are printed for all traceable parts on the Receiver. Before printing, display the part ID, part description, transaction ID, and transaction type. Provided will be a standard label format and three user-defined formats. Print one label for each lot number for each part prints. The report can be viewed, printed, or sent to a file. Standard label information/format provided: ❑ Lot number ❑ Part ID ❑ Quantity Optional label information/format provided: ❑ Barcode for the lot number ❑ Properties ❑ Comments ❑ Transaction dates ❑ Shelf lives ❑ Maximum lot sizes
4.11.1.9 Inter Branch Transfer Pack Lists	This is the *Inter Branch Transfer Pack List*. Provided will be a standard label format and three user-defined formats. All reports can optionally include the traceable part properties. The report can be viewed, printed, or sent to a file. The IBT Shipper can be printed for: ❑ Current IBT Shipper ❑ Current IBT ❑ All IBTs shipped for a given date range The IBT Shipper output can optionally include: ❑ IBT lines due through a given date ❑ Traceable part properties Header: ❑ Packing List ID ❑ Customer ID ❑ Customer billing address (street, city, state, zip) ❑ Customer shipping address (street, city, state, zip) ❑ Ship Via ❑ Free on Board ❑ Terms ❑ Customer Order ID ❑ Customer Purchase Order reference number ❑ Desired ship date ❑ Bar code order information (optional)

	Packing List header: ❑ Packing List ID Customer Order header: ❑ Customer Order ID Line item: ❑ EDI release number (optional) ❑ Line quantity ordered ❑ Line quantity shipped ❑ Line quantity backordered ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Bar code order line information (optional) ❑ Shipping weight ❑ Weight unit of measure ❑ Trace unit of measure ❑ Delivery scheduled line label ❑ Delivery scheduled date label ❑ Delivery scheduled quantity label ❑ Delivery line list ❑ Delivery date list ❑ Delivery order quantity list
4.11.1.10 Transportation Documents	The *Transportation Documents* is a status report of inventory that can be produced on demand which details the location and value of inventory and why it was shipped. This option is only available if Shipment Tracking has been enabled and after an Interbranch Transfer shipment has accrued. Header: ❑ Transportation document ID ❑ Ship date ❑ Shipped by (sending company, receiving company, carrier) ❑ Sending company name and address (street, city, state, zip) ❑ Receiving company name and address (street, city, state, zip) ❑ Shipped to company name and address (street, city, state, zip) ❑ Sending company VAT registration ID ❑ Receiving company VAT registration ID ❑ Shipped to company VAT registration ID ❑ Ship reason description ❑ Order ID ❑ Order date Line item: ❑ Shipped quantity ❑ Part ID ❑ Part description ❑ Amount Footer: ❑ Package type ❑ Carton count ❑ Weight total ❑ Shipping Terms ❑ Carrier name and address (street, city, state, zip) ❑ Carrier VAT registration ID

	❑ Document notes
4.11.1.11 Shipping and Delivery Report.	The *Customer Order Shipping and Delivery Report* provides information on all firmed and released orders. An optional date range can be specified for the desired ship date (i.e. the due date) of orders to print. If the order line item has a desired ship date, it will be used, otherwise, the ship date for the whole order will be used. Also for each of the report sequence options there are sub-sequence options as shown below. The reports can be viewed, printed, or sent to a file. Sequencing options: ❑ Due date ❑ Order ID ❑ Customer ID ❑ Customer name ❑ Part ID ❑ Supply ID
4.11.1.11.1 Shipping/Delivery Schedule (sort: Due Date)	This is the *Due Date Sorted* version, with sub-sorts of: ❑ Order ID ❑ Customer ID ❑ Customer name ❑ Part ID ❑ Supply ID Header: ❑ Company name ❑ Report title ❑ Desired ship date range (due date) Due year header: ❑ Due year date Due month header: ❑ Due month date Line items: ❑ Customer Order ID or Work Order ID (based on order existence) ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Product code ❑ Due date ❑ Quantity (per line)
4.11.1.11.2 Shipping/Delivery Schedule (sort: Order ID)	This is the *Order ID Sorted* version, with sub-sorts of: ❑ Due date ❑ Part ID Header: ❑ Company name ❑ Report title ❑ Desired ship date range (due date) ❑ Customer Order ID range

	Customer Order header: ❑ Customer Order ID Line items: ❑ Work Order ID ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Due date ❑ Quantity (per line)
4.11.1.11.3 Shipping/Delivery Schedule (sort: Customer ID)	This is the *Customer ID Sorted* version, with sub-sort of: ❑ Due date ❑ Order ID ❑ Part ID ❑ Supply ID Header: ❑ Company name ❑ Report title ❑ Desired ship date range (due date) ❑ Customer ID range Customer ID header: ❑ Customer ID ❑ Customer name Line items: ❑ Customer Order ID ❑ Work Order ID ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Product code ❑ Due date ❑ Quantity (per line)
4.11.1.11.4 Shipping/Delivery Schedule (sort: Customer Name)	This is the *Customer Name Sorted* version, with sub-sorts of: ❑ Due date ❑ Order ID ❑ Part ID ❑ Supply ID Header: ❑ Company name ❑ Report title ❑ Desired ship date range (due date) ❑ Customer name range Customer Name header: ❑ Customer name ❑ Customer ID Line items:

	❑ Customer Order ID ❑ Work Order ID ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Product code ❑ Due date ❑ Quantity (per line)
4.11.1.11.5 Shipping/Delivery Schedule (sort: Part ID)	This is the *Part ID Sorted* version, with sub-sorts of: ❑ Due date ❑ Order ID ❑ Customer ID ❑ Customer name ❑ Supply ID Header: ❑ Company name ❑ Report title ❑ Desired ship date range (due date) ❑ Part ID range Part ID header: (used for sorting purpose only) Job ID header: ❑ Part ID ❑ Work Order ID or Job Description (based on existence) Line items: ❑ Customer Order ID ❑ Work Order ID ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold) ❑ Description (either part description or user input description) ❑ Customer part ID ❑ Due date ❑ Quantity (per line)
4.11.1.11.6 Shipping/Delivery Schedule (sort: Supply ID)	This is the *Supply Sorted* version, with sub-sorts of: ❑ Due date ❑ Part ID Header: ❑ Company name ❑ Report title ❑ Desired ship date range (due date) ❑ Work Order ID range Work Order ID header: (used for sorting purpose only) Line items: ❑ Customer Order ID ❑ Work Order ID ❑ Customer name ❑ Part ID (optional, non-inventoried items can be sold)

	❑ Description (either part description or user input description) ❑ Customer part ID ❑ Product code ❑ Due date ❑ Quantity (per line)
4.11.2 Shipper Source	
4.11.2.1 Keyboard	
4.11.2.1.1 Auto Backorder Selection Mode	
4.11.2.1.2 Backlog	
4.11.2.2 Bar Code	
4.11.2.2.1 Timer Options	
4.11.2 Search and Retrieve Customer Order Information	To initiate a shipment, the Customer Order must be retrieved. This can either be entered by the user or retrieved based on all of the fields contained in a Customer Order.
4.11.3 Check Customer and Order Status	Statuses in both the Customer Order and the Customer Master are verified before activating any shipping activity.
4.11.3.1 Customer Order	Verify that the Customer Order status is Released. Only orders with a released status can be shipped.
4.11.3.2 Customer Master	The status of the Customer is checked to determine how to proceed with the shipping process. Each Customer is assigned, in the Customer Master, one of the following statuses: ❑ On Hold ❑ Orders On Hold ❑ Shipments On Hold ❑ Credit OK Only Customers with a status of either credit OK or Orders On Hold can be shipped.
4.11.3.2.1 On Hold	Do not allow creation of Customer Orders for this Customer.
4.11.3.2.2 Orders On Hold	Allow creation of a Customer Order but set the order status to “on Hold”.
4.11.3.2.3 Shipments On Hold	Allow creation of a Customer Order but prevent the shipment of the order.
4.11.3.2.4 Credit OK	Allow full order entry processing for the Customer.
4.11.4 Create Shipper	The shipment information is used in connection with information from the Customer Order **at the time of shipment** to create a document that captures all relevant information about a shipment.
4.11.4.1 Shipper Header	The Shipper header is created with minimal required information and most comes from the Customer Order. Most information taken from the Customer Order is copied into the Shipper allowing modifications as needed without affecting the original data. The following are included in the header: ❑ Shipper ID (Packing List) ❑ Customer Order ID ❑ Customer Order status

	❑ Customer currency ❑ Desired ship date ❑ Original promise date ❑ Actual ship date ❑ Sold-to address ❑ Sales representative ❑ Free on Board (FOB) ❑ Ship Via ❑ Ship Status ❑ user ❑ Intrastat information
4.11.4.1.1 Customer Order Status	The status of the Customer Order is displayed. Only orders with a status of Released can be shipped.
4.11.4.1.2 Customer Currency	The native currency for the Customer that this Customer Order is for is displayed. All amounts shown are expressed in this currency.
4.11.4.1.3 Desired Ship Date	This is the desired ship date taken from the header of the Customer Order and copied here.
4.11.4.1.4 Original Promise Date	This is the original promise date taken from the header of the Customer Order and copied here.
4.11.4.1.5 Actual Ship Date	This is the actual date that the shipment took place. The default is the current date. Subsequent shipments of the current session default to the last used ship date.
4.11.4.1.6 Sold to Address	This is the address for the Customer Order and cannot be modified without going to the Customer Master. This data is **not** copied into the Shipper.
4.11.4.1.7 Sales Representative	This is the sales representative taken from the header of the Customer Order.
4.11.4.1.8 Free on Board (FOB)	This is the FOB taken from the header of the Customer Order. This is copied to the Shipper and can be modified as necessary.
4.11.4.1.9 Ship Via	This is the Ship Via taken from the header of the Customer Order. This is copied to the Shipper and can be modified as necessary.
4.11.4.1.10 Ship Status	This is a manual mechanism for internal reviewing Shippers. The values are: ❑ Approved ❑ Review 1 ❑ Review 2 ❑ Review 3 ❑ Shipped
4.11.4.1.11 user	The ID of the user currently logged in is displayed and stored as part of the shipment transaction.
4.11.4.1.12 Intrastat Information	
4.11.4.2 Shipper Line Modes	The required information at the line level depends on the type of line that is being shipped. The shipment lines are copied from the Customer Order for those lines that have quantities remaining to be shipped. The following types of shipments occur: ❑ Stocked part ❑ Manufactured part ❑ Misc. part
4.11.4.2.1 Stocked Part	This line type carries a required part ID over from the Customer Order. Additional information is carried over and is used for processing the line. Additionally, warehouse information must be supplied indicating here from where the part is shipping.
4.11.4.2.2 Manufactured Part	A part ID is optional. A Work Order is always associated with this type of line. The part is shipped directly without the need to first receive into inventory and subsequently issue the item to the Shipper. Since the item never moves through inventory, no stockroom information need be supplied.

4.11.4.2.3 Misc. Part	This item does not have a part number nor a Work Order associated with it. The item simply ships without any inventory activity.
4.11.4.3 Shipper Line	The following information is associated with each Shipper line: ❑ Customer Order line number ❑ Part ID or description ❑ Quantity ❑ Trace? ❑ Ship date ❑ Promise date ❑ Quantity ordered ❑ Quantity shipped ❑ Ship quantity ❑ Actual freight ❑ Location/Warehouse ❑ Customer part ID ❑ Cartons ❑ Shipping weight ❑ Weight unit of measure ❑ NMFC ❑ Package type ❑ Transaction ID ❑ Unit price ❑ Shipping unit of measure ❑ Discount percent ❑ Commission percent ❑ Revenue account ❑ Shipping dimensions
4.11.4.3.1 Part ID or Description	For stocked lines, the part ID is displayed all with its associated description. For Manufactured lines, the word "Job" is displayed followed by the Work Order number and part ID if there is one. For Miscellaneous items, the word "Misc" is displayed.
4.11.4.3.2 Trace?	This indicates whether the part on the line is set up for part trace.
4.11.4.3.3 Ship Date	This is taken from the Customer Order line if it is specified. It is not changeable.
4.11.4.3.4 Promise Date	This is taken from the Customer Order line if it is specified, and overrides the similar date in the header. It is not changeable.
4.11.4.3.5 Quantity Ordered	This is taken from the Customer Order line and is expressed in terms of the stocking unit of measure.
4.11.4.3.6 Quantity Shipped	This is the cumulative shipped quantity to date for the line. It is derived from inventory transactions and is not changeable by the user.
4.11.4.3.7 Ship Quantity	This is the quantity that is currently being shipped. The default value is set to the remaining quantity to be shipped.
4.11.4.3.8 Actual Freight	This is the freight amount expressed in terms of the currency for the order. Each of the shipped lines actual freight amounts are added together and passed on to the invoicing sub-system for approval and subsequent billing.
4.11.4.3.9 Location/Warehouse	This is the warehouse and location combination from where the inventory is being shipped. The default is the default warehouse for the part ID on the line.
4.11.4.3.10 Customer Part ID	This is the Customer's part ID taken from the Customer Order line and is not changeable.
4.11.4.3.11 Cartons	Number of cartons on a pallet. This will be used later in the Bill of Lading.
4.11.4.3.12 Shipping Weight	The shipping weight for one unit. Prints on shipping documents for reference purposes only.
4.11.4.3.13 Weight	The unit of measure that the shipping weight is expressed in.

Unit of Measure	
4.11.4.3.14 NMFC	This is the National Motor Freight Code (NMFC). The NMFC for the part, if specified, is brought up as the default. NMFC Codes are established and associated with the Part Master. The NMFC master contains: ❑ ID ❑ Article ❑ Sub ❑ Description ❑ LTL Class ❑ TL Class ❑ Hazardous?
4.11.4.3.15 Package Type	This is the type of packaging that the line item is contained in. For reference purposes only.
4.11.4.3.16 Transaction ID	This is the unique tracking number that is assigned to the inventory transaction for this line.
4.11.4.3.17 Unit Price	This comes from the Customer Order line and is not changeable.
4.11.4.3.18 Discount Percent	This comes from the Customer Order line and is not changeable.
4.11.4.3.19 Commission Percent	This comes from the Customer Order line and is not changeable.
4.11.4.3.20 Revenue Account	This is the General Ledger account that is used to recognize revenue and is taken from the Customer Order line. It is not changeable.
4.11.4.3.21 Shipping Dimensions	This is taken from the Part Master, if specified, for line items that contain part ID's.
4.11.4.4 Create Part Trace Detail	For each part ID that is designated as part traceable at the time of shipment, an additional transaction type must be created in connection with general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction. The following data are part of the part trace transaction: ❑ Un-issued quantity ❑ Quantity ❑ Label ❑ Alpha property #1 ❑ Alpha property #2 ❑ Alpha property #3 ❑ Alpha property #4 ❑ Alpha property #5 ❑ Numeric property #1 ❑ Numeric property #2 ❑ Numeric property #3 ❑ Numeric property #4 ❑ Numeric property #5 ❑ Comments ❑ Expiration date There is an option to automatically fill in properties if they are left blank.
4.11.4.4.1 Un-issued Quantity	This is the quantity to be assigned a lot number. If the total quantity being shipped is greater than the maximum lot size, as specified in the part trace parameters, then the quantity is broken into more than one lines. Maximum lot size is used for each line with the remainder used as the final line.

