



QAD Enterprise Applications
Enterprise Edition

Training Guide **QAD Shop Floor Control**

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QAD Shop Floor Control Change Summary

The following table summarizes significant differences between this document and the last published version.

Date/Version	Description	Reference
April 2017/v2017 EE	Rebranded for QAD 2017 EE	--
April 2016/v2016 EE	Rebranded for QAD 2016 EE, added links to Preface and book	--
April 2015/v2015 EE	Rebranded for QAD 2015 EE	--
March 2014/v2014 SE_EE	Rebranded for QAD 2014 SE_EE	--
September 2013/v2013.1 SE_EE	Rebranded for QAD 2013.1 SE_EE	--
May 2013/v2013 SE_EE	Edited for style and clarity	--
March 2013/v2013 SE_EE	Rebranded for QAD 2013 SE_EE	--
September 2012/v2012.1 SE_EE	Rebranded for QAD 2012.1 SE_EE; Consistency edit	--
March 2012/v2012 SE_EE	Rebranded for QAD 2012 SE_EE	--
September 2011/v2011.1 SE_EE	Rebranded for QAD 2011.1 SE_EE	--

About This Course

Course Description

The Shop Floor Control training guide for QAD Enterprise Applications is designed to cover the basics of preparing to implement the Shop Floor Control module in QAD Enterprise Applications. The course includes:

- An introduction to the Shop Floor Control module
- An overview of key business issues
- Setting up the Shop Floor Control module
- Operating the Shop Floor Control module
- Activities and exercises

Course Objectives

Upon completion of this course, participants can design, implement, and efficiently use the Shop Floor Control module for QAD Enterprise Applications in their respective organizations.

Course Benefits

- Reduce the amount of WIP inventory
- Increase delivery performance of work orders
- Identify capacity issues
- Effectively manage the work order costs of material, labor, and burden
- Correct administrative errors
- Effectively manage the scrap, rework, and rejects
- Provide management with feedback reports

Audience

- Members of implementation teams
- Manufacturing managers and key users
- Shop floor supervisors
- Manufacturing planners/expeditors

Prerequisites

- Shop Floor Control is taught with Work Orders.
- Basic knowledge of:
 - QAD Enterprise Applications as used in the business
 - The manufacturing industry in general

Note Read *User Guide: Introduction* if you are unfamiliar with QAD Enterprise Applications.

Course Credit and Scheduling

This course is valid for four credit hours and is typically taught in a half day.

Virtual Environment Information

This guide applies to both the Standard Edition and the Enterprise Edition of QAD Enterprise Applications. Use the hands-on exercises in this book with the latest Enterprise Edition learning environment in the 10USA > 10USACO workspace. When prompted to log in, specify *demo* for user ID and *qad* for password.

Note If you use Standard Edition, complete the exercises in the EE environment; the concepts are the same in both environments and can be applied to Standard Edition. Features that only apply to Enterprise Edition are noted in the text.

Additional Resources

If you encounter questions on QAD software that are not addressed in this book, several resources are available. The QAD corporate Web site provides product and company overviews. From the main site, you can access the QAD Learning or Support site and the QAD Document Library. Access to some portions of these sites depends on having a registered account.

<http://www.qad.com/>

QAD Learning Center

To view available training courses, locations, and materials, use the QAD Learning Center. Choose Education under the Services tab to access this resource. In the Learning Center, you can reserve a learning environment if you want to perform self-study and follow a training guide on your own.

QAD Document Library

To access release notes, user guides, training guides, and installation and conversion guides by product and release, visit the QAD Document Library. Choose Document Library under the Support tab. In the QAD Document Library, you can view HTML pages online, print specific pages, or download a PDF of an entire book.

For more information, see *QAD Manufacturing User Guide*.

To find a resource, you can use the navigation tree on the left. You can also use cross-document search, which finds all documents matching your search terms and lets you refine the search by book type, product suite or module, and date published.

QAD Support

Support also offers an array of tools depending on your company's maintenance agreement with QAD. These support resources include the Knowledgebase and QAD Forums, where you can post questions and search for topics of interest. To access the Knowledgebase or QAD Forums, choose Visit Online Support Center under the Support tab.

4 Training Guide — Shop Floor Control

Chapter 1

Introduction to Shop Floor Control

Course Overview

Course Overview

➤ Introduction to Shop Floor Control

- Business Considerations
- Set up Shop Floor Control
- Process Shop Floor Control



SFC-IN-040

Course Objectives

Course Objectives

In this class you will learn how to:

- ▶ Identify key business considerations to analyze before setting up and using Shop Floor Control
- Set up Shop Floor Control to most effectively use it in your organization
- Effectively use and manage Shop Floor Control in QAD Enterprise Applications



SFC-IN-140

Course Benefits

Shop Floor Control Benefits

- Reduce the amount of WIP inventory.
- Increase delivery performance of work orders
- Identify capacity issues.
- Effectively manage the work orders costs of material, labor and burden.
- Correct administrative errors.
- Effectively manage the scrap, rework, and rejects.
- Provide management with feedback reports.

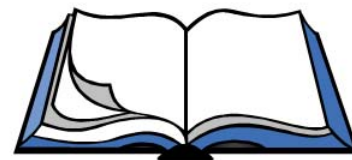


SFC-IN-145

Terminology

Terminology

- Computer-integrated manufacturing (CIM) interface
- Work in process (WIP)
- Queue
- Dispatch list
- Input/output control
- Downtime
- Reason codes
- Utilization
- Efficiency
- Capacity
- Direct/indirect labor



SFC-IN-060

Computer Integrated Manufacturing (CIM) Interface. The CIM interface takes imported transactions from an external file or system and loads them into QAD Enterprise Applications.

Work in Process (WIP). WIP indicates a product in various stages of completion throughout the plant. Stages include raw material released for manufacturing up to processed material awaiting final inspection and acceptance as finished product.

Queue. Can apply to any of the following:

- A waiting area
- The time work normally waits at a work center before the operations begin
- A holding area for calls, call quotes, and service requests before the next event takes place in their life cycle

Dispatch List. A dispatch list is a listing of all manufacturing orders ranked in relative priority. The list contains information of priority, location, quantity, and the capacity requirements of the order by operation. Dispatch lists are normally generated daily and grouped according to work center.

Input/Output Control. Input/output control is a technique for capacity control where actual output from a work center is compared with the planned output developed through capacity requirements planning (CRP). Input is also monitored to see if it corresponds to plan and is adequate for the work center to meet its capacity requirements.

Downtime. Downtime is time when a resource is scheduled for operation but is not producing for reasons such as maintenance, repair, or setup.

Reason Code. In the Sales Quotes, Repetitive, and Shop Floor Control modules, a reason code is a code that categorizes or describes a transaction. In the Product Change Control module, reason codes are user-defined and specify severity levels related to approval of change documents.

Utilization. Utilization is a measure of how well a resource is being used to produce goods or services. It compares actual time used to available time. Utilization is the ratio of time available for work/time used for work expressed as a percentage

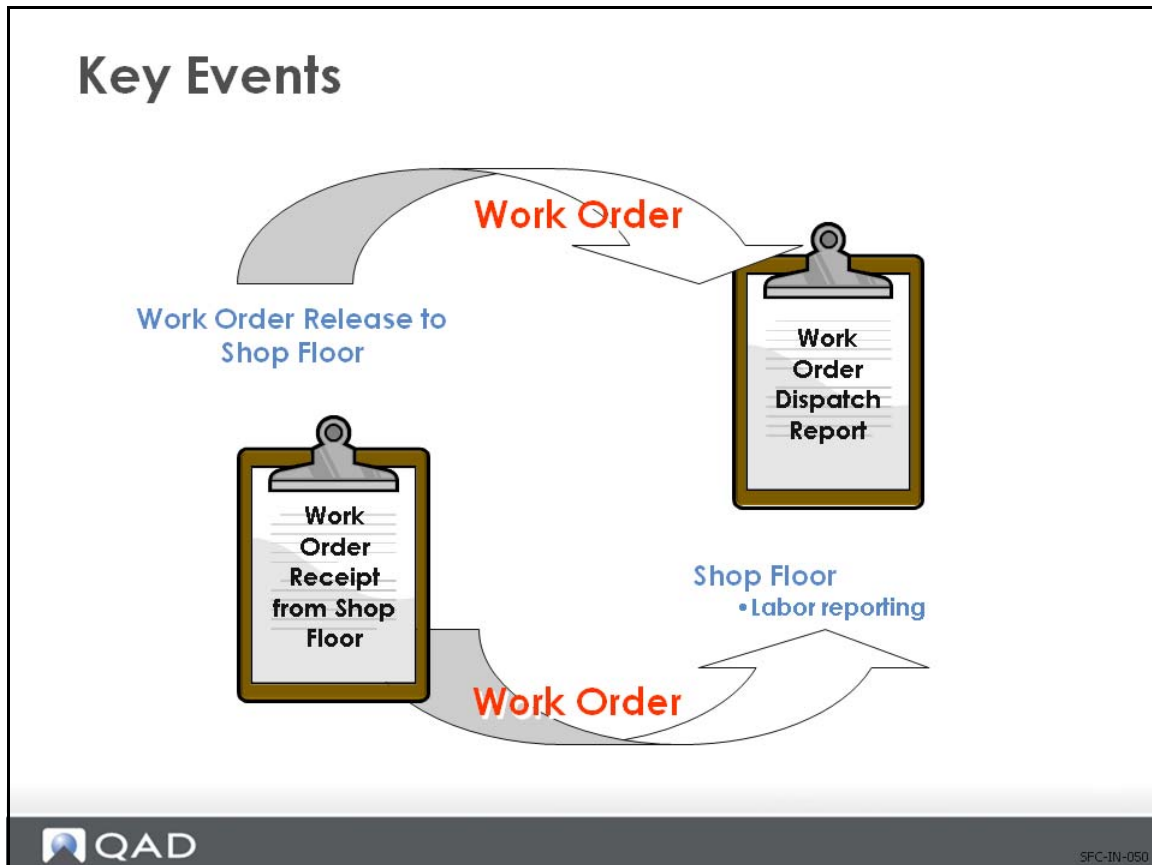
Efficiency. The relationship between the planned standard time and actual time charged to the task. Efficiency is calculated by dividing the standard hours earned by the actual direct labor hours. It is possible for efficiency to be more than 100%.

Capacity. Capacity is the maximum work load for a work center, machine, and so on.

Direct Labor. Direct labor is labor applied to the product being manufactured or utilized in the performance of the service.

Indirect Labor. Indirect labor is the work necessary to support production without being related to the production of a specific item or product (meetings, for example).