4.11.4.4.2 Quantity	This is the user assigned quantity for the particular lot. The default is the un-issued quantity specified above. The user can enter a different quantity and add additional lot numbers if necessary.
4.11.4.4.3 Label	This nomenclature is used for the part such as serial number, heat number, etc. The Label is specified in the part trace profile.
4.11.4.4.4 Alpha Property 1-5	
4.11.4.4.5 Numeric Property 1-5	
4.11.5 Process Shipment	Once the appropriate information is gathered and the Shipper is created, the system proceeds processing the shipment. These steps are: ❑ Processing modes ❑ Backorder modes ❑ Quantity over-shipment ❑ Calculate transaction costs ❑ Create inventory transactions ❑ Create part trace transactions ❑ Allocate ship quantity to supply link ❑ Update perpetual inventory ❑ Update Customer Order ❑ Update Customer status
4.11.5.1 Processing Modes	Shipments can be processed either on a line-by-line basis or by processing all eligible lines enmasse.
4.11.5.1.1 Line-By-Line	This mode requires the user to enter shipment information for each line that is desired to be shipped. Certain information defaults on each line to simplify this process.
4.11.5.1.2 All Eligible	This mode assumes that each line is to ship complete. The default warehouse and location is used to issue the inventory from.
4.11.5.2 Backorder Modes	Each line on the Customer Order that is not shipped complete as the result of the current shipment must be handled by a backorder procedure. The following are the possible methods of handling incomplete shipped lines: ❑ Close the line(s) short ❑ Leave the line(s) open ❑ Copy the line(s) the a separate backorder Customer Order
4.11.5.2.1 Close Short	If wanted, the user can simply close the line short. In this case the total to-date shipped quantity is still preserved along with the original ordered quantity. However, the line is flagged as closed short to negate any demand or future shipments against the line. This flag should be able to be cleared by the user should a future shipment and visibility of the demand are needed.
4.11.5.2.2 Leave Order Open	This mode leaves the remaining quantity open for a future shipment against the line(s).
4.11.5.2.3 Create Separate Backorder	The lines that have remaining quantities to be shipped are copied to a new Customer Order and the original Customer Order is changed to a status of closed. The new order has the same order ID with a suffix (e.g. –1, -2, -3) for each time this mode was utilized for the Customer Order. The quantity remaining to be shipped is entered as the order quantity on the backorder.
4.11.5.3 Quantity Over-shipment	In the event that the quantity specified to be shipped is greater than that on the Customer Order, two scenarios can exists: ❑ Distribute over-shipment ❑ Over-ship line
4.11.5.3.1 Distribute Over-shipment	In this mode, the excess shipped quantity is distributed to the other lines containing the same part ID on a line-by-line basis.
4.11.5.3.2 Over-ship Line	In this mode, the shipped quantity is simply allowed to exceed the order quantity for the line.
4.11.5.4 Calculate Costs	Upon shipment, a cost is established for the outgoing inventory transaction. For standard

for Inventory Transactions	cost systems, this cost comes from the Part Master. For actual cost systems, the cost comes from the various cost layers of existing stock based on a first in first out basis. [TBD]
4.11.5.5 Create Inventory Transactions	One or more inventory transactions are made for each line on the shipments based on the type of line being shipped: ❑ Stocked part ❑ Manufactured part For stocked parts, one inventory transaction is created. This removes the part from stock and charges the cost to Cost of Goods Sold for the Customer Order. The following information is captured: ❑ Part ID ❑ Ship quantity ❑ Warehouse and location ❑ Ship date ❑ Cost For manufactured parts, two inventory transactions are created. The first receives the part into stock from Work in Process. The second transaction removes the part from stock and charges the cost to Cost of Goods Sold for the Customer Order. The following information is captured: ❑ Part ID ❑ Ship quantity ❑ Warehouse and location (the default for the manufactured part as defined in the Part Master) ❑ Ship date ❑ Cost
4.11.5.6 Create Part Trace Transaction	For each part number that is designated part trace, an additional transaction type must be created in connection with the general inventory transaction. This part trace transaction contains information specific to the lot number and its attendant properties assigned at the time of the transaction. There must be one part trace transaction for each unique part trace number within the general inventory transaction.
4.11.5.6 Allocate Ship Quantity to Supply Link	
4.11.5.7 Update Perpetual Inventory	The on-hand quantity for the part number is updated along with the on-hand balance for each affected stocking location.
4.11.5.8 Update Customer Order	If each order line is shipped complete, that is the total to-date shipped quantity is equal to or greater than the ordered quantity, then set the status of the Customer Order to closed.
4.11.5.9 Update Customer Statistics	Once the order is shipped statistics are updated for the Customer. Sales amounts are gathered for: ❑ Current period ❑ Year to date ❑ Life to date
4.11.6 Create Bill of Lading	The Bill of Lading is optional for purposes of combining one or more Packing Lists for transportation via a commercial carrier. One Bill of Lading is required per Customer and shipping destination combination.
4.11.6.1 BOL Header	The Shipper header is created with the following required information: ❑ Bill of Lading ID ❑ Carrier ❑ Ship date

	The following are optional: ❑ Advance ship notice (ASN) ❑ Ship time ❑ Expected delivery date and time ❑ Value of the shipment ❑ Cash on delivery (COD) information ❑ Declared value ❑ Freight terms ❑ Shipment instructions ❑ Route ❑ Vehicle number ❑ National Motor Freight Code (NMFC) ❑ Weight
4.11.6.2 BOL Line	Each line on the Bill of Lading can either be a Packing List or a miscellaneous shipment (not created through Customer Order shipping). For each line, the following information is required: ❑ Packing List ID (only if associated with a Packing List) ❑ Description The following are optional: ❑ Hazardous ❑ Article ❑ Sub-classification ❑ Rate class
4.11.7 Print Shipping Documents	The Packing List and optional Bill of Lading is printed to accompany the shipment to the Customer. The system flags the Shipper as printed with the current date. The document can be printed either as a "Picking List" or a "Packing List." The Picking List gives detailed information of what is about to ship, while the Packing List contains information of what is shipping. There is the choice to include barcodes and/or part trace properties on the documents. By default, all line items print on each Packing List for an order whether a quantity was shipped for the item or not. A zero appears for the quantity of each item that was not shipped. There is an option to suppress the printing of line items with a shipped quantity of zero. There are several options for printing Packing Lists: ❑ Current Packing List ❑ Current order ❑ All released orders through ❑ All orders shipped between ❑ Lines through
4.11.7.1 Current Packing List	If a Packing List is currently displayed, selecting this option can print it. If no Packing List is displayed then this option is not enabled.
4.11.7.2 Current Order	If a Packing List or Customer Order is currently displayed, selecting this option can print all Packing Lists for that order.
4.11.7.3 All Released Orders Through	This prints a Before Shipment Packing List for all released Customer Orders having lines with Ship Dates on or before a date specified by the user. If a Ship Date appears on the order line, that date is used. Otherwise, the Desired Ship Date from the Customer Order is used. Note that the Dated From date does not apply for this option. As with all Before Shipment Packing Lists, only lines that need to be shipped are printed.
4.11.7.4 All Orders	This prints an After Shipment Packing List for all Customer Orders with Actual Ship Date

Shipped Between	between the Dated From and Dated Through dates. Dated From can be left blank to give an open-ended range. Dated Through must be specified.
4.11.7.5 Lines Through	This option further constrains the printing of Packing List lines. For Before Shipment Reports, selecting this option filters out Packing List lines that have a desired ship date later than the specified date. If a Ship Date is not specified on the order line, the Desired Ship Date for the Customer Order is used. This option is useful when using Print Current Order to focus on lines due before a certain date. For After Shipment Reports, the Print Lines Due Through option filters out Packing Lists with Actual Ship Dates later than the Dated Through date.
4.11.8 Manage Shipper	Shippers can be managed in the following ways: ❑ Edit existing Packing List
4.11.8.1 Edit Existing Packing List	Packing Lists can be edited for Customer Orders that have not yet been Invoiced. The following header information can be modified: ❑ Ship time ❑ Delivery date and time ❑ Specification ❑ Free on Board (FOB) ❑ Ship Via ❑ Sales tax group ❑ Entity ID New lines can be added to existing Packing Lists for service charges only. New lines for shipments can not be added to an existing Packing List. The following line information can be modified: ❑ Unit price ❑ Discount percent ❑ Actual freight ❑ Shipping weight ❑ Weight unit of measure ❑ Carton count and pallet count if no pallet details exist ❑ NMFC Code ❑ Package type ❑ Commission percent ❑ Sales tax group ❑ Revenue General Ledger account ❑ Specification The following line service charge information can be modified: ❑ Quantity ❑ Shipping unit of measure ❑ Service charge ID ❑ Service charge miscellaneous reference
4.11.9 Contra Transactions	This is the same as a regular shipment except the transactional quantities are reversed. A new Shipper is created to reflect this return transaction.
4.11.9.1 Search and Display Original Shipper Information	To facilitate the return of previously shipped Customer Orders, the original Shipper needs to be searched and retrieved including those orders that are on closed status.
4.11.9.2 Create Shipper	A Shipper is created just as for a normal shipment. However, the shipped quantity is reversed.
4.11.9.3 Reverse Receive Inventory	Customer Orders that are linked to Work Orders have their finished part automatically received into stock as part of the shipping process. As part of the return process these inventory receipts need to be reversed. Each of the inventory transactions (regular, and

	part trace) are processed the same for a return transaction except that the quantities are reversed.
4.11.9.3.1 Create Inventory Reverse Receipt Transaction	A reverse receipt transaction is created for each original issue transaction.
4.11.9.3.2 Create Part Trace Reverse Transaction	A reverse transaction is created for each original part trace transaction.
4.11.9.4 Reverse Issue Inventory	A new inventory transaction is created for each of the shipment inventory transactions originally created as part of the shipping process. These new transactions are essentially the same except that their quantities are reversed. The returned quantity cannot exceed the total quantity shipped for each line. If part trace were part of the original shipment, then these need to be reversed as well.
4.11.9.4.1 Create Inventory Reverse Issue Transaction	A reverse shipment transaction is created for each original shipment transaction.
4.11.9.4.2 Create Part Trace Reverse Transaction	A reverse transaction is created for each original part trace transaction. The user must identify which lots are being returned.
4.11.9.5 Update Customer Order	If the Customer Order has been closed, it is re-released. The to-date shipped quantities for each line are updated based on the quantities being returned.
4.11.10 Delete Shipper	Shippers cannot be deleted. Reversing transactions are used to correct errors.
4.11.11 Ship an Interbranch Transfer (IBT)	
4.11.11.1 Search and Retrieve IBT Information	
4.11.11.2 Create IBT Shipper Header	
4.11.11.3 Create IBT Shipper Line	
4.11.11.4 Assign Ship Quantity to Supply Links	
4.11.12 Delete IBT Shipper	

4.12 Service and Repair	*Service and Repair* is the sub-system for authorizing and processing a return from a Customer. Service and Repair involves the following functionality: ❑ Creating the Returning Material Authorization ❑ Receiving of the goods ❑ Processing of the returned goods ❑ Reshipping of new or repaired goods ❑ Costing of the repaired goods ❑ Pricing the repair ❑ Adjusting of Customer Invoices A Return Material Authorization (RMA) is a document that controls the return of parts previously sold and shipped to a Customer. The RMA is a fairly simple document containing an ID, status, and some other identification of who is returning the material and for what purpose. Costing issues get complicated when repairs and replacements are at issue, especially when the original Customer Order may not exist in the system or the parts being repaired are originally from another source.
4.12.1 General Service and Repair Reports	
4.12.1.1 Return Material Authorization Form	The *Return Material Authorization Form* can be generated with the following configurations as follows: Reporting output options are: ❑ For a single RMA ❑ For a range of RMAs and/or Period (date range) Reports can be sequence by: ❑ RMA ID ❑ Customer ID RMA types can be selected for any or all RMA types of: ❑ Credit ❑ Replacement ❑ Repair RMA status can also be selected for any or all RMA status of: ❑ Opened ❑ Received ❑ Closed ❑ Cancelled ❑ On hold Reporting levels are: ❑ Summary version (shown below) ❑ Detail version (shown below)
4.12.1.1.1 RMA Summary Version	This is the *Summary Version* of the Return Material Authorization Form. Header: ❑ RMA range (possible range of one) ❑ Date range (optional) RMA ID footer: ❑ RMA ID ❑ Order ID

	❑ Customer ID ❑ Customer name ❑ Order date ❑ Desired ship date ❑ RMA Status ❑ Order amount (RMA total) Report footer: ❑ Order amount (report total)
4.12.1.1.2 RMA Detail Version	This is the *Detail Version* of the Return Material Authorization Form. Header: ❑ RMA range (possible range of one) ❑ Date range (optional) RMA ID header: ❑ RMA ID ❑ Order ID ❑ Customer ID ❑ Customer name ❑ Customer address ❑ Customer Ship-To address ❑ Customer contact name ❑ Customer contact phone / fax ❑ Order ID ❑ Order date ❑ Ship Via ❑ Free on Board ❑ Sales representative ❑ Territory ❑ Desired ship date (ship on) ❑ RMA Status Line items: ❑ Line number ❑ Quantity ordered ❑ Quantity shipped ❑ Part ID ❑ Description (reference part or user description entered) ❑ Customer part ID ❑ Unit price ❑ Discount ❑ Order amount ❑ Ship amount RMA ID footer: ❑ Order amount total (per RMA) ❑ Ship amount total (per RMA) Report footer: ❑ Order amount grand total ❑ Ship amount grand total
4.12.2 Retrieve Original Customer Order	The original Customer Order that contains the item(s) being returned must be identified and retrieved. This Customer Order can be cross referenced using one of the following methods:

	❑ The Customer ID ❑ The original Customer Order ID itself ❑ The original Packing List Once the original Customer Order is retrieved, much of the RMA header and detail information is completed automatically.
4.12.3 RMA Types	There are four different types of RMA's: ❑ Credit ❑ Replace ❑ Repair in warranty ❑ Repair not in warranty
4.12.3.1 Credit	A credit RMA insures that a Customer return of materials is authorized. After the materials have been received, the system credits the price of the original material to the Customer's account. The price is based on the original Customer Order, if available.
4.12.3.2 Replace	A replacement RMA means that the company has agreed to replace the original material with new material. Shipment of the replacement material can occur immediately or may be delayed until the original material is returned.
4.12.3.3 Repair In Warranty	A repair RMA means that the company has agreed to receive the materials, diagnose and repair them, then reship them to the Customer. Depending on the way repairs are scheduled, this may involve a Work Order. The new Work Order tracks the value being added to the part, not the original cost of the material. Because the company does not assume ownership of the parts, there is no accounting entry required and the parts are not brought into inventory or issued to the repair Work Order. Bringing the parts into inventory, even at zero cost, could cause inventory transaction matching problems if a part ID is involved.
4.12.3.4 Repair Not In Warranty	[TBD]
4.12.4 Create RMA Header	The RMA header contains the following information: ❑ RMA ID ❑ Customer ID ❑ Packing List ID ❑ Original Customer Order ID ❑ New Customer Order ID ❑ Type ❑ Status ❑ Reason ❑ Received ❑ Shipped ❑ Return to original order? ❑ Ship from original order? ❑ Under warranty? ❑ Ship before return receipt? ❑ Notes ❑ Specifications
4.12.4.1 Original Customer Order ID	This is the original Customer Order that contains the item that this RMA is being issued for.
4.12.4.2 New Customer Order ID	By indicating to the system that a new Customer Order is desired to handle the reshipment of the RMA item a new order number will be populated here or can be manually assigned. If no original Customer Order ID was specified above, then a new Customer Order ID is used for both receiving and reshipping the RMA item.
4.12.4.3 Type	This specifies which type of RMA this is to be: ❑ Credit ❑ Replace ❑ Repair in warranty ❑ Repair not in warranty

4.12.4.4 Status	Each RMA has a status to indicate the progression through the RMA cycle. These statuses are: ❑ Open ❑ Received ❑ Closed ❑ Cancelled/Void ❑ On hold
4.12.4.4.1 Open	The RMA is active and the material has not been received. This is the default status for a new RMA.
4.12.4.4.2 Received	All materials have been received from the Customer. Shipment back to the Customer is pending. RMA's for credit cannot have this status.
4.12.4.4.3 Closed	The RMA is complete. All material has shipped to the Customer or a Credit Memo has been issued on credit RMA's.
4.12.4.4.4 Cancelled/Void	The RMA is cancelled. The material may or may not have been received.
4.12.4.4.5 On Hold	The RMA is on hold. The system will reject any attempt to receive or ship material with the RMA on this status.
4.12.4.5 Reason	A Reason is optionally associated with each RMA. The Reason must exist in the Reason master and can be chosen from that list. The Reason Master contains the following: ❑ Reason
4.12.4.6 Received	The date that the RMA material is received is captured in this part of the record.
4.12.4.7 Shipped	The date that the RMA materials were last shipped to the Customer.
4.12.4.8 Return to Original Order?	This flag indicates to the system that the materials are to be returned to the original Customer Order. The system automatically creates a Credit Memo against the original order upon receipt of the RMA goods. This option is not applicable for repair RMA's.
4.12.4.9 Ship From Original Order?	This flag indicates to the system that the materials are shipped from the original Customer Order. This option is not applicable for repair RMA's.
4.12.4.10 Under Warranty?	This flag indicates that the repairs are under warranty and will not result in an Invoice being generated upon shipment of the goods. This option is only applicable for repair RMA's.
4.12.4.11 Ship Before Return Receipt?	This flag indicates that for replacement RMA's it is permissible to ship replacement materials prior to receiving the returned materials from the Customer. With this flag **not** set, the system prevents an RMA shipment from taking place until the parts are returned by the Customer.
4.12.5 Create RMA Line	The majority of line detail is carried over from the original Customer Order for reference purposes. Any changes desired must be made to that original order. The RMA header contains the following information: ❑ Original Customer Order line number ❑ Original quantity ordered ❑ Original shipped quantity ❑ Return quantity authorized ❑ Quantity returned to date ❑ Work Order ID ❑ Part ID ❑ Service Charge ID ❑ Description ❑ Unit of measure ❑ Unit of price ❑ Discount percent ❑ Extension ❑ Ship date ❑ Promise date ❑ Freight charges ❑ Commission percent