Shop Floor Control Defined



Shop Floor Control is a system for using data from the shop floor to maintain and communicate status information on shop (manufacturing) orders and work centers. (Source: *APICS Dictionary*)

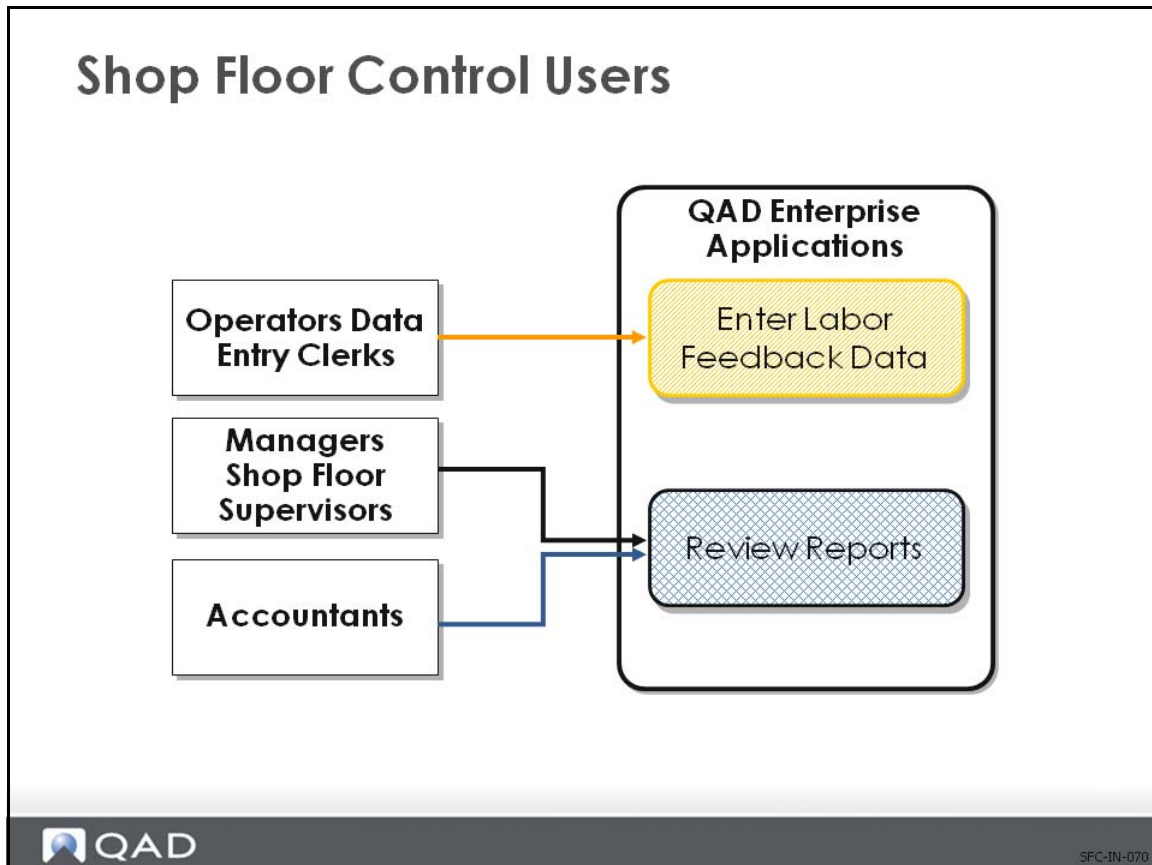
Use Shop Floor Control (SFC) when management of production priorities requires work order operations visibility and/or when labor costs are a large part of total production costs

In these types of situations, it is also likely that:

- Products have many operations or long lead times.
- Work center queues are relatively long.
- Labor costs and variances relate to products and work centers.

The SFC module works only with the Work Order module.