	❑ Tax Group ID ❑ Product code ❑ Commodity code ❑ General Ledger account ID ❑ Customer part ID ❑ Drawing ID ❑ Drawing revision ❑ Line closed short?
4.12.5.1 Return Quantity Authorized	This is the quantity that is authorized for return by the Customer and is made part of the line record of the RMA. This quantity cannot exceed the total shipped quantity.
4.12.5.2 Quantity Returned to Date	This is the cumulative quantity returned to date for this RMA line. The quantity is calculated from receiving records so it is not editable directly in the RMA.
4.12.6 Print RMA	The Return Material Authorization is printed for delivery to the Customer. The system flags the RMA as printed with the current date. The RMA can be printed in several ways: ❑ Current RMA ❑ RMA's within a date range ❑ A range of RMA's For each of these methods the RMA format can be selected as either: ❑ Summary ❑ Detail
4.12.6.1 Print Current	If an RMA is currently displayed, selecting this option can print it. If an RMA is not displayed, then this option is not enabled. This option does not change the status of the RMA.
4.12.6.2 RMA's Within a Date Range	All RMA's within a user supplied date range are printed. The printed RMA's can be sequenced by either: ❑ RMA ID ❑ Customer ID One or more RMA types can be selected for inclusion in the printing: ❑ Credit ❑ Replacement ❑ Repair One or more RMA status values can be selected for inclusion in the printing: ❑ Opened ❑ Received ❑ Closed ❑ Cancelled ❑ On hold
4.12.6.3 A Range of RMA's	All RMA's within a user-supplied range are printed. The printed RMA's can be sequenced by either: ❑ RMA ID ❑ Customer ID One or more RMA types can be selected for inclusion in the printing: ❑ Credit ❑ Replacement ❑ Repair One or more RMA status values can be selected for inclusion in the printing: ❑ Opened

	❑ Received ❑ Closed ❑ Cancelled ❑ On hold
4.12.7 Receive an RMA	The receipt of materials back from the Customer on an RMA is accomplished through the same mechanism as a contra shipment. Either the original Customer Order or new Customer Order, depending on the way the RMA was established, is used to receive the return shipment. Each Customer is configured telling the system if an RMA is required for a return on a Customer Order. This provides the logic to ensure that RMA's are issued when required before accepting a return shipment.
4.12.8 Cost an RMA	Costing is performed in a different manner for each of the following types of RMA's: ❑ Credit ❑ Repair ❑ Replacement Each of these three, in turn, has three costing scenarios.
4.12.8.1 Credit	There are three costing scenarios for credit RMAs: ❑ Return to original order, Ship from original order ❑ Return to original order, Ship from new order ❑ Return to new order, Ship from new order
4.12.8.1.1 Original / Original	This case is standard functionality without regard to the RMA process. The Credit Memo is created against the original order for the proper value and the Customer Order line is left closed so no new demand is created.
4.12.8.1.2 Original / New	This is the same as above with the addition of a new Customer Order. The new order would not be for any material, but for service charges, restocking fees, etc.
4.12.8.1.3 New / New	This case should only be used if the original Customer Order is unavailable. The new Customer Order would contain part ID, description, and cost information (all possibly copied from the original order) but for a quantity of zero. It could also have additional fees added. The Customer Order line should be closed so no demand is generated even after the return. This will allow the Credit Memo to be created normally getting the value from the Customer Order. If there is no part ID referenced on the new order, then the parts are returned in a manner similar to a miscellaneous shipment.
4.12.8.2 Repair	There are three costing scenarios for repair RMA's: ❑ Return to original order, Ship from original order ❑ Return to original order, Ship from new order ❑ Return to new order, Ship from new order
4.12.8.2.1 Original / Original	A repair RMA should not affect the costing of the original order so this scenario, while made available, would be rarely used.
4.12.8.2.2 Original / New	A repair RMA should not affect the costing of the original order so this scenario, while made available, would be rarely used.
4.12.8.2.3 New / New	The new Customer Order would most likely contain no new material, only a custom Work Order to perform the repair. The returned parts are adjusted into inventory at zero cost and issued directly to the repair Work Order (which must exist). No contra Packing List is created. The adjustment inventory transaction stores the information regarding the receipt of the parts to repair. No accounting entries have to take place because the parts are not an asset to the manufacturer and not part of inventory. A Repair RMA is also the only type that should be concerned with warranty status for the repair. If under warranty, the new Customer Order price needs to be set accordingly. Due to the nature of repair order pricing, the user needs a chance to set/review the price of the repair reshipment. Setting the status of the return Packing List to "Hold" allows the user this opportunity before approving the Packing List.
4.12.8.3 Replacement	There are three costing scenarios for replacement RMA's: ❑ Return to original order, Ship from original order ❑ Return to original order, Ship from new order ❑ Return to new order, Ship from new order

4.12.8.3.1 Original / Original	This scenario is similar to credit RMA's case one except the order line is reopened creating demand for the reshipment. This case will not work for ship immediate replacements because there is no way to indicate that an over-shipment is required until the return is received.
4.12.8.3.2 Original / New	This case is similar to credit RMA's case two except the new order would be for the replacement material in addition to any other fees.
4.12.8.2.3 New / New	The new Customer Order would contain part ID, description and cost information (all possibly copied from the original order.) The quantity required would be zero for a normal replacement. However, for a ship immediate replacement the quantity would have to be the number of parts being returned. It could also have additional fees added. The Customer Order line should remain open so demand is generated after the return. This will allow the Credit Memo to be created normally, getting the value from the Customer Order. If there is no part ID referenced on the new order then the parts are returned in a manner similar to a miscellaneous shipment.
4.12.9 Price RMA Repairs	A repair RMA controls the process of receiving items, diagnosing and repairing them, and then reships them to the Customer. The ownership of the items being repaired never passed from the Customer and as such there is no accounting information showing parts being returned to inventory. The materials, labor, outside services, and burden used to accomplish the repair are recorded as expenses and used as a basis price the RMA repair.
4.12.9.1 Pricing Parameters	Once the RMA to be priced has been selected, the following information is required: ❑ Hourly rate ❑ Labor markup ❑ Material markup ❑ Burden markup ❑ Service markup
4.12.9.1.1 Hourly Rate	This is the hourly rate that the Customer is to be charged for the repairs being made.
4.12.9.1.2 Labor Markup	This is the percent markup for the labor charged to the Work Order associated with the RMA.
4.12.9.1.3 Material Markup	This is the percent markup for the materials charged to the Work Order associated with the RMA.
4.12.9.1.4 Burden Markup	This is the percent markup for the burden charged to the Work Order associated with the RMA.
4.12.9.1.5 Service Markup	This is the percent markup for outside services charged to the Work Order associated with this RMA.
4.12.9.2 Determine Price	The system calculates the price using the Labor Tickets and inventory transactions associated with the Work Order and applying the labor rates and markups specified above.
4.12.9.3 Approve Shipment	The calculated price can be either accepted as is or manually overridden. Once the final price is settled upon, the RMA repair is approved for shipment. The pricing information is passed to invoicing for automatic invoicing upon actual shipment.
4.12.10 Ship an RMA	Once the RMA has been properly processed, the shipment takes place like any other shipment in the system. Either the original order or new order is used depending on the way the RMA was setup. Full shipment of the RMA's Customer Order will close the order as is with normal processing in addition to closing the RMA itself.
4.12.11 Delete RMA	An RMA can be deleted permanently from the system. Line level detail can be deleted or the entire RMA can be deleted.
4.12.11.1 Delete Line	This deletes individual lines from the RMA. A line cannot be deleted if a receipt transaction has been recorded against it. The transaction would need to be deleted before deleting the line.
4.12.11.2 Delete Header	This deletes the entire RMA. All lines must be eligible for deletion, as specified above, for the RMA to be deleted.

4.13 Invoicing	Invoices are created from Shippers. Once the Shipper has been Invoiced, the Shipper is flagged as Invoiced. The invoicing information is passed to Accounts Receivable. Return shipments create negative quantity Shippers and subsequently a Credit Memo. The following are the invoicing scenarios: ❑ Invoicing all eligible Shippers ❑ Creating one Invoice ❑ Creating Credit Memo(s) ❑ Printing duplicate Invoice(s)
4.13.1 General Invoicing Reports	
4.13.1.1 Invoice Form	The *Invoice Form* is created for shipped Customer Orders. The form numbering needs to support pre-numbered or auto numbering of forms. The date range is used to limit Invoice output, and to ensure that an older Invoice is never forgotten. The beginning date is always left open into the past, meaning that only one ending or Through Date is required. All Invoices up to and including the specified through date are printed. For entity selection, one or all, is provided if multiple financial entities are used. Invoice information options, Invoice date options, and printing options are shown in the lists below. Multiple Invoice formats (three user defined) will be included with the standard format. An Invoice output can only be sent to a printer. Sample printouts need to be included to assure printer and form are setup correctly before a run and during form design. Invoice Information option: ❑ Print Draft – No Invoice number saved and Packing List is not marked as Invoiced ❑ Pre-Numbered Forms used – user enters Starting Form number and system follows ❑ A/R Invoice – For financials module to auto generate a receivable Invoice This process does not create a receivable Invoice, without a financials module. ❑ Use Current Exchange Rates – Multi-currency feature (order exchange rate is default) ❑ Traceable Part Properties – Displays the part traceable properties ❑ Packing List Combine – Joins all Packing Lists for an order onto one Invoice Invoice Date Setting, specifies the date to be used for the Invoices: ❑ Current date (default) ❑ Shipped date – uses the Packing List shipped date ❑ Specified Date – uses a user given date Printing options: ❑ Print all Invoices – generates all eligible Invoice as described above ❑ Print one Invoice – generates a single Invoice from a list of eligible Packing Lists ❑ Print duplicate Invoices – reproduces Invoices previously generated Sample Printing options: ❑ None – no samples generated (not recommended for first run of the day) ❑ One sample form – generates one sample first and then Invoices follow. ❑ Three sample forms – generates one sample first and then Invoices follow. ❑ Only sample forms (one to 'n') – Only samples; no real Invoices (design/setup) Header: ❑ Invoice ID (auto generate or user given) ❑ Invoice date (three options shown above) ❑ Customer ID

	❑ Customer name ❑ Customer address (bill to) ❑ Customer Ship-To address ❑ Customer Purchase Order number ❑ Order ID ❑ Ship Via ❑ Free on Board ❑ Terms ❑ Sales representative Line items: ❑ Order quantity ❑ Shipped quantity ❑ Backorder quantity ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Taxable? (per line item) ❑ Discounted unit price ❑ Extended cost Footer: ❑ Sub Total ❑ Tax ❑ Freight ❑ Prepaid amount ❑ Amount due (grand total)
4.13.1.2 Invoice Form with Value Added Tax	This is the manufacturing *Invoice Form with Value Added Tax* (VAT). Header: ❑ Invoice ID (auto generate or user given) ❑ Invoice date (3 options shown above) ❑ Customer ID ❑ Customer name ❑ Customer address (bill to) ❑ Customer Ship-To address ❑ Customer Purchase Order number ❑ VAT Tax identification number (Customers) ❑ Order ID ❑ Ship Via ❑ Free on Board ❑ Terms ❑ Sales representative Line items: ❑ Order quantity ❑ Shipped quantity ❑ Backorder quantity ❑ Part ID ❑ Part description ❑ Customer part ID ❑ Unit price ❑ VAT percent ❑ VAT amount ❑ Extended cost

	Footer: ❑ Sub Total ❑ Freight ❑ VAT amount ❑ Prepaid amount ❑ Amount due (grand total)
4.13.1.3 Customer Order Deferred Revenue Status Report	This is the *Customer Order Deferred Revenue Status Report*. This report can be generated for a given Customer, order, or date range and optionally limited for a given entity. Either the Customer ID or Order ID can sequence the report. The report can be viewed, printed, or sent to a file. A summary and a detailed version of this report can be generated. This report can be generated per: ❑ Customer selected ❑ Customer Order selected ❑ All Customers ❑ All Customer Orders The report can be limited by: ❑ Date range ❑ Entity The report can be sequenced by: ❑ Either the Customer ID or Order ID can sequence the report.
4.13.1.3.1 Summary version	This is the *Summary version* of the Customer Order deferred revenue status report. Header: ❑ Date range (if used) ❑ Entity ID (if used, default = all) Customer header: ❑ Customer ID ❑ Customer name Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Total amount ordered ❑ Order date Order footer: ❑ Order ID ❑ Customer Purchase Order number ❑ Total amount ordered ❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance Customer ID footer: ❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance Report footer:

	❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance
4.13.1.3.2 Detail version	This is the *Detail version* of the Customer Order deferred revenue status report. Header: ❑ Date range (if used) ❑ Entity ID (if used, default = all) Customer header: ❑ Customer ID ❑ Customer name Order header: ❑ Customer Order ID ❑ Customer Purchase Order number ❑ Total amount ordered ❑ Order date Line items: ❑ Invoice ID ❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance Order footer: ❑ Order ID ❑ Customer Purchase Order number ❑ Total amount ordered ❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance Customer ID footer: ❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance Report footer: ❑ Invoice amount ❑ Recognized revenue amount ❑ Deferred revenue amount ❑ Deferred revenue amount balance
4.13.1.4 Customer Order Milestones Status Report	This is the *Milestone Status* report used for Customer Orders. A milestone is a point in time. Typically, a milestone is the completion of a specified operation in a Work Order or master. Each operation of a milestone must have the milestone ID in it. This permits the correct functioning of a multi-level Work Order and also permits out of sequence milestones. This report can be generated for a given Customer, order, or date range and optionally limited for a given entity. Either the Customer ID or Order ID can sequence the report.

	The report can be viewed, printed, or sent to a file. Header: ❑ Date range (if used) ❑ Entity ID (if used, default = all) Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Customer Purchase Order number ❑ Order date Customer Order line header: ❑ Line number ❑ Part ID ❑ Customer part ID ❑ Order quantity ❑ Order amount ❑ Work Order ID Event header: ❑ Event number ❑ Bill percent ❑ Revenue percent ❑ Event date ❑ Milestone ID ❑ Triggered date ❑ Bill amount ❑ Revenue amount Customer Order Line footer: ❑ Bill amount total (per Customer Order line) ❑ Revenue amount total (per Customer Order line) Customer Order footer: ❑ Order amount total (per Customer Order) ❑ Bill amount total (per Customer Order) ❑ Revenue amount total (per Customer Order) Report footer: ❑ Order amount grand total ❑ Bill amount grand total ❑ Revenue amount grand total
4.13.1.5 Customer Order Invoice Status Report	This is the *Customer Order Invoice Status* report. This report can be generated for a given Customer, order, or date range and optionally limited for a given entity. Either the Customer ID or Order ID can sequence the report. The report can be viewed, printed or sent to a file. Header: ❑ Date range (if used) ❑ Entity ID (if used, default = all) Order header: ❑ Order ID ❑ Customer ID

	❑ Customer name ❑ Customer Purchase Order number ❑ Order date ❑ Desired ship date ❑ Status ❑ Total amount ordered Invoice header: ❑ Invoice ID Line items: ❑ Line number ❑ Part ID ❑ Invoice date ❑ Invoice amount ❑ Order quantity ❑ Amount ordered ❑ Work Order ID ❑ Distribution General Ledger account ID ❑ Distribution General Ledger description ❑ Debit amount ❑ Credit amount Invoice footer: ❑ Invoice amount ❑ Debit amount ❑ Credit amount Order footer: ❑ Invoice amount ❑ Debit amount ❑ Credit amount Report footer: ❑ Invoice amount ❑ Debit amount ❑ Credit amount
4.13.2 Invoice All Eligible Shippers	This mode is used to Invoice in batch mode. All Shippers eligible for invoicing through a certain date are printed together. The process includes: ❑ Retrieving Shippers ❑ Updating actual freight ❑ Determining printing options ❑ Updating Shippers ❑ Optionally creating A/R Invoices
4.13.2.1 Retrieve Shippers	Shippers that have not been Invoiced are retrieved for processing. The user provides a date through which they want to Invoice. Only Shippers created on or before this date are included in the Shippers for processing.
4.13.2.2 Update Actual Freight	Each Shipper line can optionally have actual freight amounts associated with it. The total of all freight lines is printed at the bottom of the Invoice. These freight amounts can be entered either at the time of shipment or during Invoice printing. If the freight was previously entered during shipment, then those amounts are editable prior to Invoice printing.
4.13.2.3 Print Options	The following options are available for the printing of Invoices: ❑ Draft only ❑ Pre-numbered forms

	❑ Use current exchange rates ❑ Trace properties ❑ Invoice date ❑ Combine Shippers
4.13.2.3.1 Draft Only	This option prints the Invoices but does not set a printed flag. The Shippers will once again be eligible for printing after printing. No further processing is performed.
4.13.2.3.2 Pre-Numbered Forms	This option is used when printing Invoices on paper that has Invoice numbers preprinted. The user must enter the first Invoice number and then the system will increment Invoice numbers from that starting point. If this option is not chosen, then Invoices will be automatically numbered by the system.
4.13.2.3.3 Use Current Exchange Rates	This parameter tells the system to lookup the most current currency exchange rate applicable for the Customer. Then this parameter prints the amounts on the Invoice using that exchange rate. If this parameter is not set, then the exchange rate that was established at the time of order entry (or subsequent intentional updating) is used for determining the amounts to be printed on the Invoice. In either event, the native currency defined for the Customer is always used for printing amounts on the Invoice.
4.13.2.3.4 Trace Properties	This parameter is used to include part trace properties (both alpha and numeric) on the printed Invoice for each part traced line. Whether this parameter is set or not, part trace ID's print for all lines that contain a part that is establish as traceable at the time of shipment.
4.13.2.3.5 Invoice Date	There are three choices for determining the date to print on the Invoice: ❑ Current date ❑ Specific date entered by user ❑ Date the Shipper was created
4.13.2.3.6 Combine Shippers	Normally one Invoice prints for each eligible Shipper. Setting this parameter causes all Shippers for the same Customer to be combined into one Invoice for this batch of Shippers.
4.13.2.4 Update Shippers	Each of the Shippers is updated to indicate that it has been Invoiced. The Invoice number is recorded with the Shipper for historical purposes. There can be only one Invoice per Shipper. However, there can be multiple Shippers and Invoices for each Customer Order. If Shippers are combined, there can be multiple Shippers for a single Invoice.
4.13.2.5 Create A/R Invoice(s)	This parameter tells the system to pass an electronic copy of the Invoice to Accounts Receivable were it waits for further processing. Without setting this parameter, the system simply prints the Invoice and does not provide any financial interfacing.
4.13.3 Create One Invoice	This printing mode is used when the user wants to Invoice one specific Shipper. The process is essentially the same as batch Invoice printing except for the Shipper selection process. The system must retrieve all Shippers eligible for invoicing for the user to select the specific Shipper to be Invoiced.
4.13.4 Create Credit Memo	The shipping sub-system treats Customer returns as Shippers with negative shipped quantities. The invoicing sub-system recognizes these "negative Shippers" and prints an Invoice with a negative (Credit Memo) amount. The transaction is passed to Accounts Receivable as a Credit Memo.
4.13.5 Print Duplicate Invoice(s)	Because each Shipper is flagged as being Invoiced to prevent duplicate printing, a special function needs to be provided for reprinting Invoices. The system retrieves all printed Invoices (and negative quantity Invoices) for user selection. Reprinting occurs upon selection of one or more Invoices. No further processing takes place.
4.13.6 Invoice Progress Billings	The system carries out billing via one or more Invoices prepared specifically from event information. Note that the shipping of a line item automatically disables billing as a function of events. Pre-shipment Invoices are only created by events if the line item ship quantity is zero. The system marks all billing Invoices with the order ID having the event(s) that triggered the prepayment Invoices.
4.13.6.1 Print Options	The following options are available for the printing of Invoices: ❑ Draft only

	❑ Pre-numbered forms ❑ Use current exchange rates ❑ Invoice date
4.13.6.1.1 Draft Only	This option prints the Invoices but does not set a printed flag. The Shippers will once again be eligible for printing after printing. No further processing is performed.
4.13.6.1.2 Pre-Numbered Forms	This option is used when printing Invoices on paper that has Invoice numbers preprinted. The user must enter the first Invoice number and then the system will increment Invoice numbers from that starting point. If this option is not chosen, then Invoices will be automatically numbered by the system.
4.13.6.1.3 Use Current Exchange Rates	This parameter tells the system to lookup the most current currency exchange rate applicable for the Customer. Then this parameter prints the amounts on the Invoice using that exchange rate. If this parameter is not set, then the exchange rate that was established at the time of order entry (or subsequent intentional updating) is used for determining the amounts to be printed on the Invoice. In either event, the native currency defined for the Customer is always used for printing amounts on the Invoice.
4.13.6.1.4 Invoice Date	There are three choices for determining the date to print on the Invoice: ❑ Current date ❑ Specific date entered by user ❑ Date the Shipper was created
4.13.6.1.5 Combine Shippers	Normally, one Invoice prints for each eligible Shipper. Setting this parameter causes all Shippers for the same Customer to be combined into one Invoice for this batch of Shippers.
4.13.6.1.6 Trace Properties	This parameter is used to include part trace properties (both alpha and numeric) on the printed Invoice for each part traced line. Whether this parameter is set or not, part trace ID's print for all lines that contain a part that is establish as traceable at the time of shipment.
4.13.6.2 Create A/R Invoice(s)	This parameter tells the system to pass an electronic copy of the Invoice to Accounts Receivable were it waits for further processing. Without setting this parameter, the system simply prints the Invoice and does not provide any financial interfacing.
4.13.7 Print Duplicate Progress Billing(s)	Because each Invoice is flagged to prevent duplicate printing, a special function needs to be provided for reprinting Invoices. The system retrieves all printed Invoices (and negative quantity Invoices) for user selection. Reprinting occurs upon selection of one or more Invoices. No further processing takes place.

4.14 Manufacturing Costing	*Manufacturing Costing* is the subsystem for calculating costs from manufacturing activity and preparing them for the posting to the General Ledger. These procedures create summary journal transactions called distributions, which are then ready for posting to the General Ledger. Each journal is a subsidiary journal similar in nature to the Accounts Payable or Accounts Receivable journals. The journals must be posted to the General Ledger. Manufacturing Costing may create several distributions for each order. If an order is open for more than one period, it typically has multiple distributions. If Manufacturing Costing is run more than once during the period and the results are posted, the system creates multiple distributions. Manufacturing Costing removes any unposted transactions for the period being processed and replaces them with up to date transactions. This simplifies the resulting distributions allowing a summary to occur across all available transactions. If Manufacturing Costing is run and the results are not posted, the unposted transactions are deleted the next time Manufacturing Costing is run. These transactions will be added to the current distribution summary. It is important to remember that manufacturing journals only handle costs that flow directly as a result of entering inventory transactions and Labor Tickets. Other cost items (such as freight, depreciation, inventory storage costs, overhead, etc.) are not processed via a manufacturing journal. Because the accounts affected by the manufacturing journals are either expense accounts structured below the cost of sales accounts or asset accounts structured with other inventory accounts, the total expense from manufacturing activity is derived directly from the Chart of Accounts. Several features are also available to provide analysis for those costs and utilities to correct incorrect costs if necessary. Only cost data is processed here. Other financial data comes from: ❑ Invoicing ❑ Sales commission calculation
4.14.1 General Manufacturing Costing Reports	
4.14.1.1 Cost of Goods Sold Analysis	This is the *Cost of Goods Sold Analysis* report. This report is generated for a given end date of an account period. This report has an option to print for exceptions only based on user given parameters of a Plus/Minus percent deviation and/or a Plus/Minus Amount deviation. The report can be viewed, printed, or sent to a file. This report provides a means to analyze Cost of Goods Sold by Customer Order. The analysis report compares cost of quantity received versus cost of quantity shipped and posted to Cost of Goods Sold. The report lists for each Customer Order the part ID shipped, the costed and shipped quantity by Work Order, and their values. The values shown on this report are the actuals from the Work Order(s). With actual costing, Work Order costs can be affected across several periods. Thus, Costs are totaled by month for the last six months. Header: ❑ Accounting period Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Order date

	❑ Customer Purchase Order number ❑ Sales distribution month … (6 columns, 1 column of each of month date) ❑ Sales distribution amount …(6 columns, 1 column of each of month amount) ❑ Total sales distribution amount (Cost of Goods Sold total) Ship transaction header: ❑ Ship transaction ID ❑ Ship Customer Order line number ❑ Part ID ❑ Part description ❑ Ship quantity ❑ Ship costed quantity ❑ Total ship amount (=material + labor + burden + service) Line items: ❑ Received transaction ID ❑ Received order ID ❑ Received quantity ❑ Received costed quantity ❑ Received distributed quantity ❑ Total received amount (=material + labor + burden + service) Ship transaction footer: ❑ Received distributed quantity ❑ Total received amount (=material + labor + burden + service) Customer Order footer: (Order Totals) ❑ Sum of "Total Sales Distributed Amounts 1, 2,3 4, 5, 6") ❑ Sum of "Total Ship Amount" (for material + labor + burden + service) ❑ Sum of "Received Amount" (for material + labor + burden + service) ❑ Sum of "Total Return Amount" (for material + labor + burden + service) ❑ Sum of "Received Amount" + "Total Return Amount" (from above lines). Report footer: ❑ Grand total of "Total Sales Distributed Amounts 1, 2,3 4, 5, 6" ❑ Grand total of "Total Ship Amount" (for material + labor + burden + service) ❑ Grand total of "Received Amount" (for material + labor + burden + service) ❑ Grand total of "Total Return Amount" (for material + labor + burden + service) ❑ Grand total of "Received Amount" + "Total Return Amount" (from above lines). ❑ And grand totals for: ❑ Sales distribution month … (6 columns, 1 column of each of month date) ❑ Sales distribution amount …(6 columns, 1 column of each of month amount) ❑ Total sales distribution amount (Cost of Goods Sold total)
4.14.1.2 Cost of Goods Sold Margin Report	This is the *Cost of Goods Sold Margin* report. This report is generated for a given end date of an account period. This report has an option is to print all orders that affect Cost of Goods Sold for that period or only those orders shipped during that select period. Orders shipped in a previous period may affect Cost of Goods Sold in the current period due to changes to the order shipped such as posting of Accounts Payable Invoices or edits to Labor Tickets. This report shows a margin earned on that product by Customer Order and line item shipped. Information in the report includes ship quantity, revenue, actual cost, margin, estimated cost and a variance between estimated and actual cost. For each Customer Order, this report also shows total revenue versus total actual costs and total revenue versus estimated costs and the respective margins.

	Header: ❑ Accounting period Customer Order header: ❑ Customer Order ID ❑ Customer ID ❑ Customer name ❑ Order date ❑ Customer Purchase Order number Ship transaction header: ❑ Ship transaction ID ❑ Ship date ❑ Ship Customer Order line number ❑ Part ID ❑ Part description ❑ Ship quantity ❑ Ship revenue (revenue) ❑ Total ship amount (=material + labor + burden + service) (actual cost) ❑ Margin (ship revenue – total ship amount) Line items: ❑ Received date ❑ Received order ID ❑ Received distribution quantity ❑ Received estimate (=material + labor + burden + service) (estimated) ❑ Received amount (=material + labor + burden + service) (actual cost) ❑ Variance (total received amount – total received estimate) Ship transaction footer: ❑ Received estimate (=material + labor + burden + service) (estimated) ❑ Received amount (=material + labor + burden + service) (actual cost) ❑ Variance (total received amount – total received estimate) Customer Order footer: ❑ Order totals versus actual cost: ❑ Total ship revenue ❑ Total Ship Amount (for material + labor + burden + service) ❑ Margin to actual (total ship revenue – total ship amount) ❑ Order totals versus estimated cost: ❑ Total ship revenue ❑ Total received estimate (for material + labor + burden + service) ❑ Margin to estimate (total ship revenue – total received estimate) Report footer: ❑ Grand totals versus actual cost: ❑ Total ship revenue ❑ Total Ship Amount (for material + labor + burden + service) ❑ Margin to actual (total ship revenue – total ship amount) ❑ Grand totals versus estimated cost: ❑ Total ship revenue ❑ Total received estimate (for material + labor + burden + service) ❑ Margin to estimate (total ship revenue – total received estimate)
4.14.1.3 Cost Distribution Analysis	This is the *Cost Distribution Analysis* report. This report is generated for a given transaction date range and optional part range. This report also has an option to print for exceptions only based on user given parameters of a Plus/Minus percent deviation and/or

	a Plus/Minus Amount deviation. The report can be viewed, printed, or sent to a file. This report shows how costs for a given item were issued at FIFO (first in first out) or how costs were distributed due to links between the Work Order requirement and the Purchase Order or the Work Order and Customer Order in the case of a buy/resell part or manufactured part. This report shows the out transaction ID (issue a shipment) and the associated in transaction IDs (Purchase Order receipts or Work Order receipts) from which the issue received its costs. The total dollar value of the issue should be equal to the total dollar value of all receipts consumed by the issue. This report can be used to determine and/or analyze any cost discrepancies in a part's inventory valuation. Header: ❑ Transaction range ❑ Part range Part header: ❑ Part ID ❑ Part description Out transaction header: (shipment) ❑ Out transaction ID ❑ Out transaction date ❑ Out order ID ❑ Out quantity ❑ Out costed quantity ❑ Out amount Line items: (in transactions = Purchase Order receipts or Work Order receipts) ❑ In transaction ID ❑ In transaction date ❑ In order ID ❑ In quantity ❑ In costed quantity ❑ In dist quantity ❑ In actual amount ❑ In amount Out transaction footer: ❑ In distribution quantity total ❑ In actual amount total ❑ In amount total Part footer: ❑ Out amount total ❑ In amount total Report footer: ❑ Out amount grand total ❑ In amount grand total
4.14.1.4 Purchase Order Accrual Analysis	This is the *Purchase Order Accrual Analysis* report. This report is generated for a given received date range and Purchase Order. This report reviews Purchase Order receipts against the amount Invoiced against those receipts. The report can be viewed, printed, or sent to a file.

	The report printing options are: ❑ Show all Receivers ❑ Only Receivers not matched to an Invoice ❑ Any Receiver incorrectly matched to an Invoice amount. ❑ Sensitivity sub-options: ❑ Plus/Minus percent ❑ Plus/Minus Amount deviation. Header: ❑ Received date range ❑ Purchase Order ID ❑ Receiver type (all, received/not Invoiced, mismatched) Purchase Order header: ❑ Purchase Order ID Line items: ❑ Purchase Order ID ❑ Purchase Order line number ❑ Posting candidate (yes or no) ❑ Vendor ID ❑ Vendor name ❑ Received date ❑ Receiver ID ❑ Receiver amount ❑ Invoice amount Purchase Order footer: ❑ Receiver amount total ❑ Invoice amount total Report footer: ❑ Receiver amount grand total ❑ Invoice amount grand total ❑ Sum of (Receiver amount + Invoice amount)
4.14.1.5 Analysis of Journal Preparation	This is the *Journal Preparation Analysis* report. This report can be run for a range of orders or transactions for the selected journal type or for all orders or transactions for that journal. See the list below for types of journals. It can also be run for exceptions only. The exceptions parameters are user definable in the plus/minus percent and or the plus/minus amounts fields. During exceptions checking, allow the option to mark exceptions found as a posting candidate (recommended). Then the system will reevaluate it during the next costing run. The report can be viewed, printed, or sent to a file. The "Types" of journals are: ❑ Purchase journal ❑ Work Order Work in Process journal ❑ Work Order finish goods journal ❑ Shipments journal ❑ Adjustment journals ❑ Indirect labor journal This report reexamines each Purchase Order, Work Order, sales order, adjustment and indirect Labor Ticket, and attempts to determine if the item's current value, based on its inventory transactions, Labor Tickets, service receipts, direct Invoices, etc., is equal to the value posted to the General Ledger.

	Header: ❑ Journal type selected ❑ Type range given Line items: ❑ Order ID ❑ Order reference description ❑ Posting candidate ❑ Transaction amount ❑ Debit amount ❑ Credit amount Report footer: ❑ Transaction amount ❑ Debit amount ❑ Credit amount
4.14.1.6 Analysis of FIFO Distributions	This is the *Inventory Materials First In First Out (FIFO) Analysis* report generated for a given part range and transaction dated on or after a given date. The report can be viewed, printed, or sent to a file. The FIFO distributions report views incoming costs of selected parts against the distribution of those parts. Header: ❑ Part ID range ❑ Date of beginning transactions Part header: ❑ Part ID ❑ Part description In transaction header: ❑ In transaction ID ❑ In quantity ❑ In transaction amount ❑ In costed quantity ❑ In order ID ❑ In type ❑ In class ❑ In transaction date Line items: ❑ In transaction ID ❑ Out order ID ❑ Out type ❑ Out class ❑ Out transaction date ❑ Distribution quantity ❑ Distribution amount In transaction footer: ❑ Total distribution quantity ❑ Total distribution amount
4.14.2 Cost Inventory Transactions	The costing sub-system implements standard or actual cost as a one-time system setup choice. If standard cost is chosen, all costs come from Part Masters and Resource Masters. The variances produced are written off to specific General Ledger accounts. The system implements actual costing for Work Orders as a function of inventory and labor

	transactions placed against those Work Orders. All costs ultimately come from these two sources. When a Work Order is first created, it has no transactions. As inventory is issued and labor is posted to the Work Order, the Work Order is given actual cost. Depending on the costing method to which the system is set, the values used in these transactions are either based on part and resource standards or actuals. Purchase Orders, when received, effectively have an actual cost, too. Similarly, Customer Orders, when shipped, have actuals associated with them. Just as a Work Order can be shown to have an actual cost by totaling the issues and labor against it, so can a Purchase Order and Customer Order by totaling the receipts and shipments, respectively, against them. For primarily performance reasons, it is not practical to carry out the entire costing process in real time. The following transactions are carried out in batch mode on a regular basis: ❑ Cost Work Order receipts ❑ Match and cost inventory transactions The Manufacturing Costing function is used to prepare inventory and labor transactions to be permanently costed and posted to the General Ledger.
4.14.2.1 Cost Work Order Receipts	This function examines newly created labor transactions and inventory transactions of any permanently costed Work Order to see if changes have occurred because the Work Order became permanently costed. If any new transactions have been added, the corresponding Work Order is no longer permanently costed and is now reconsidered for costing. Then, each Work Order that is not permanently costed is examined and determined if the Work Order is costable. A Work Order can be permanently costed if the following is true: ❑ The order is fully received or marked closed ❑ The operations of the order are fully Reported or marked completed ❑ The material requirements of the order are fully issued or marked completed ❑ The material issue transactions of the order are fully costed. Invoices have been received and matched to receipts consumed by this Work Order If the Work Order being examined is costable, take its actual cost, determine the unit cost for each cost category (material, labor, burden, service), and save the result in each inventory receipt of the Work Order. Mark the Work Order as costed permanently (by setting the date costed to the current system date/time in the Work Order). A processing option allows the system to assume that all operations and requirements for a Work Order are closed if the Work Order is closed, (fully received to stock), regardless of the complete status of the individual requirements and operations. All material issues to the Work Order, however, must have a final cost. For example, a Work Order may require 100 pieces of an item per the estimate. If 90 pieces have been issued and fully costed, this option assumes that the job can be final costed.
4.14.2.2 Match and Cost Inventory Transactions	This feature is used to calculate actual costs and is only required when the system is running in actual cost mode. For actual cost systems, the original inbound inventory transactions for the part need to be retrieved. For systems with a global setting of "FIFO by part", the transactions are found by simple first-in-first-out for the part number based on creation date of the original transaction. For systems with a global setting of "FIFO by part location", the transactions are found by first including only inbound transactions for the part and the stocking warehouse/location. First-in-first-out is used based on the creation date of the original transaction to identify the specific inbound transaction(s).