Shop Floor Control Users

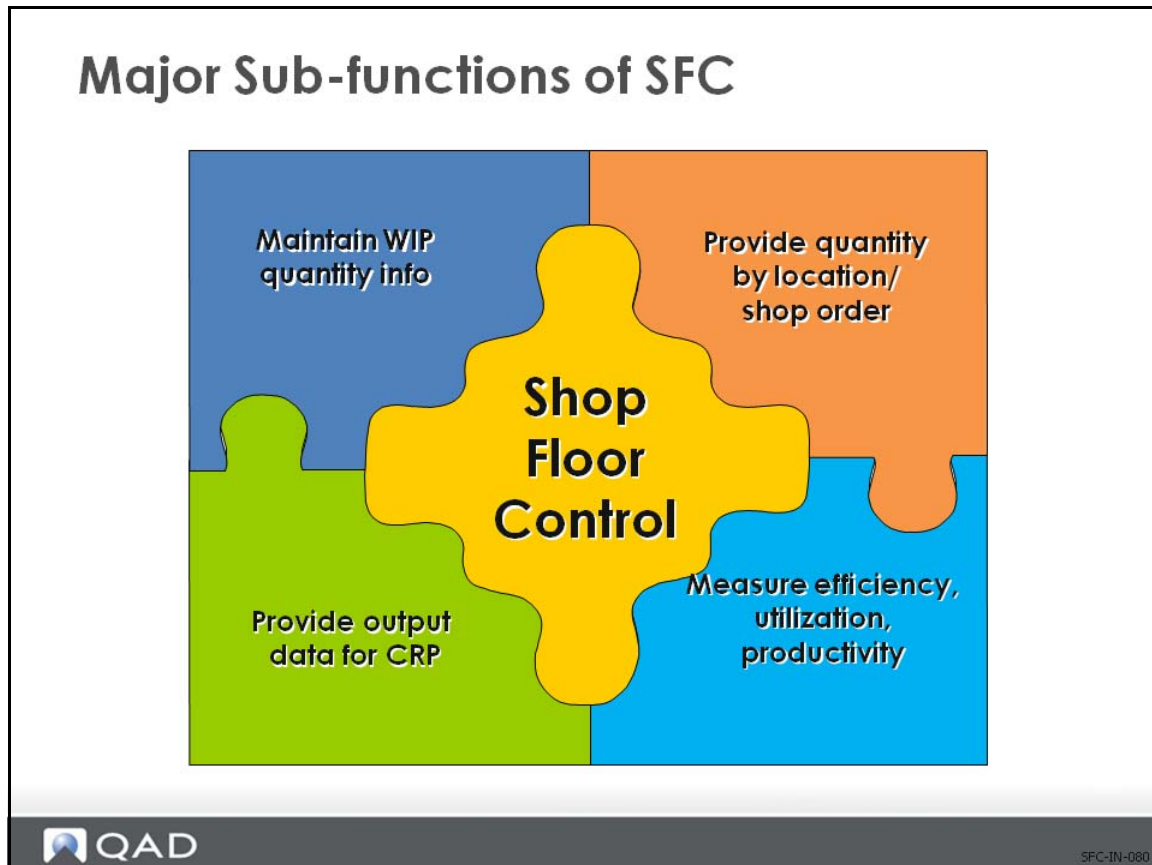


Managers, shop floor supervisors, accountants, data entry clerks, and operators use the Shop Floor Control module.

Defining specific SFC users depends upon the primary business reason for using SFC and whether it is to track:

- Labor time
- Productivity
- WIP

Major Sub-functions of SFC



- Maintain WIP quantity information
- Provide quantity by location by shop order for WIP inventory and accounting purposes
- Measure of efficiency, utilization, and productivity of the work force and machines
- Provide actual output data for capacity control purposes

(Source: APICS Dictionary)

Shop Floor Environment

Shop Floor Environment

- Evolution from paper systems to “dumb” terminals to “smart” terminals
 - Automated reading systems and distributed computers facilitate data acquisition and shop-floor decision-making
 - Faster data acquisition with fewer errors
 - CIM interfaces



SFC-IN-090

Understanding Scheduling and Operation Status

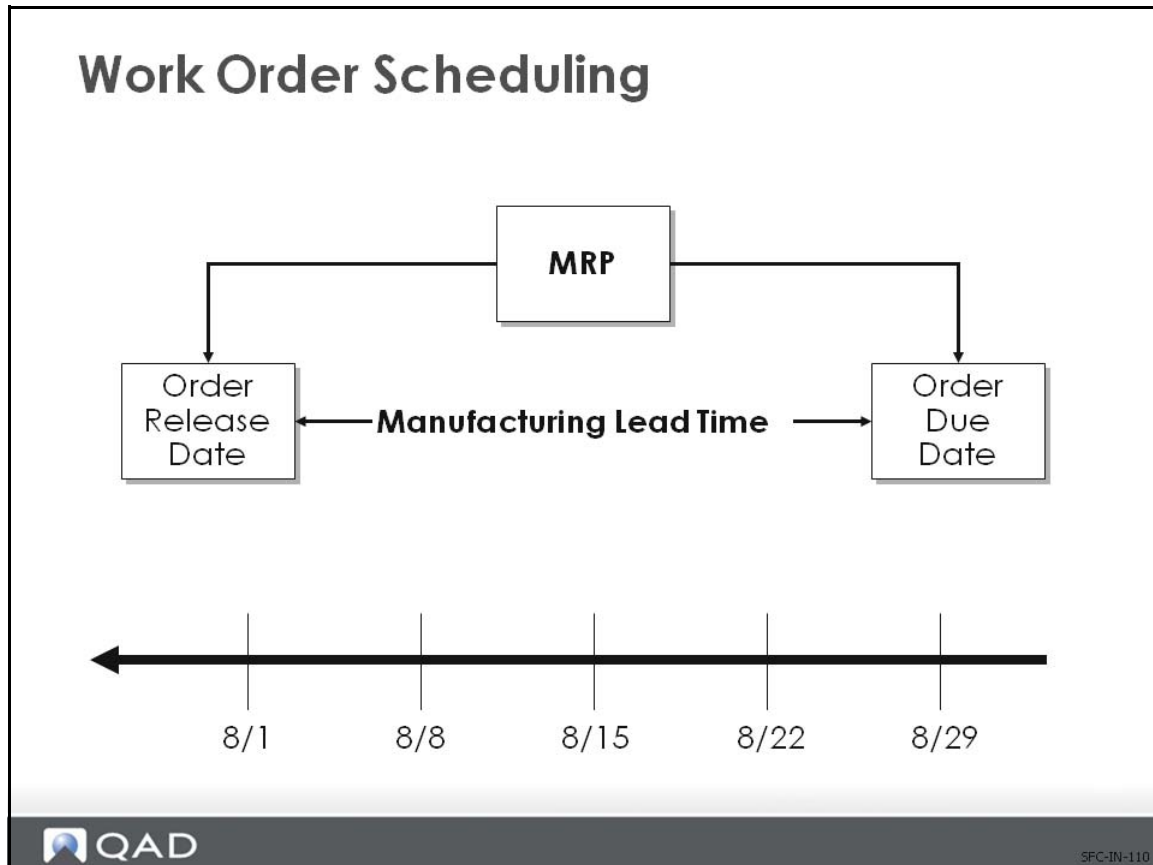
Understanding Scheduling & Operating Status