	actual costing is carried out by assigning the incoming costs, represented by purchased part receipts or adjustments to inventory, to outgoing costs, represented by material issues, shipments, and adjustments, to inventory. Before any cost can be assigned to an outgoing transaction, the system must first have a permanent cost for an incoming transaction. The primary source of incoming costs is the purchased part receipt. Another source of incoming costs is a Work Order receipt from Work in Process. Labor Tickets are given a permanent cost when they are created. Purchased part receipts may not be given a permanent cost at time of receipt. If the system is set to cost purchased part receipts from Purchase Orders, then the transaction is given its final value upon creation. If the system is set to cost purchased part receipts from Accounts Payable Invoices, then the transaction must wait for its permanent cost until the matching Accounts Payable Invoice is entered. After the purchased part inventory receipt is given its final, permanent value, the system distributes costs from that transaction. Connecting the receipt to one or more outgoing transactions for the same part does this. The order of assignment of transactions is First In, First Out (i.e. FIFO). The inventory transaction costing function examines each inventory part's incoming inventory transactions that have not been fully distributed and assigns them to the same part's outgoing inventory transactions that have not been previously assigned. The system permanently maintains the match between inbound and outbound inventory transactions so it can find all affected transactions when a given value has changed. For instance, a change to an Accounts Payable Invoice after its original entry would potentially have an affect that proceeds all the way to the Cost of Goods Sold account. This is assuming that the finished part, which used the purchased part being costed, has already been shipped. As purchased part receipts are costed, material issues are costed. In turn, material issues are part of the cost of a Work Order. Thus, the cost of these material issues affects the receipt costs for parts coming from the Work Order. Once all details of the Work Order are costed, the receipts of the Work Order can be costed. Those costs are then distributed to either material issue costs (when the part is used in the fabrication of another Work Order) or to shipment costs (when the part is a finished good and is shipped to a Customer). The process of costing inventory transactions spirals up the Bill of Material and routing (i.e. engineering structure) until it becomes part of inventory or Cost of Goods Sold. There are situations when the system overrides the FIFO rules normally applied. When a purchased part is linked to a Work Order material requirement, the system knows which material issue should be given the costs represented by the purchased part receipt. The link is used to create the inventory issue immediately upon creation of the receipt. At the same time, the distribution is created. Its creation occurs even though the receipt's permanent cost may not be known. When the permanent cost is finally entered, the system updates the corresponding issue transaction(s) for the permanent cost. Similarly, when a Work Order is specified on a Customer Order line item, the system knows which shipment should be given the costs that result from the Work Order (ultimately). The cost distribution (described above) is created immediately upon creation of the shipment transaction. When the Work Order is given its permanent cost the cost is carried to the related shipment(s). For both scenarios, the inbound inventory records are updated to indicate the quantity applied to the in-process outbound transaction. This updating cascades on a FIFO basis until the entire quantity of the outbound transaction is covered. The cost from each matched inbound transaction is totaled and used as the cost basis for the outbound transaction. Material, labor, burden, and service costs are maintained as separate costs

	throughout this process. The association between the inbound and outbound transactions and the associated quantities must be preserved for cost updating purposes.
4.14.2.3 Spiral Through all Cost Layers	With multi-level receiving and issuing of Work Orders, it is possible that a Work Order is final costed (4.14.2.1 above) and then subsequently **un-**permanently costed because a material issue (possibly from a feeding Work Order) has a revised cost (4.14.2.2 above). Because of this potential condition, it is necessary to repeat Work Order receipt costing to see if any Work Orders have lost their permanent cost status. If they have, the costing process must repeat. These two steps must be repeated back-to-back until all receipts/issues are updated and no further cost updates are possible. An option is provided to enable or disable this spiraling feature. By default, spiral costing is performed. For example, in actual costing, if an issue to a Work Order ID fully costed by matching the Accounts Payable Invoice with the Purchase Order Receiver, the Work Order that received the material is considered for full cost. If the Work Order is closed, the receipt of the Work Order is fully costed and therefore, any issue (shipment or issue to a higher-level Work Order) of the received Work Order, can now be costed. If this option is not enabled, the receipt is not fully costed, and therefore, the issue of the fabricated item to a higher level Work Order is not costed. A single pass (option not enabled) first values receipts and then the issues from those receipts. Because some receipts first require that issues are valued, a single pass does not always cost everything that can be valued. The only time it is necessary to use this option is if all bills of materials for the product being fabricated are single level – and – very few returns are made.
4.14.3 Prepare Journals for Posting	Once the inventory costs have been updated, the system needs to generate journals on a periodic basis for posting to the General Ledger. To reduce the volume of transactional volume (and duplication) in the General Ledger, costs are posted on a **document** basis; that is, each source document (Customer Order, Purchase Order, Work Order) is costed in its entirety. Each journal preparation examines all inventory transactions related to its specific document and compares the total transactional cost and distribution to the to-date posted summary cost and distribution. A journal entry is then prepared to reflect the difference between the transactional and document cost and distribution. If these journals are prepared on a frequent basis, there will be many journals for each document to the General Ledger each reflecting a fairly small number of summarized transactions. If these journals are prepared on an infrequent basis, many transactions will be combined into a single journal. This frequency of processing can be determined operationally by the user. Note that only journals have been prepared at this point. Nothing has been actually posted to a General Ledger. The following are the types of transactions that are processed: ❑ Purchase Order ❑ Work Order ❑ Customer Order The date of processing must fall into an accounting period that is open and that has all prior periods closed. This is to prevent any information not posted in the previous period to be posted in the current period. In the event that inventory transactions do exist in a prior period and that period is closed, then those transactions will be "swept" into the current period being processed. In the event that inventory transactions are entered into a future open period, then those transactions are to be ignored until that period is being processed. Not all costs are related to one of the documents above. Because there is no source document, these transactions must be handled transactionally. These types of costs come from: ❑ Indirect Labor Tickets ❑ Inventory adjustments

	In essence, the transaction itself becomes the source document and generates a cost and distribution for a journal.
4.14.3.1 Prepare Purchase Journal	This journal uses the Purchase Order as its source document. The transactions are inventory receipts and returns from Purchase Order Receivers.
4.14.3.2 Prepare Work Order Journal	This journal uses the Work Order as its source document. Transactions come from two places for this journal. The first is issues (and returns) into the Work Order from inventory transactions and Labor Tickets. The second is receipt (and return) of the Work Order from WIP into inventory.
4.14.3.3 Prepare Shipment Journal	This journal uses the Customer Order as its source document. The transactions are inventory shipments and returns from Shippers.
4.14.3.4 Prepare Indirect Labor Journal	This journal is prepared directly from Labor Tickets that are designated as indirect (costed to a General Ledger account not a Work Order).
4.14.3.5 Prepare Adjustment Journal	This journal is prepared directly from inventory transactions that are designated as adjustments (costed to a General Ledger account not a Work Order, Customer Order, or Purchase Order).
4.14.4 Perform Cost Analysis	It is imperative that the transactions held in the various manufacturing areas of the system tie out to their related inventory transactions at both detail and summary levels. This tie out must be two-way; they each must support one another exactly. This function allows the user to examine transactions and identify those that do not meet this requirement of tying out to one another. Another feature is the ability for the problem to be corrected and noted. This functionality is a way of ensuring that manufacturing costs are always kept in sync with the supporting General Ledger entries. The following cost categories can be analyzed: ❑ Purchases ❑ Work in Process ❑ Finished goods ❑ Shipments ❑ Adjustments ❑ Indirect labor The Costing Tools function provides a check, and if necessary, a correction (post) to ensure that the Manufacturing costs are kept in sync with the supporting General Ledger entries. There are two main areas to the window: the selection area and the detail area. Selection Area - Depending on the Costs to Check option selected, the Selection area prompts for various description information. For example, if Purchase or Shipments are selected from the Cost to Check combo box, the system prompts for the Order ID range. If WIP, Finished goods, or WIP Balance costs are selected, the system prompts for the Work Order Base ID. If Adjustment or Indirect Labor costs is selected, the system prompts for the transaction ID range. The Options area includes four possible controls depending on the type of Cost to Check selected. For all costs, except for WIP Balance, there are three options (Transaction, Detail and Exceptions only). If WIP Balance is selected, a Balance option appears immediately below the Details option. When the Exceptions only check box is checked, the system activates the Plus/Minus percent, and/or Plus/Minus Amount fields. These fields act as additional filters for the information that appears in the Detail Area. When a value in either of these fields is entered, only those records that exceed the exceptions value setting(s) appear on the table. Detail Area - The Options selected in the Selection Area of the Costing Tools window except for the Exceptions only check box control the column display in the Detail Area of the window.

4.14.4.1 Purchases	This checks Purchase Orders against the appropriate detail and distribution (posted) transactions. A note in the Remarks field identifies any discrepancies between the detail and posted transaction totals. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting Purchase Order ❑ Ending Purchase Order ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those Purchase Order that are an exception to the following parameters: ❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Purchase Order ID ❑ Posting candidate? ❑ Total amount posted ❑ Remarks Additionally, there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail If there is an inconsistency, the user has the choice of either correcting the costs immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that the Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.4.2 Work in Progress	This checks Work Orders against the appropriate detail and distribution (posted) transactions. A note in the Remarks field identifies any discrepancies between the detail and posted transaction totals. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting Work Order ❑ Ending Work Order ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those Work Orders that are an exception to the following parameters: ❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Work Order ID ❑ Posting candidate? ❑ Total amount posted ❑ Remarks Additionally, there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail If there is an inconsistency, the user has the choice of either correcting the costs

	immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.4.3 Finished Goods	This checks Work Orders against the appropriate detail and distribution (posted) transactions. Any discrepancies between the detail and posted transaction totals are identified by a note in the remarks field. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting Work Order ❑ Ending Work Order ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those Work Orders that are an exception to the following parameters: ❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Work Order ID ❑ Posting candidate? ❑ Total amount posted ❑ Remarks Additionally, there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail If there is an inconsistency, the user has the choice of either correcting the costs immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.4.4 Shipments	This checks Customer Orders against the appropriate detail and distribution (posted) transactions. A note in the remarks field identifies any discrepancies between the detail and posted transaction totals. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting Customer Order ❑ Ending Customer Order ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those Customer Orders that are an exception to the following parameters: ❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Customer Order ID ❑ Posting candidate? ❑ Total amount posted

	❑ Remarks Additionally there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail If there is an inconsistency, the user has the choice of either correcting the costs immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that the Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.4.5 Adjustments	This checks Inventory Adjustments against the appropriate detail and distribution (posted) transactions. Any discrepancies between the detail and posted transaction totals are identified by a note in the remarks field. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting inventory transaction ❑ Ending inventory transaction ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those inventory transactions that are an exception to the following parameters: ❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Inventory transaction ❑ Posting candidate? ❑ Total amount posted ❑ Remarks Additionally there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail If there is an inconsistency, the user has the choice of either correcting the costs immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that the Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.4.6 Indirect Labor	This checks Indirect Labor Tickets against the appropriate detail and distribution (posted) transactions. Any discrepancies between the detail and posted transaction totals are identified by a note in the remarks field. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting Labor Ticket ❑ Ending Labor Ticket ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those Labor Tickets that are an exception to the following parameters:

	❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Labor Ticket transaction ❑ Posting candidate? ❑ Total amount posted ❑ Remarks Additionally, there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail If there is an inconsistency, the user has the choice of either correcting the costs immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.4.7 WIP Balance	This checks Work Orders against the appropriate detail and distribution (posted) transactions for WIP distributions. Any discrepancies between the detail and posted transaction totals are identified by a note in the remarks field. Furthermore, the values in the rows do not match. The following parameters specify the input to the analysis: ❑ Starting Work Order ❑ Ending Work Order ❑ Posting date (default to last day of prior period) The detail is presented with the option to only display those Work Orders that are an exception to the following parameters: ❑ Plus/Minus percent **OR** ❑ Plus/Minus amount The detail includes the following: ❑ Work Order ID ❑ Posting candidate? ❑ Total amount posted ❑ Remarks Additionally, there is the choice of displaying additional information at the detail level: ❑ Transaction amount ❑ Total transaction detail ❑ WIP balance If there is an inconsistency, the user has the choice of either correcting the costs immediately or identifying the offending transactions for correction in the next run of Manufacturing Costing. If the correction is immediate, a provision is provided to prepare any necessary journal for eventual posting to the General Ledger. If it is to be corrected later, then the system merely flags the document as a Posting Candidate so that Manufacturing Costing will re-cost the transaction and make the necessary journal preparations.
4.14.5 Recalculate Inventory Balances	It may become necessary to recalculate inventory balances presented by the Inventory Balances Report for a specific financial period. This function allows the user to

	recalculate the inventory balances of any period. The following conditions must be valid for a revaluation to take place: ❑ The period must be open ❑ The period must be fully costed Inventory Balance recalculation does **not** create posting candidates.
4.14.6 Recalculate WIP Balances	Like recalculating inventory balances above, it also may become necessary to recalculate Work in Process balances for a specific financial period. This function allows the user to recalculate the WIP balances for any period. The following conditions must be valid for a revaluation to take place: ❑ The period must be open ❑ The period must be fully costed WIP Balance recalculation does **not** create posting candidates.
4.14.7 Recalculate Standard Costs	This function is used to update the standard cost for each part in its respective Part Master. The basis of this cost is the average of receipt costs for a given period of time. Because the standard cost is used as a basis for inventory valuation in a standard cost system, this function will general impact the value of inventory. In actual cost system, the inventory value is not affected. However, it is still of importance to maintain accurate standard costs to be used as estimates through the system when actual costs are not available.
4.14.8 Recalculate Inventory Transaction Distributions	This is used to correct transactions that have not been costed correctly. This function reexamines, for the selected part(s) and date, the receipts and related issues of that part. If any discrepancies in quantity or cost are found, those transactions are set as posting candidates and costed again with the next run manufacturing costing.

4.15 Work Flow Messages	*Work Flow Messages* is the sub-system for creating and maintaining user defined business rules messages for monitoring and triggering in the background of all other sub-systems. When an event is triggered, notification can be sent in the following ways: ❑ Pop up messages that appear on the users computer screen ❑ Email to specified people ❑ Printed notification to the users printer ❑ SQL and Oracle DML statements and queries This functionality is useful to: ❑ Track certain events over a period of time ❑ Need immediate notification that an event has occurred
4.15.1 General Workflow Messages Reports	
4.15.1.1 Process Events - Detected Messages	This is the *Process Events Detected Messages* report. Report header: ❑ Detected messages detail Line items: ❑ Event ID ❑ Create date ❑ Document type ❑ Document ID ❑ Subject ❑ Message
4.15.1.2 Detected Message Reports	The *Detected Message Report* creates and maintains records of specific events. These Reports print about notification that an event has occurred, in detail or summary versions.
4.15.1.2.1 Summary	This is the *Detected Messages Summary* report. Report header: ❑ Detected messages detail Line items: ❑ Message
4.15.1.2.2 Detail	This is the *Detected Messages Detail* report. Report header: ❑ Detected messages detail Line items: ❑ Event ID ❑ Create date ❑ Document type ❑ Document ID ❑ Subject ❑ Message
4.15.2 Event Creation	Work Flow Messages are centered around events. An event is a point in time at which some specified change has occurred to a document within the system and a message is created. For example, an event could occur when the status of Customer Order changes. The event could then send an email message to a specified person alerting them to the status change. Event creation involves the following information:

	❑ Event ID ❑ Class ❑ Action ❑ Status ❑ Document ❑ Frequency ❑ Sender ❑ Recipient ❑ Subject ❑ Message ❑ Data ❑ Query ❑ Tokens
4.15.2.1 Event ID	Event ID is the unique identifier for the Event.
4.15.2.2 Class	This is the action performed on the selected document that triggers the event. There are the following classes: ❑ Status change ❑ Line item change ❑ Operation change ❑ Requirement change ❑ Insert ❑ Update ❑ Delete ❑ Query ❑ Deadline event ❑ Recurring event
4.15.2.2.1 Status Change	This is used to detect that the status has changed on the selected document.
4.15.2.2.2 Line Item Change	This is used to detect that some piece of information has changed on a line of the selected document.
4.15.2.2.3 Operation Change	This is used to detect that some piece of information has changed in an operation of a Work Order, Engineering Master, or Quote Master.
4.15.2.2.4 Requirement Change	This is used to detect that some piece of information has changed in a requirement of a Work Order, Engineering Master, or Quote Master.
4.15.2.2.5 Insert	This is used to detect that a new record is being created of the type of document selected.
4.15.2.2.6 Update	This is used to detect that an existing record is being modified of the type of document selected.
4.15.2.2.7 Delete	This is used to detect that an existing record is about to be deleted of the type of document selected.
4.15.2.2.8 Query	This is used to establish a user-defined query that will trigger an event.
4.15.2.2.9 Deadline Event	This is used to establish a user-defined query that will only execute once on a certain date that will then be used to trigger an event.
4.15.2.2.10 Recurring Event	This is used to establish a user-defined query that will execute once on a certain date and then once a day from that point forward. The query is used to trigger an event.
4.15.2.3 Action	This is what is to occur when an event is triggered. There are the following actions: ❑ Email ❑ Hold ❑ Print ❑ Popup ❑ Execute
4.15.2.3.1 Email	The system sends an email to the specified recipients.