- Work Order Scheduling
- Operation Scheduling
- Operation Status



SFC-IN-100

Work Order Scheduling



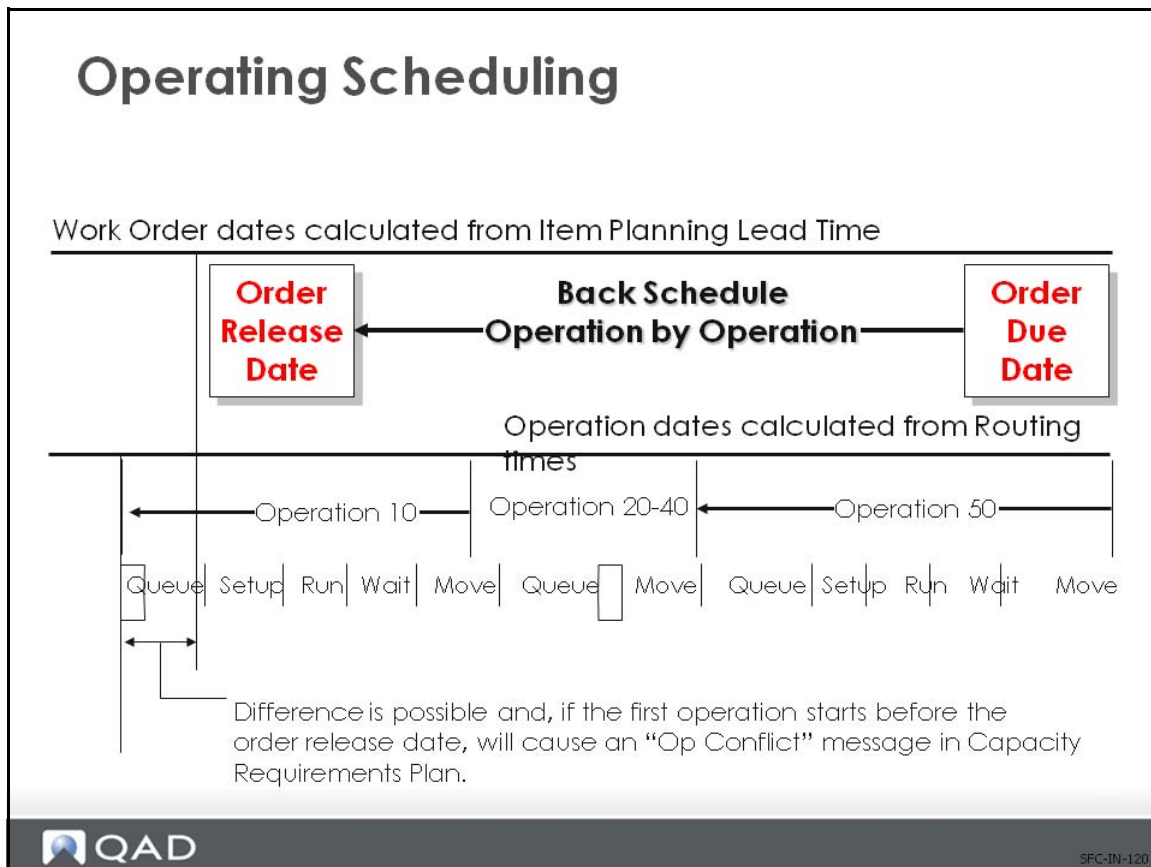
MRP automatically schedules all planned work order release and due dates.

Backward Scheduling Method

MRP automatically calculates the planned order release date from the order due date. To determine the release date, QAD Enterprise Applications uses the manufacturing lead time to offset the number of shop days required before the due date. The shop calendar is used to define the work week and identifies both shop and nonwork days. This technique is a backward scheduling method. From a planning perspective, it is critical to ensure that the lead times are accurate and that the planning horizon is sufficient in length to cover the longest lead time item.

An important element of backward scheduling is the standard order quantity specified in the Item Planning Data. This value is used during the lead time roll-up process. Thus the manufacturing lead time (displayed in Item Planning Maintenance) is based on the time required to make the standard order quantity.

Operation Scheduling



Back Scheduling

Work order operations are back scheduled from the MRP order due date. Back scheduling uses the standard operation setup, run, and move times along with work center queue and wait times. The scheduler can manually change operation start and end dates; however, these changes revert when CRP is recalculated. You can change operation time elements to increase or decrease operation times using Work Order Routing Maintenance.

Operation vs. Order Dates

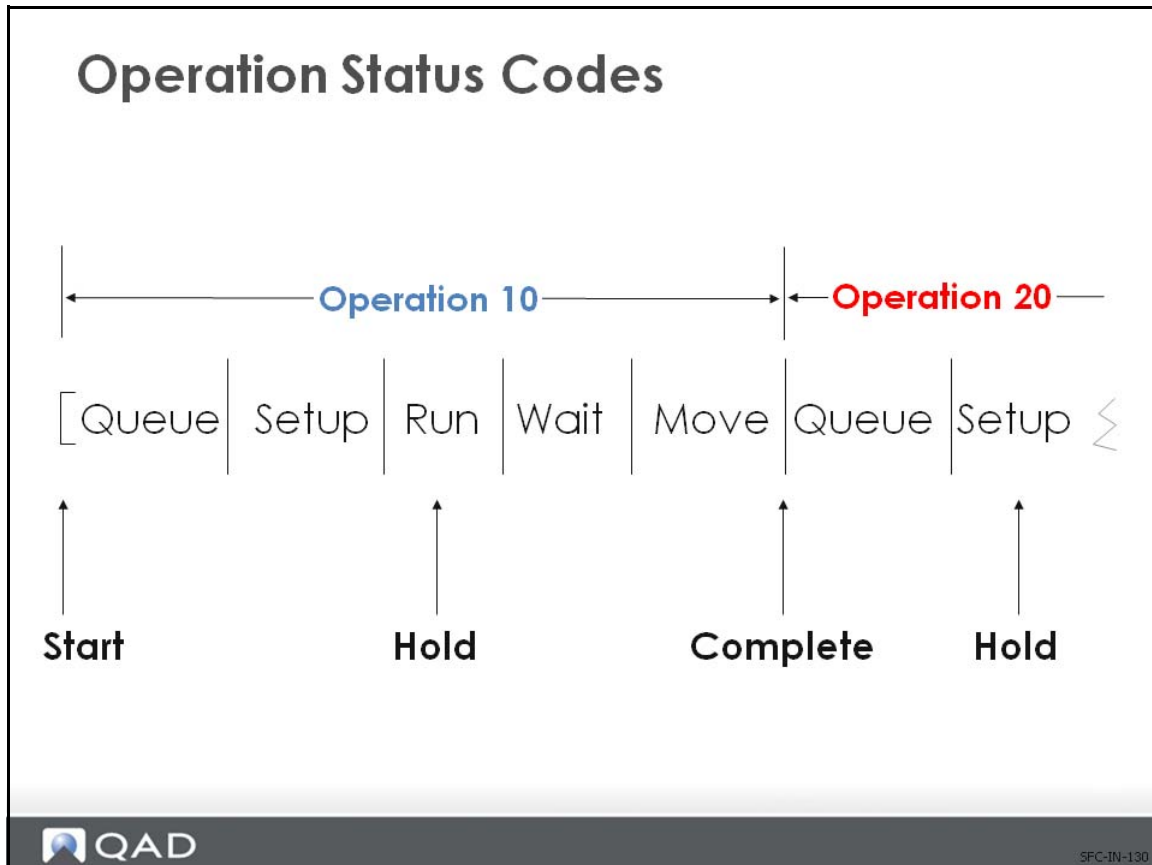
MRP creates the work order release date by back scheduling from the order due date using manufacturing lead time. Because work order operations use routing times, order quantities greater than the standard order quantity on the item master can push the first operation start date out past the order release date.

If the operation start date is before the order start date, the message "Op Conflict" (operation conflict) is generated in the Capacity Requirements Planning (CRP) recalculation report.

Overlap Operations

The scheduling algorithm considers operation overlap. Overlap specifies the number of items requiring completion before the next operation can begin. The overlap quantity can be specified in Routing Maintenance.

Operation Status Codes



Operation status codes are used to indicate the detailed status of an individual operation. The status codes can be entered manually using Work Order Routing Maintenance or automatically set when the Shop Floor Control Labor Feedback Transactions are used.

QAD Enterprise Applications identifies the following status codes:

- Q (Queue)
- S (Setup)
- R (Running)
- H (Hold)
- C (Complete)

The first operation can be set to status Queue automatically upon releasing the work order when the Move Next Operation field in Shop Floor Control is set to Yes. Succeeding operations can be set to Queue automatically when the previous operation is reported as Complete.