4.15.2.3.2 Hold	This prevents the system from automatically processing the event. The event detection is queued for manual processing.
4.15.2.3.3 Print	The system sends a message to a selected printer.
4.15.2.3.4 Popup	The system displays a message on a specified user's computer screen.
4.15.2.3.5 Execute	The system executes a predefined SQL query.
4.15.2.4 Status	This is the status of the newly created event. The following are event statuses: ❑ Active ❑ Completed ❑ Suspend ❑ Cancelled
4.15.2.4.1 Active	This is a newly created event that will be immediately processed.
4.15.2.4.2 Completed	This is an event that has met the conditions specified in the Frequency section, but has not been processed.
4.15.2.4.3 Suspend	This status temporarily suspends the event trigger.
4.15.2.4.4 Cancelled	This status permanently cancels an event but does not remove it from the system.
4.15.2.5 Document	This is the document that is monitored for changes based on event detection criteria. The following documents can be monitored: ❑ Customer Order ❑ Purchase Order ❑ Work Order ❑ Engineering Master ❑ Shipper ❑ Service Dispatch ❑ Receiver ❑ A/R Invoice ❑ A/P Invoice ❑ Quote ❑ Part As an option all of these documents can be selected. For Work Orders, Engineer Masters, Quote Masters, Customer Orders, and Purchase Orders a specific ID can be entered to restrict the processes to the one document.
4.15.2.6 Frequency	This is the number of times the system will process an event after it has been triggered. The following are the frequencies: ❑ Permanent ❑ Repeat 'n' times ❑ Do until 'n'
4.15.2.6.1 Permanent	This causes the system to process the event each time it is triggered.
4.15.2.6.2 Repeat 'n' Times	This causes the system to process the event a specified number of times. The number of times must be specified.
4.15.2.6.3 Do Until 'n'	This causes the system to process the event each time it is triggered until the specified date.
4.15.2.7 Sender	This is the name of the user who created the event.
4.15.2.8 Recipient	This is the email name for each person who is to receive email notification.
4.15.2.9 Subject	This is an optional subject information for the email, popup message, or printed document.
4.15.2.10 Message	This is where the content of the message, that will be sent upon event detection, is

	defined. To make a message, custom placeholder variables can be used. These variables are defined by Tokens during the execution of event. These tokens extract specific information about the detected event for substitution into the placeholder values. This allows, for example, to refer to the specific document that causes an event rather than referring to the document generically.
4.15.2.11 Data	This is a place to store binary data. It is for reference purposes only.
4.15.2.12 Query	This is the SQL query that is executed as a triggering test.
4.15.2.13 Tokens	This is where a SQL query is established that will fill in placeholders with token values. The following are tokens: ❑ Trigger date ❑ Trigger time ❑ Trigger date and time ❑ user ❑ Document ID ❑ Document type ❑ Work Order/Master base ❑ Work Order/Master lot ❑ Work Order/Master split ❑ Event ID
4.15.3 Event Deletion	This removes the event permanently from the system.
4.15.4 Event Processing	Event processing consists of the following: ❑ Processing parameters ❑ Processing modes ❑ Processing errors
4.15.4.1 Processing Parameters	There are three general categories for how events are to be processed: ❑ Process events ❑ Place events on hold ❑ Disable events In addition, a Time Slice can be specified to limit system resources expended on event processing. The time slice is specified in seconds and will be the amount of time spent each checking cycle on processing events. If all event processing does not complete within one time slice, then the remaining events are queued for processing in the next slice.
4.15.4.1.1 Process Events	This causes all detected events to be processed. The following parameters control how processing is to occur: ❑ Check for detected events every ‘n’ minutes ❑ Combine messages if more than ‘n’ ❑ Eliminate duplicate messages created within ‘n’ minutes
4.15.4.1.2 Place Events On Hold	This causes all detected events to be queued for manual processing at a later time. The following parameters control how processing is to occur: ❑ Combine messages if more than ‘n’ ❑ Eliminate duplicate messages created within ‘n’ minutes
4.15.4.1.3 Disable Events	This causes all event detection to be suspended.
4.15.4.2 Processing Modes	Events are processed in three modes: ❑ Automatic ❑ Deadline/Recurring ❑ Manual
4.15.4.2.1 Automatic	In this mode, the system automatically processes events in the background as defined in the event itself.
4.15.4.2.2 Deadline / Recurring	This forces all deadline and recurring events to be examined and, if eligible, processed. Normally these types of events are only examined when a user logs into the system.

4.15.4.2.3 Manual	There are four types of events that can processed manually by the user: ❑ New ❑ Hold ❑ Completed ❑ Error New events are ones that have been detected but not yet processed. Most likely these are still queue waiting for the next time slice. Hold events are ones that have been detected but placed on hold. Completed events are ones that have been detected and successfully processed. This is useful if the user wants to re-send a message. Error events are ones that have been detected but not successfully processed. The user can process any of the above messages manually by the following choices: ❑ Print ❑ Email ❑ Delete

4.16 Electronic Data Interchange (EDI)	*Electronic Data Interchange* imports and exports data for electronically exchanging business documents in a predefined, standard format. As an important component of electronic commerce, EDI controls costs, improves quality, increases efficiency, and gains strategic advantage. Buyers and supplies are referred collectively as *trading partners*. The American National Standards Institute (ANSI) sets the standards for EDI in the United States. The United Nations standards body, UN/EDIFACT, sets the international standards for EDI. The ANSI accredited standards committee, X12, is the U.S. representative to the United Nations standards body. The ASC X12 standards specify the format and data content of electronic business transactions. By using the standard, all organizations can benefit from the efficiencies of a common interchange language. There are two methods of exchanging information with trading partners: The data is simply exchanged and then manually entered into the system The data exchange process includes integration into the appropriate sub-system The system supports the following integration functionality: Actual demand information (inbound Customer Orders) Planning or forecasting information (Inbound Master Schedule/Customer Forecast) Actual shipment information (outbound Advance Ship Notice ASN)) Actual Accounts Receivable information (Invoices) Outbound purchasing
4.16.1 General EDI Reports	
4.16.1.1 Data Exchange Log	
4.16.1.2 Data Exchange Log	
4.16.1.3 EDI Accum Discrepancy	
4.16.1.4 EDI Session Change	

4.16.2 Supported Documents	
4.16.2.1 Customer Order	
4.16.2.2 Purchase Order	
4.16.2.3 Planning Information	
4.16.2.4 Planning Schedule	
4.16.2.5 Shipping Information	
4.16.2.6 Advance Shipment Notice (ASN)	
4.16.2.7 Invoice	
4.16.3 Third Party Infrastructure	
4.16.3.1 Communications	
4.16.3.2 Translation Software	
4.16.4 Integration Mapping	
4.16.5 Data Exchange	

4.17 Enterprise Information System (EIS)	
4.17.1 General Enterprise Information System (EIS) Reports	
4.17.1.1 Sales Summary Report	The *Sales Summary Report* outputs one line for each sales activity. For each activity it gives the number of associated documents, and the total number of lines and total value for all documents. The report can be printed, viewed, e-mailed, or sent to a file. The sales summary activities reported are: ❑ Backlog ❑ Late orders ❑ Projected shipments ❑ Quote activity ❑ Quote proforma ❑ Sales bookings ❑ Sales service level ❑ Shipments Header: ❑ Company name ❑ Report title ❑ Time period Line item: ❑ Activity ❑ Documents total per activity ❑ Lines total per activity ❑ Value total per activity
4.17.1.2 Sales Summary Graph	The *Sales Summary Graph* generates a graph that displays each sales activity, except service level, against its total value. The graph can be printed, viewed, e-mailed, or sent to a file. The sales summary activities graphed are: ❑ Backlog ❑ Late orders ❑ Projected shipments ❑ Quote activity ❑ Quote proforma ❑ Sales bookings ❑ Shipments Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Activity vs. ❑ Value total per activity

4.17.1.3 Sales Detail Reports	The *Sales Detail Reports* generate one report for each sales activity. Each report can be printed, viewed, e-mailed, or sent to a file. Detail sales activities reported are: ❑ Backlog ❑ Late orders ❑ Projected shipments ❑ Quote activity ❑ Quote proforma ❑ Sales bookings ❑ Sales service level ❑ Shipments
4.17.1.3.1 Sales Backlog	The *Sales Backlog* detail report output contains all Customer Orders/Work Orders for the given time period on which work has not yet been completed. Header: ❑ Company name ❑ Report title ❑ Time period Ship date header: ❑ Desired ship date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Order ID ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Ship date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.2 Sales Late Orders	The *Sales Late Orders* detail report outputs all Customer Orders/Work Orders that are scheduled to be late for the given time period. Header: ❑ Company name ❑ Report title

	❑ Time period Ship date header: ❑ Desired ship date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Order ID ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Ship date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.3 Sales Projected Shipments	The *Sales Projected Shipments* detail report outputs all Customer Orders/Work Orders that are scheduled to be shipped for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Ship date header: ❑ Desired ship date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Order ID ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value

	❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Ship date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.4 Sales Quote Activity	The *Sales Quote Activity* detail report outputs all quotes for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Quote date header: ❑ Quote date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Quote ID ❑ Part ID ❑ Part description ❑ User ID ❑ In Proforma ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Ship date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.5 Sales Quote Proforma Activity	The *Sales Quote Proforma Activity* detail report outputs quotes that are classified as readily attainable as a result of having a certain win probability percent for the given time period. Header: ❑ Company name

	❑ Report title ❑ Time period Quote date header: ❑ Quote date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Quote ID ❑ Part ID ❑ Part description ❑ User ID ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Ship date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.6 Sales Bookings	The *Sales Bookings* detail report outputs all Customer Orders taken for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Order date header: ❑ Order date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Order ID ❑ Desired ship date ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent

	❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Order date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.7 Sales Service Level	The *Sales Service Level* detail report outputs all Customer Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Desired ship date header: ❑ Desired ship date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Order ID ❑ Order date ❑ Shipped on time ❑ Purchase Order number ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Order date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.3.8 Sales Shipments	The *Sales Shipment* detail report outputs shipments for the given time period. Header:

	❑ Company name ❑ Report title ❑ Time period Ship date header: ❑ Ship date Customer header: ❑ Customer ID ❑ Customer name Line item: ❑ Order ID ❑ Order date ❑ Packing List ID ❑ Part ID ❑ Part description ❑ Quantity ❑ Unit price ❑ Selling unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code ❑ Sales representative ID ❑ Territory Order date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.4 Sales Daily View Reports and Graphs	*Sales Daily Views* offer different scenarios on the current day's sales activity. Each report can be printed, viewed, e-mailed, or sent to a file. The daily sales views are: ❑ Top 10 orders ❑ Top 10 orders as percent of backlog ❑ 10 Latest orders ❑ Latest orders as percent of backlog ❑ Book to Ship To Invoice ratio
4.17.1.4.1 Sales Top 10 Orders	The *Sales Top 10 Orders* report outputs the top 10 open Customer Orders for a given time period. Header: ❑ Company name ❑ Report title ❑ Time period Line item: ❑ Order ID ❑ Customer ID ❑ Customer name

	❑ Total value
4.17.1.4.2 Sales Top 10 Orders as Percent of Backlog	The *Sales Top 10 Orders as Percent of Backlog* report generates a graph that displays the total sales value of the top 10 orders Vs the total sales value of all other backlog orders for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Top 10 orders total value vs. ❑ All other orders total value
4.17.1.4.3 Sales 10 Latest Orders	The *Sales 10 Latest Orders* report outputs the top 10 latest orders for a given time period. Header: ❑ Company name ❑ Report title ❑ Time period Line item: ❑ Order ID ❑ Customer ID ❑ Customer name ❑ Desired ship date ❑ Days late
4.17.1.4.4 Sales 10 Latest Orders as Percent of Backlog	The *Sales 10 Latest Orders as Percent of Backlog* report generates a graph that displays the total sales value of the 10 latest orders Vs the total sales value of all other late orders for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ 10 latest orders total value vs. ❑ All other late orders total value
4.17.1.4.5 Sales Book to Ship To Invoice Ratio	The *Sales Bookings to Shipments to Invoices* report generates a graph that displays the total each value Vs the other two total values of all orders for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Bookings total value vs. ❑ Shipments total value vs. ❑ Invoices total value
4.17.1.5 Purchases Summary Report	The *Purchases Summary Report* outputs one line for each purchases activity. For each activity it gives the number of associated documents, and the total number of lines and total value for all documents. The report can be printed, viewed, e-mailed, or sent to a file. The purchases summary activities reported are:

	❑ Open Purchase Orders ❑ Purchase Orders issued ❑ Purchase Orders received ❑ Past due Purchase Orders ❑ Projected receipts ❑ Purchases service level Header: ❑ Company name ❑ Report title ❑ Time period Line item: ❑ Activity ❑ Documents total per activity ❑ Lines total per activity ❑ Value total per activity
4.17.1.6 Purchases Summary Graph	The *Purchases Summary Graph* generates a graph that displays each purchases activity, except service level, against its total value. The graph can be printed, viewed, e-mailed, or sent to a file. The purchases summary activities graphed are: ❑ Open Purchase Orders ❑ Purchase Orders issued ❑ Purchase Orders received ❑ Past due Purchase Orders ❑ Projected receipts ❑ Service Level Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Activity vs. ❑ Value total per activity
4.17.1.7 Purchases Detail Reports	The *Purchase Detail Reports* generate one report for each purchase activity. Each report can be printed, viewed, e-mailed, or sent to a file. Detail purchase activities reported are: ❑ Open Purchase Orders ❑ Purchase Orders issued ❑ Purchase Orders received ❑ Past due Purchase Orders ❑ Projected receipts ❑ Service Level
4.17.1.7.1 Purchase Orders Open	The *Open Purchase Order* detail report outputs all open Purchase Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period

	Order date header: ❑ Order date Vendor header: ❑ Vendor ID ❑ Vendor name Line item: ❑ Order ID ❑ Desired receive date ❑ Part ID ❑ Part description ❑ Order quantity ❑ Received quantity ❑ Unit price ❑ Purchase unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code Order date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.7.2 Purchase Orders Issued	The *Purchase Orders Issued* detail report outputs all issued Purchase Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Order date header: ❑ Order date Vendor header: ❑ Vendor ID ❑ Vendor name Line item: ❑ Order ID ❑ Desired receive date ❑ Part ID ❑ Part description ❑ Order quantity ❑ Unit price ❑ Purchase unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code

	Order date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.7.3 Purchase Orders Received	The *Purchase Orders Received* detail report outputs all received Purchase Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Received date header: ❑ Received date Vendor header: ❑ Vendor ID ❑ Vendor name Line item: ❑ Order ID ❑ Desired receive date ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ordered ❑ Quantity to date ❑ Quantity received ❑ Unit price ❑ Purchase unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code Received date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.7.4 Purchase Orders Past Due	The *Purchase Orders Past Due* detail report outputs all past due Purchase Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Desired receive date header: ❑ Desired receive date

	Vendor header: ❑ Vendor ID ❑ Vendor name Line item: ❑ Order ID ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ordered ❑ Unit price ❑ Purchase unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code Received date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.7.5 Purchase Orders Projected Receipts	The *Purchase Orders Projected receipts* detail report outputs all projected receipts purchases for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Desired receive date header: ❑ Desired receive date Vendor header: ❑ Vendor ID ❑ Vendor name Line item: ❑ Order ID ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ordered ❑ Unit price ❑ Purchase unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code Received date footer: ❑ Count of orders ❑ Total value

	Report footer: ❑ Count of orders ❑ Total value
4.17.1.7.6 Purchase Orders Service Level	The *Purchase Order Service Level* detail report outputs the service level for purchases for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Received date header: ❑ Received date Vendor header: ❑ Vendor ID ❑ Vendor name Line item: ❑ Order ID ❑ Desired receive date ❑ Was the order on time? ❑ Order date ❑ Part ID ❑ Part description ❑ Quantity ordered ❑ Quantity to date ❑ Quantity received ❑ Unit price ❑ Purchase unit of measure ❑ Trade discount percent ❑ Total value ❑ Product code ❑ Commodity code Received date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.8 Purchases Daily View Reports and Graphs	*Purchases Daily Views* offer different scenarios on the current day's purchases activity. Each report can be printed, viewed, e-mailed, or sent to a file. The daily Purchase Order views are: ❑ Late Purchase Orders as a percent of backlog ❑ Top 10 Purchase Orders as a percent of backlog ❑ Top 10 Purchase Orders ❑ 10 latest Purchase Orders ❑ Top 10 vendors
4.17.1.8.1 Late Purchase Orders as a Percent of	The *Late Purchase Orders as Percent of Backlog* report generates a graph that displays the total value of all late Purchase Orders Vs the total value of all other Purchase Orders for a given time period

Backlog	Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Late Purchase Orders total value vs. ❑ All other Purchase Orders total value
4.17.1.8.2 Top 10 Purchase Orders as a Percent of Backlog	The *Top 10 Purchase Orders as Percent of Backlog* report generates a graph that displays the total value of the top 10 Purchase Orders Vs the total value of all other Purchase Orders for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Top 10 Purchase Orders total value vs. ❑ All other Purchase Orders total value
4.17.1.8.3 Top 10 Purchase Orders	The *Top 10 Purchase Orders* report outputs the top 10 Purchase Orders for a given time period. Header: ❑ Company name ❑ Report title Line item: ❑ Order ID ❑ Vendor ID ❑ Vendor name ❑ Total value
4.17.1.8.4 Ten Latest Purchase Orders	The *10 Latest Purchase Orders* report outputs the ten latest Purchase Orders. Header: ❑ Company name ❑ Report title Line item: ❑ Order ID ❑ Vendor ID ❑ Vendor name ❑ Desired receive date ❑ Days late
4.17.1.8.5 Top 10 Vendors	The *Top 10 Vendors* report outputs the ten top vendors. Header: ❑ Company name ❑ Report title ❑ Line item: ❑ Vendor ID ❑ Vendor name ❑ Total value

4.17.1.9 Production Summary Report	The *Production Summary Report* outputs one line for each production activity. For each activity it gives the number of associated documents, and the total number of lines and total value for all documents. The report can be printed, viewed, e-mailed, or sent to a file. The production summary activities reported are: ❑ Jobs completed ❑ Jobs open ❑ Jobs past due ❑ Jobs started ❑ Operations completed ❑ Operations open ❑ Operations released ❑ Service level by operations ❑ Service level by scheduled ❑ Service level by want Header: ❑ Company name ❑ Report title ❑ Time period Line item: ❑ Activity ❑ Documents total per activity ❑ Value total per activity
4.17.1.10 Production Summary Graph	The *Production Summary Graph* generates a graph that displays each production activity, except service level, against its total value. The graph can be printed, viewed, e-mailed, or sent to a file. The production summary activities graphed are: ❑ Jobs completed ❑ Jobs open ❑ Jobs past due ❑ Jobs started ❑ Operations completed ❑ Operations open ❑ Operations released Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Activity vs. ❑ Value total per activity
4.17.1.11 Production Detail Reports	The *Production Detail Reports* generate one report for each production activity. Each report can be printed, viewed, e-mailed, or sent to a file. Detail production activities reported are: ❑ Jobs completed ❑ Jobs open ❑ Jobs past due ❑ Jobs started ❑ Operations completed

	❑ Operations open ❑ Operations released ❑ Service level by operations ❑ Service level by scheduled ❑ Service level by want
4.17.1.11.1 Jobs completed	The *Production Jobs Completed* detail report outputs all completed Work Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ Completion date Line item: ❑ Order ID ❑ Desired want date ❑ Desired release date ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.2 Jobs open	The *Production Jobs Open* detail report outputs all open Work Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Desired want date ❑ Desired release date ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description

	❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.3 Jobs past due	The *Production Jobs Past Due* detail report outputs all past due Work Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Desired want date ❑ Desired release date ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.4 Jobs started	The *Production Jobs Started* detail report outputs all past due Work Orders for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period ❑ Date header: ❑ Actual release date Line item:

	❑ Order ID ❑ Desired want date ❑ Desired release date ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.5 Operations completed	The *Production Operations Completed* detail report outputs all completed Work Order operations for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ Completion date Line item: ❑ Order ID ❑ Status ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Resource ID ❑ Resource type ❑ Setup hours ❑ Run hours ❑ Actual setup hours ❑ Actual run hours ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value ❑ Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.6	The *Production Operations Open* detail report outputs all open Work Order operations for

Operations open	the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Status ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Resource ID ❑ Resource type ❑ Setup hours ❑ Run hours ❑ Actual setup hours ❑ Actual run hours ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.7 Operations released	The *Production Operations Released* detail report outputs all released Work Order operations for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Status ❑ Scheduled start date ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Resource ID ❑ Resource type ❑ Setup hours

	❑ Run hours ❑ Actual setup hours ❑ Actual run hours ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.8 Service level by operations	The *Service Level by Operations* production detail report outputs the service level Work Order operations for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Status ❑ Complete date ❑ Completed on time? ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Resource ID ❑ Resource type ❑ Actual setup hours ❑ Actual run hours ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.9 Service level by scheduled	The *Service Level by Schedule date* production detail report outputs the service level by schedule date for the given time period. Header: ❑ Company name

	❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Complete date ❑ Completed on time? ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.11.10 Service level by want	The *Service Level by want date* production detail report outputs the service level by want date for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Date header: ❑ As of date Line item: ❑ Order ID ❑ Complete date ❑ Completed on time? ❑ Scheduled finish date ❑ Part ID ❑ Part description ❑ Desired quantity ❑ Total value ❑ Product code ❑ Commodity code Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value

4.17.1.12 Production Daily View Reports and Graphs	*Production Daily Views* offer different scenarios on the current day's production activity. Each report can be printed, viewed, e-mailed, or sent to a file. The daily production views are: ❑ Past due jobs as percent of open jobs (want date) ❑ Past due jobs as percent of open jobs (scheduled date) ❑ Top 10 Work Orders by value ❑ Past due operations as percent of open operations
4.17.1.12.1 Past Due Jobs as Percent of Open Jobs (want date)	The *Past Due Jobs as Percent of Open Jobs* (by want date) report generates a graph that displays the total value of all late jobs Vs the total value of all other open jobs for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Late jobs total value vs. ❑ All other open jobs total value
4.17.1.12.2 Past Due Jobs as Percent of Open Jobs (scheduled date)	The *Past Due Jobs as Percent of Open Jobs* (by scheduled date) report generates a graph that displays the total value of all late jobs Vs the total value of all other open jobs for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Late jobs total value vs. ❑ All other open jobs total value
4.17.1.12.3 Top 10 Work Orders by Value	The *Top 10 Work Orders* (by value) report outputs the top 10 Work Orders for a given time period. Header: ❑ Company name ❑ Report title Line item: ❑ Work Order ID ❑ Part ID ❑ Part description ❑ Total value
4.17.1.12.4 Past Due Operations as Percent of Open Operations	The *Past Due Operations as Percent of Open Operations* report generates a graph that displays the total value of all late operations Vs the total value of all other open operations for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Late operations total value vs.

	❑ All other open operations total value
4.17.1.13 Financials Summary Report	The *Financials Summary Report* outputs one line for each financials activity. For each activity it gives the number of associated documents, and the total number of lines and total value for all documents. The report can be printed, viewed, e-mailed, or sent to a file. The financials summary activities reported are: ❑ Accounts Payable ❑ Accounts Receivable ❑ Invoices created Header: ❑ Company name ❑ Report title ❑ Time period Line item: ❑ Activity ❑ Documents total per activity ❑ Value total per activity
4.17.1.14 Financials Summary Graph	The *Financials Summary Graph* generates a graph that displays each financials activity against its total value. The graph can be printed, viewed, e-mailed, or sent to a file. The financials summary activities graphed are: ❑ Accounts Payable ❑ Accounts Receivable ❑ Invoices created Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Activity vs. ❑ Value total per activity
4.17.1.15 Financials Detail Reports	The *Financial Detail Reports* generate one report for each financial activity. Each report can be printed, viewed, e-mailed, or sent to a file. Detail financial activities reported are: ❑ Accounts Payable ❑ Accounts Receivable ❑ Invoices created
4.17.1.15.1 Accounts Payable	The *Accounts Payable* detail report is generated for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Invoice date header: Invoice date Line item: ❑ Voucher ID ❑ Age

	❑ Vendor ❑ Invoice ID ❑ Total value ❑ Payment date ❑ Entity ID Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.15.2 Accounts Receivable	The *Accounts Receivable* detail report is generated for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Invoice date header: ❑ Invoice date Line item: ❑ Invoice ID ❑ Age ❑ Customer ❑ Total value ❑ Payment date ❑ Entity ID Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.15.3 Invoices Created	The *Invoices Created* detail report is generated for the given time period. Header: ❑ Company name ❑ Report title ❑ Time period Invoice date header: ❑ Invoice date Line item: ❑ Invoice ID Age Customer Total value Payment date Entity ID

	Completion date footer: ❑ Count of orders ❑ Total value Report footer: ❑ Count of orders ❑ Total value
4.17.1.16 Financials Daily View Reports and Graphs	*Production Daily Views* offer different scenarios on the current day's production activity. Each report can be printed, viewed, e-mailed, or sent to a file. The daily financial views are: ❑ Daily sales outstanding ❑ Daily purchases outstanding
4.17.1.16.1 Daily Sales Outstanding	The *Daily Sales Outstanding* report generates a graph for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Outstanding sales total value
4.17.1.16.2 Daily Purchases Outstanding	The *Daily Purchases Outstanding* report generates a graph for a given time period Header: ❑ Company name ❑ Report title ❑ Time period Graph: ❑ Outstanding purchases total value
4.17.2 Generate EIS Data	
4.17.2.1 Build Parameters	
4.17.2.2 Build EIS Data	
4.17.2.2.1 Build On Demand	
4.17.2.2.2 Automatically Build	
4.17.2.3 Reset Currency Exchange Data	
4.17.3 Configure EIS Views	
4.17.3.1 Time Period	
4.17.3.2 Graphs	
4.17.3.3 Groups	
4.17.3.4 Web Publishing	
4.17.3.5 Comparative Intervals	
4.17.3.6 Trend Intervals	
4.17.3.7 Foreign	

Currency	
4.17.4 View EIS Data	[jay-not sure if groups contain daily views or summaries or the other way around]
4.17.4.1 Sales	
4.17.4.2 Purchases	
4.17.4.3 Production	
4.17.4.4 Financials	

4.18 Operations Parameters	
4.18.1 General Operations Parameters Reports	
4.18.1.1 Security Report (by user)	The *Security Report* shows each module to which each user has access to. This report is sorted by user. The report can be limited by a given user range and/or module range. The report can be view, printed, e-mailed, or sent to a file. Header: ❑ user range given (default range is all users) ❑ Module range given (default range is all modules) user ID header: ❑ user ID Module Group ID header: ❑ Module Group ID Line item: (option 1 - for users with full access) ❑ Print - user has full access to all modules Line item: (option 2 - for users with restricted access) ❑ Module ID ❑ Module Name ❑ Component ❑ Permission ❑ Profile
4.18.1.2 Component Security Report (by Module)	The *Component Security Report* shows which user has access to each module. This report is sorted by module. The report can be limited by a given module range and/or user range. The report can be view, printed, e-mailed, or sent to a file. Header: ❑ Module range given (default range is all modules) ❑ user range given (default range is all users) Module ID header: ❑ Module ID ❑ Module Name user ID header: ❑ user ID Line item: ❑ Component ❑ Permission ❑ Profile
4.18.2 user Logins	Each user is assigned a unique user ID that identifies them on the system. This login is used for: ❑ Controlling access to the system with an accompanying password ❑ Restricting the functionality the user is permitted to use ❑ Maintaining an audit trail in transactional data

	The user IDs are defined at the database level (not in the application) so security remains intact if third party tools are used in addition to this system.
4.18.3 Security Definition	Access to individual functional areas within the system can be controlled. Users can be granted the following rights to each major functional area: ❑ Full access ❑ Read only access ❑ No access To simplify the setting up of security for each user, the security assignments can be copied from one user to another, and then optionally edited. More detailed functional user access control is provided for working with engineering and job definitions as well as certain part information.
4.18.3.1 Engineering and Job Definitions	The read only access can be applied to the following in any combination: ❑ Engineering Masters ❑ Quote Masters ❑ Work Orders
4.18.3.2 Part Information	To provide greater granularity to the control of these data, the following categories of attributes can be independently controlled: ❑ ABC Analysis ❑ Accounting ❑ Commodity code ❑ Costing ❑ Cycle count ❑ Defaults ❑ Delete part ❑ Hold reasons ❑ Implode costs ❑ Locations ❑ Dimensional inventory ❑ Planning ❑ Product code ❑ Purchase price ❑ Reset costs ❑ Selling price ❑ Unit of measure conversion ❑ User defined fields ❑ Reset part information
4.18.4 user Permissions	This permits specific control over the right to set various status values for documents based on user login. The following controls are available: ❑ Purchase Order ❑ Customer Order ❑ Work Order ❑ Packing Lists ❑ Quotes ❑ Physical inventory counts ❑ Purchase Ship-To address
4.18.4.1 Purchase Order	Each user can be assigned the right to explicitly set the following statuses: ❑ Firm ❑ Release ❑ Close ❑ Cancel ❑ Printed Note that the document may have its status changed implicitly, that is some functionality,

	for which the user has permission, may change the status of the document as part of its responsibility.
4.18.4.2 Customer Order	Each user can be assigned the right to explicitly set the following statuses: ❑ Firm ❑ Release ❑ Close ❑ Cancel ❑ Hold ❑ Printed Note that the document may have its status changed implicitly, that is some functionality, for which the user has permission, may change the status of the document as part of its responsibility.
4.18.4.3 Work Order	Each user can be assigned the right to explicitly set the following statuses: ❑ Unreleased ❑ Firm ❑ Release ❑ Close ❑ Cancel Note that the document may have its status changed implicitly, that is some functionality, for which the user has permission, may change the status of the document as part of its responsibility.
4.18.4.4 Packing List	Each user can be assigned the right to explicitly set the following statuses: ❑ Shipped ❑ Review 1 ❑ Review 2 ❑ Review 3 ❑ Approve Note that the document may have its status changed implicitly, that is some functionality, for which the user has permission, may change the status of the document as part of its responsibility.
4.18.4.5 Quote	Each user can be assigned the right to explicitly set the following statuses: ❑ Active ❑ Ready ❑ Printed ❑ Won ❑ Lost ❑ Cancel Note that the document may have its status changed implicitly, that is some functionality, for which the user has permission, may change the status of the document as part of its responsibility.
4.18.5 Global Settings	These parameters control the overall behavior of the system and typically affect more than one sub-system. Changing some settings after the first transaction is in the system would create potential data corruption. These settings are referred to as "one-time" settings and must not change after implementation. The global parameters are broken down into the following categories: ❑ General ❑ Costing ❑ Scheduling ❑ Value Added Tax ❑ Intrastat ❑ Drawing

	❑ Payment ❑ Order Management ❑ Shipment tracking
4.18.5.1 General	General parameters include: ❑ Corporate Name ❑ Corporate Address ❑ Tax ID number ❑ Effective exchange rate date ❑ Default menu language ❑ Packing Lists default status ❑ Default Demand Fence 1 ❑ Default Demand Fence 2 ❑ Use Demand Fence 1 as MRP frozen period? ❑ Part location on the fly ❑ Default manufacturing entity ID ❑ Is the financial interface in use? ❑
4.18.5.1.1 Corporate Address	The corporate address consists of the following information: ❑ Address #1 ❑ Address #2 ❑ Address #3 ❑ City ❑ State ❑ Zip code ❑ Country
4.18.5.1.2 Tax ID Number	This is the federal tax number assigned to the corporation.
4.18.5.1.3 Effective Exchange Rate Date	Currency exchange is based on one of the following: • Use system date • Use transaction date
4.18.5.2 Costing	Costing parameters include: ❑ Costing method ❑ WIP costing ❑ FIFO method ❑ Source of raw material cost ❑ Purchase quote type ❑ Labor cost basis ❑ Costing between levels ❑ Burden basis ❑ Receipt exchange rate
4.18.5.2.1 Costing Method	Costing choices are: ❑ Standard ❑ Actual Standard costs: ❑ Purchase material at standard with PPV (Purchase Price Variances) ❑ Manufacturing variances upon receipt from Work Order ❑ Labor and burden cost charged to the Work Order at Shop Resource standard ❑ Service costs at standard