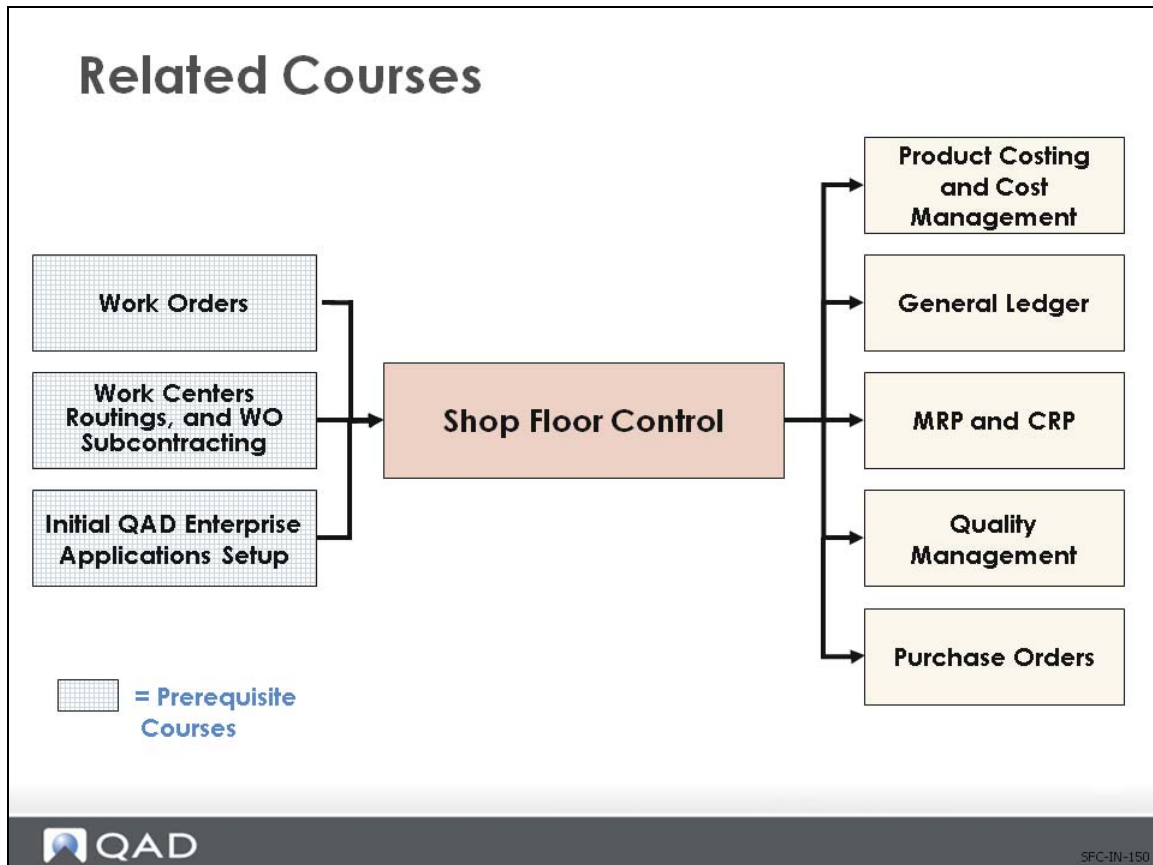
Review Questions

- 1 Does Shop Floor Control work with Repetitive or Advanced Repetitive?
- 2 Shop Floor Control tracks what key elements?
- 3 What is a queue? How does MRP use queues?

Answers to Review Questions

- 1 No, they have their own reporting transactions.
- 2 WIP, Labor, Productivity.
- 3 A queue is the workload at a work center waiting to be worked on. Queue time in hours is an element of lead time MRP uses to calculate an order start date.

Related Courses



Summary

Summary of SFC Introduction

- ✓ Key Events
- ✓ Users
- ✓ Sub-functions of Shop Floor Control
- ✓ Shop Floor Environment
- ✓ Scheduling & Operating status

Chapter 2

Business Considerations

Chapter Objective

Business Considerations

In this section you will learn how to:

- **Identify key business considerations to analyze before setting up and using Shop Floor Control**
- Set up Shop Floor Control to most effectively use it in your organization
- Effectively use and manage Shop Floor Control in QAD Enterprise Applications



SFC-BC-010

Benefits of examining key business considerations include:

- Using a subsystem to collect data enables efficient real-time collection of data
- Using subcontractors to control capacity-constrained operations
- Selecting proper reporting operations eliminates unnecessary administration
- SFC manages collection of rework, reject, and quality test data.

Overview

Business Issues

- Subsystem interface
- Subcontract work
- Reporting method
- Standard or actual
- Rejects
- Quality reporting



SFC-BC-020

There are several business issues to consider before setting up QAD Enterprise Applications Shop Floor Control (SFC). This section does not discuss all potential issues, but presents some issues to generate thought and discussion.

The key question to ask is “what is the primary business goal?” Is it:

- To track labor time?
- To track productivity?
- To track work in process (WIP)?