	Actual costs: ❑ Raw materials valued at Purchase Order or A/P Invoice ❑ Inventory valued at FIFO or purchased to a job ❑ Labor charged at actual Employee rate
4.18.5.2.2 WIP Costing	WIP costing choices are: ❑ Projected ❑ Actual If system is set to actual costing, then WIP Costing (Work Order receipts) can be either Actual or Projected. Actual uses total cost to date for the receipt. Projected uses a calculated value based on the prorated share of units completed, but cannot exceed actual to date per cost components. The final valuation for each of these methods takes place at the completion of the Work Order. If the system is set to standard costing, and the standard cost of the receipt is less than the actual charged to date to the Work Order, then the quantity is received at standard and no variance is calculated. If the standard cost of the receipt is greater than the actual cost charged to the Work Order to date, then the quantity is received at standard and a variance is calculated for the difference between the actual and standard cost of the partial receipt.
4.18.5.2.3 FIFO Method	FIFO method choices are: ❑ Inventory pools by part ID ❑ Inventory pools by part ID and location
4.18.5.2.4 Source of Raw Material Cost	This option only applies when using actual costing and controls the source of costs assigned to raw material inventory. ❑ Purchase Orders - costs will be taken from the Purchase Order at the time of material receipt ❑ A/P Invoices – costs will be taken first from the Purchase Order, as an estimate, then updated from the Invoice for the purchase, when it is received
4.18.5.2.5 Labor Cost Basis	This option controls how labor costs are calculated. It is only applicable when using standard costing. ❑ Hours worked - Labor is essentially calculated by multiplying the hours Reported on a Labor Ticket by the standard cost of the operation ❑ Quantity produced - labor is essentially calculated by multiplying quantity completed for an operation by the standard cost per unit for the operation
4.18.5.2.6 Costing Between Levels	The system costs using four categories: Material, Labor, Burden, and Service. Purchased materials only affect the Material category, while internally fabricated parts incur costs in all four categories. This option controls how costs are passed between levels when one fabricated part is used as a material requirement in another. There are two options: ❑ Fold to material cost - If this option is selected, the Material, Labor, Burden, and Service cost of an internally manufactured intermediate are all summed into the material cost when it is required in another fabricated part. From a cost point of view, this makes a manufactured part look essentially like a purchased part – when it is required in another product, the cost is all counted as material cost. ❑ Keep separate costs - If this option is selected, the Material, Labor, Burden, and Service costs of an internally manufactured intermediate part contribute to those individual categories in parent assemblies. From a cost point of view, this counts labor and burden associated with fabricating the intermediate look like part of the labor and burden costs for the entire product.
4.18.5.2.7 Burden Basis	This determines if the burden basis is to be taken from: ❑ Shop Resource ❑ Operation

	This option only applies when using actual costing and is best described as the overhead calculation used to control the source of Burden to be applied to Work Orders.
4.18.5.3 Purchase Quote Type	Part quotes from vendors can be maintained in the system by one of two methods: ❑ Quantity break ❑ Up to quantity
4.18.5.3.1 Quantity Break	If this option is selected, then the quantity levels are referred to as *Quantity Breaks* and the following rules are used: This price is used — When Default Price 1 — Order Qty < Quantity Break 1 Price 1 — Qty Break 1 < Order Qty < Quantity Break 2 Price 2 — Qty Break 2 < Order Qty < Quantity Break 3 Price 3 — Qty Break 3 < Order Qty < Quantity Break 4 Price 4 — Qty Break 4 < Order Qty In this case, the default price is a default price for a minimum quantity and Price 4 is used to cover the open end of the quantities – the high end.
4.18.5.3.2 Up To Quantity	If this option is selected, then the quantity levels are referred to as *Up-To Quantities*, and the following rules are used: This price is used — When Price 1 — 1 < Order Qty < Up-To Quantity 1 Price 2 — Up-To Quantity 1 < Order Qty < Up-To Quantity 2 Price 3 — Up-To Quantity 2 < Order Qty < Up-To Quantity 3 Price 4 — Up-To Quantity 3 < Order Qty < Up-To Quantity 4 Default Price — Up-To Quantity 4 < Order Qty In this case, the default price assumes the bulk purchase – it is probably the lowest price available, only given when purchasing above a certain point.
4.18.5.4 Scheduling	• Default weekly shop calendar • Treat all release dates as hard in all schedules? • Use all supply before applying lead-time in material checks?
	This is the weekly shop calendar for the company, which consists of standard workday and shift information. The Global Scheduler uses this information when producing a shop schedule. Specific calendars can be defined for particular schedules and/or individual Shop Resources elsewhere in the system. Where neither of these are defined, the calendar specified here is used.
4.18.5.5 Drawings	This configures where the drawing files are physically located and where the viewer is located. Command arguments can be passed to the viewer to custom configure the manner in which it opens and displays a drawing.
4.18.6 Currency Exchange Rate	Currency Exchange Rate is used to setup multiple currencies for use with Customers and vendors. The following are associated with a currency as it relates to the system currency: ❑ Effective date ❑ Exchange sell rate ❑ Exchange buy rate A system-wide setting determines the effective exchange rate date.
4.18.6.1 Effective Exchange Rate Date	This determines which of the following dates is to be used for exchange rate effectivity: ❑ System date ❑ Transaction date

4.18.7 Value Added Tax	*Value Added Tax* (VAT) is a method of taxation on goods consumed. VAT applies to goods sold within a given country. It is not charged on goods leaving or entering the country. The system's support of VAT requires support for recoverable VAT in purchasing and A/P. VAT is usually product-related rather than destination-related. This is different than taxation in the United States. The system displays a VAT code column in the Part Master when VAT is enabled. Companies in the U.S. typically do not use this VAT field. In the United States, companies may set the default Sales Tax in the Customer and vendor records. This data element is not visible in VAT mode. Setting up VAT requires that no transactions exist in the system. The following are requirements for establishing VAT: ❑ Parameters ❑ VAT setup ❑ VAT book setup
4.18.7.1 Parameters	The following parameters define VAT: ❑ VAT enabled ❑ VAT discounted by terms discount ❑ Use VAT books to generate Invoice numbers ❑ VAT registration ❑ Next VAT sequence number ❑ VAT receivables export ID ❑ VAT payables export ID
4.18.7.1.1 VAT Enabled	This switch turns VAT support on throughout the system.
4.18.7.1.2 VAT Discounted By Terms Discount	This switch has the system compute VAT from the price after terms discount. This does not include other discounts.
4.18.7.1.3 Use VAT Books To Generate Invoice Numbers	This switch enables enhanced features of VAT book numbering.
4.18.7.1.4 VAT Registration	This is the VAT registration number for the company.
4.18.7.1.5 Next VAT Sequence Number	This is the next number available for VAT Reporting.
4.18.7.1.6 VAT Receivables Export ID	This is the receivables export ID if Reports are being generated to a file.
4.18.7.1.7 VAT Payables Export ID	This is the payables export ID if Reports are being generated to a file.
4.18.7.2 VAT Setup	The following parameters setup VAT in the system: ❑ Tax percent ❑ Tax General Ledger account ❑ Recoverable tax percent ❑ Tax recoverable General Ledger account
4.18.7.2.1 Tax Percent	Tax Percent is the percent of the Value Added Tax.
4.18.7.2.2 Tax General Ledger Account	This is the General Ledger account to be posted for this tax.
4.18.7.2.3	This is the percent of recoverable tax. This pertains only to payable taxes.

Recoverable Tax Percent	
4.18.7.2.4 Tax Recoverable General Ledger Account	This is the General Ledger account to be posted for this tax.
4.18.7.3 VAT Book Setup	VAT Books control the numbering sequence of all Invoices and memos created when VAT is enabled. In the European Community, there may be more than one "VAT book" or numbering sequence in use at any one time. With VAT enabled, the system permits more than one automatic numbering sequence to exist in the system for Invoices and Credit Memos. The Invoicing Sub-System uses the Customer's VAT book code to determine the new Invoice numbers. The system saves this code in each of the generated Invoices and determines the numbering scheme applied to the Invoices. Note that Credit Memos can also be generated if Shippers are for returned goods. The Customer record has two VAT book code references – one for Invoices and one for Credit Memos. When creating manual Invoices and memos, the system requires the entry of a VAT Book code whenever the system is in VAT mode. The system uses the VAT Book code to determine the automatic number scheme for the new Invoice or memo. In addition, this code determines on which VAT and Intrastat Reports the Invoice or memo ultimately appears. The system does not require that the Customer VAT Book code agree with the code that has been entered. When a VAT Book code has been entered, the system verifies that the VAT Book supports the type of document in question. The system does this by examining the flags in the VAT Book record. It is an error to refer to a VAT Book that does not support the given Invoice or Credit Memo type. A VAT Book consists of the following information: ❑ Code ❑ Code type ❑ Year ❑ Description ❑ Report format ❑ Sequence numbers ❑ Current posting date
4.18.7.3.1 Code	This is the unique identifier for the VAT Book.
4.18.7.3.2 Code Type	One or more of the following VAT codes are selected: ❑ Accounts Receivable Invoices ❑ Accounts Receivable Credit Memos ❑ Accounts Payable Invoices ❑ Accounts Payable Credit Memos
4.18.7.3.3 Year	This is the year for the VAT Book.
4.18.7.3.4 Description	This is the user designated description for the VAT Book.
4.18.7.3.5 Report Format	There are two report formats: ❑ European Community (EC) ❑ Italy (IT)
4.18.7.3.6 Sequence Numbers	This is the next number generator for Invoices and Credit Memos. The following fields are defined: ❑ Start number ❑ Next sequential number ❑ Alphanumeric prefix ❑ Alphanumeric suffix ❑ Number of decimal places

	❑ Show leading zeros?
4.18.8 Intrastat	Intrastat is a European Community term that refers to the system of tracking statistics of goods manufactured and distributed to and from EC member countries. Intrastat is intended to ease the burden to manufacturers and distributors of goods who import and export within the EC by eliminating customs declarations. Intrastat requires that goods sold and manufactured in the EC be tracked so that their origin and destination is recorded in some permanent way. Periodically, each manufacturer and distributor of goods must report those items sold and distributed, where they were manufactured or obtained, and where they were sent, including intermediate distribution points (when the origin or destination is outside of the country where the manufacturer or distributor resides). Intrastat applies to the importation and exportation of goods. It does not apply to goods shipped within a given member country. Only VAT registered companies are required to provide Intrastat information. The Intrastat feature provides the appropriate information to be placed on required Reports being made to the governing country in which the manufacturer operates and records the supporting data on which the Reports are based. The exact form and format of these Reports varies from country to country. Therefore, these may need to be edited. Intrastat is established using the following: ❑ General Intrastat parameters ❑ Intrastat report formats ❑ European Sales List (ESL) setup ❑ Port of arrival ❑ Port of transshipment ❑ Nature of transaction ❑ Mode of transport ❑ Tariff ❑ Region ❑ Country
4.18.8.1 General Intrastat Parameters	The following parameters setup Intrastat in the system: ❑ Intrastat enabled? ❑ Country ❑ Branch ❑ Next sequence number
4.18.8.2 Intrastat Report Formats	The Intrastat report can be set to run: ❑ Monthly ❑ Quarterly ❑ Annually There are two report formats that must be defined: ❑ Arrival format ❑ Dispatch format
4.18.8.2.1 Arrival Format	The following data are selectable to be included in this report: ❑ Tariff code ❑ Excise price ❑ Region ❑ Country ❑ Port of arrival ❑ Port of transshipment ❑ Siret number ❑ Export ID

4.18.8.2.2 Dispatch Format	The following data are selectable to be included in this report: ❑ Tariff code ❑ Excise price ❑ Region ❑ Country ❑ Port of arrival ❑ Port of transshipment ❑ Siret number ❑ Export ID
4.18.8.3 European Sales List (ESL) Setup	A European Sales List (ESL) is a VAT report that is based on goods Reported under Intrastat. The following information configures this report: ❑ ESL Export ID ❑ Next sequence number The Intrastat report can be set to run: ❑ Monthly ❑ Quarterly ❑ Annually
4.18.8.4 Port of Arrival	The port of arrival is the place in which goods are received. This master consists of: ❑ Code ❑ Description
4.18.8.5 Port of Transshipment	The port of transshipment is the place from which goods will be shipped. This master consists of: ❑ Code ❑ Description
4.18.8.6 Nature of Transaction	This master consists of: ❑ Code ❑ Description
4.18.8.7 Mode of Transport	The mode of transport is the method by which the goods will be shipped. This master consists of: ❑ Code ❑ Description
4.18.8.8 Tariff	Tariff codes define the class of goods being transported. This master consists of: ❑ Code ❑ Description
4.18.8.9 Region	Region codes define the locations of warehouses. This master consists of: ❑ Code ❑ Description
4.18.8.10 Country	This defines countries, whether or not Intrastat is required, and what country codes are used for Reporting. This master consists of: ❑ Country ID ❑ Description ❑ Intrastat required? ❑ Intra Country ❑ ESL Country
4.18.9 Default Workspace Configuration	There are two areas that customize the workstation environment: ❑ Default login ❑ Window Configuration
4.18.9.1 Default Login	This sets the default login and password for the workstation. This permits automatic login on the workstation. The login and/or the password can be made part of the default login giving the user flexibility in how much information is to be automatically supplied.
4.18.9.2 Window Configuration	The table area, (where line level detail is displayed), of most windows can be modified so suit the needs of individual users. These settings include: ❑ Hiding/showing columns

	❑ Renaming columns ❑ Changing the width These configurations are stored and associated with the workstation. The configuration will restore itself each time the window is opened regardless of the user logged in.
4.18.10 Report Customization	All Reports throughout this specification are based on a technology that allows the format to be separate from the contents. Each report has a separate physical file called a template. These templates can be modified to change the appearance of the Reports without changing any of the attendant logic. It is also possible to add to the data that is being sent to a report template. The following are options in customizing Reports: ❑ Report format overrides ❑ Extended queries
4.18.10.1 Report Format Overrides	To facilitate an orderly method of managing report modifications, report Overrides can be defined. Report Format Overrides allows customization of forms on a system-wide and user-specific basis. Rather than changing the standard templates, copies are made, modified, and stored in a dedicated folder. The following defines a Report Format Override: ❑ Standard template name ❑ Context ❑ Overriding template name and path ❑ Description
4.18.10.1.1 Context	There are three possible override contexts: ❑ Entity - This context only applies to Customer Order Acknowledgments and to Invoices, and specifies that the override only applies to one financial entity ❑ user - This override applies to a specifically named user ❑ Always
4.18.10.1.2 Overriding Template Name and Path	This can be any valid file name and any folder.
4.18.10.1.3 Description	Reference description typically used to describe the nature of the override.
4.18.10.2 Extended Queries	This functionality allows a SQL statement to be written that will retrieve additional data elements for use with a report template. The following are required: ❑ SQL statement ❑ Destination variable
4.18.10.2.1 SQL Statement	This SQL statement is used to retrieve the data.
4.18.10.2.2 Destination Variable	This is the name of the variable that will contain the information retrieved by the SQL statement. The variable will then be used in the report template. One of the following data types is assigned to the variable: ❑ String ❑ Number ❑ Date/Time

4.19 Purging	Purging is defined as the sub-system for removing outdated and unwanted information from the database. Purging frees up space in the database. However, it does not reduce the size of the database because the compaction is a function of the database manager and its tools. Only records that are no longer active or not tied to other active can be purged. Specific types of records can be purged as well as purging based on certain selection criteria. The following types of records can be purged: ❑ Receivers ❑ Shippers ❑ Customer Orders ❑ Purchase Orders ❑ Work Orders ❑ Labor Tickets ❑ Inventory transactions
4.19.1 General Purging Reports	
4.19.1.1 Purge Status Report	This is the Purge Status Report. This report presents the results of purge activity including the following: ❑ Elapsed time of the purge ❑ Number of records that are qualified for purge ❑ Specific identification of records that have dependency exceptions ❑ Number of records that are qualified for purge Header: ❑ Purge status Report (report header) ❑ Report date (current date) ❑ Purge date (Purge on or before given date) Purge Status header: ❑ Purge status Line item: ❑ Purge item information ❑ Number of records that are qualified for purge ❑ Specific identification of records that have dependency exceptions ❑ Number of records that are qualified for purge
4.19.2 Record Candidacy	The selection of records is determined by the date of the record. All records of a specific type are selected for potential processing if they are dated on or before a user provided date. The record dates are as follows: ❑ Receiver…Received date ❑ Shippers…Shipped date ❑ Customer Orders…Order date ❑ Purchase Orders…Order date ❑ Work Order…Creation date ❑ Labor Tickets…Creation date ❑ Inventory transactions…Creation date
4.19.3 Active Status Testing	Once the records are initially selected for purging, they are further qualified by testing to see if they are active or are attached to other records that are active. If either of these tests fails, then the record cannot be deleted.
4.19.3.1 Test Receivers	Receivers must be vouchered in Accounts Payable.
4.19.3.2 Test Shippers	Shippers must be Invoiced prior to purging.
4.19.3.3 Test Customer Orders	Customer Orders must be either closed or cancelled and must have any Shipper associated with it posted to the General Ledger.
4.19.3.4 Test Purchase Order	Purchase Orders must be either closed or cancelled and must have any Receiver associated with it posted to the General Ledger.

4.19.3.5 Test Work Orders	Work Orders must be either closed or cancelled and each operation and material requirement in the structure must be either closed or cancelled.
4.19.3.6 Test Labor Tickets	Labor Tickets must no longer be associated with a Work Order. The Work Order needs to be purged first.
4.19.3.7 Test Inventory Transactions	Inventory transactions must no longer reference Purchase Orders or Customer Orders. These need to be purged prior to inventory transactions. All inventory transactions must also be fully costed and posted to the General Ledger prior to deletion.
4.19.4 Purge Process	To facilitate the purging process, test purges can be performed where only the records are counted and returned to the user without actually deleting anything from the database. The user is given the option of saving the purged (or to be purged) records into an external data file. There is no provision to bring the data file back into the active database as its purpose is strictly for cleansing the database and archiving.
4.19.5 Archive File	The external archive file contains all header and line level detail for each type of record. The file is formatted as ASCII comma separated text.