Subsystem Interface

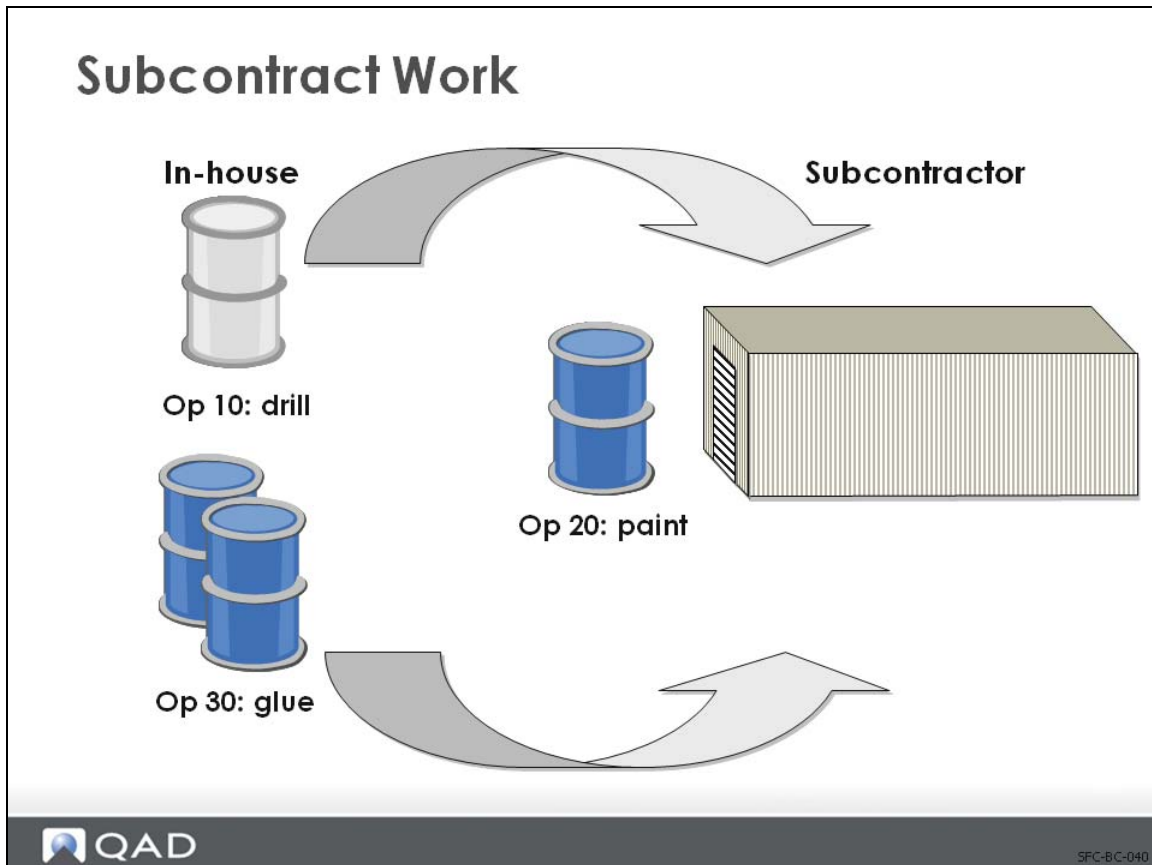
Subsystem Interface

- If a subsystem is used to collect labor feedback data:
 - Have interface issues been addressed?
 - How will data be downloaded from the subsystem into QAD Enterprise Applications?



SFC-BC-030

Subcontract Work

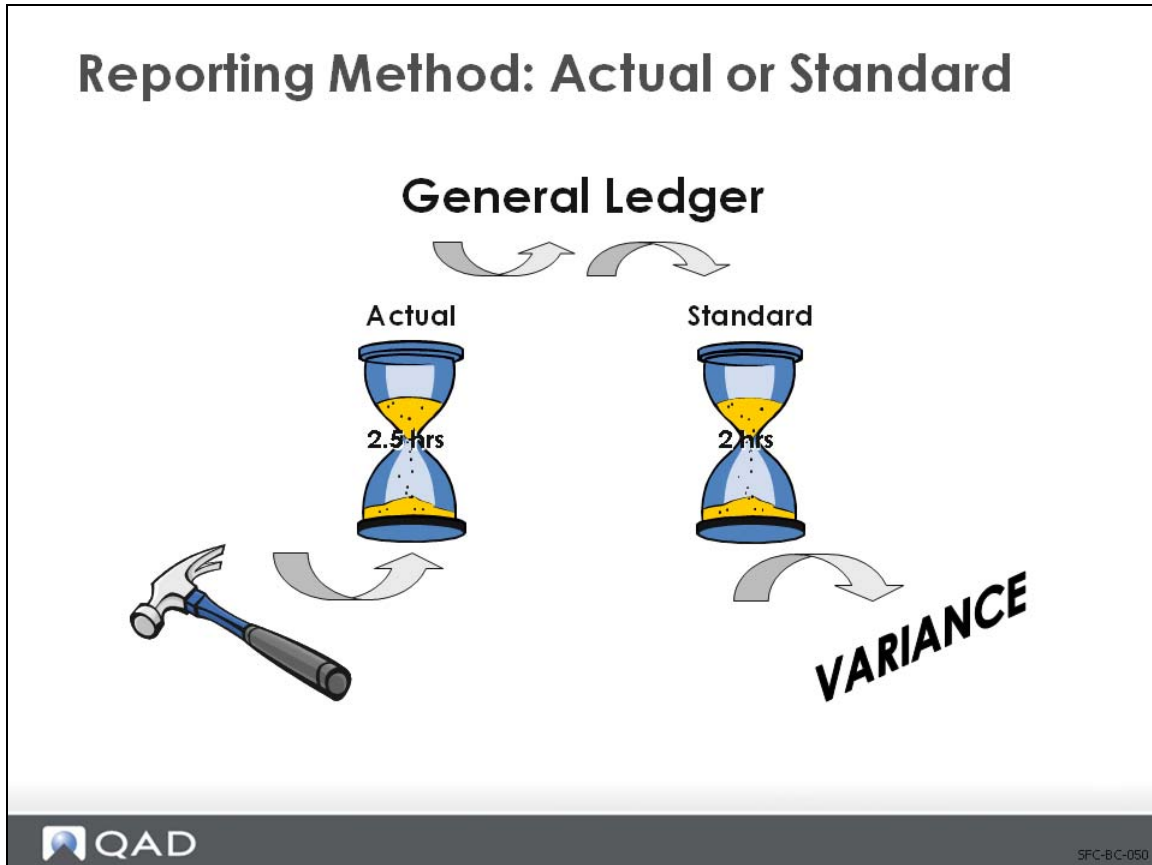


Some work order operations may need to be completed by outside suppliers/subcontractors. Subcontract operations are often used when there is insufficient manufacturing capacity or when operations require specialized equipment and machinery.

You can use the SFC module with the Work Orders (16) and Purchasing (5) modules in the subcontract cycle for closer tracking of WIP.

Subcontract items are received into WIP. The receipt updates the quantity completed at the designated work order operation and sets the operation status to C. In Purchase Order Receipts, specifying "Move to Next Operation" sets the status of the next operation to Q (queue) so it appears on the dispatch list.

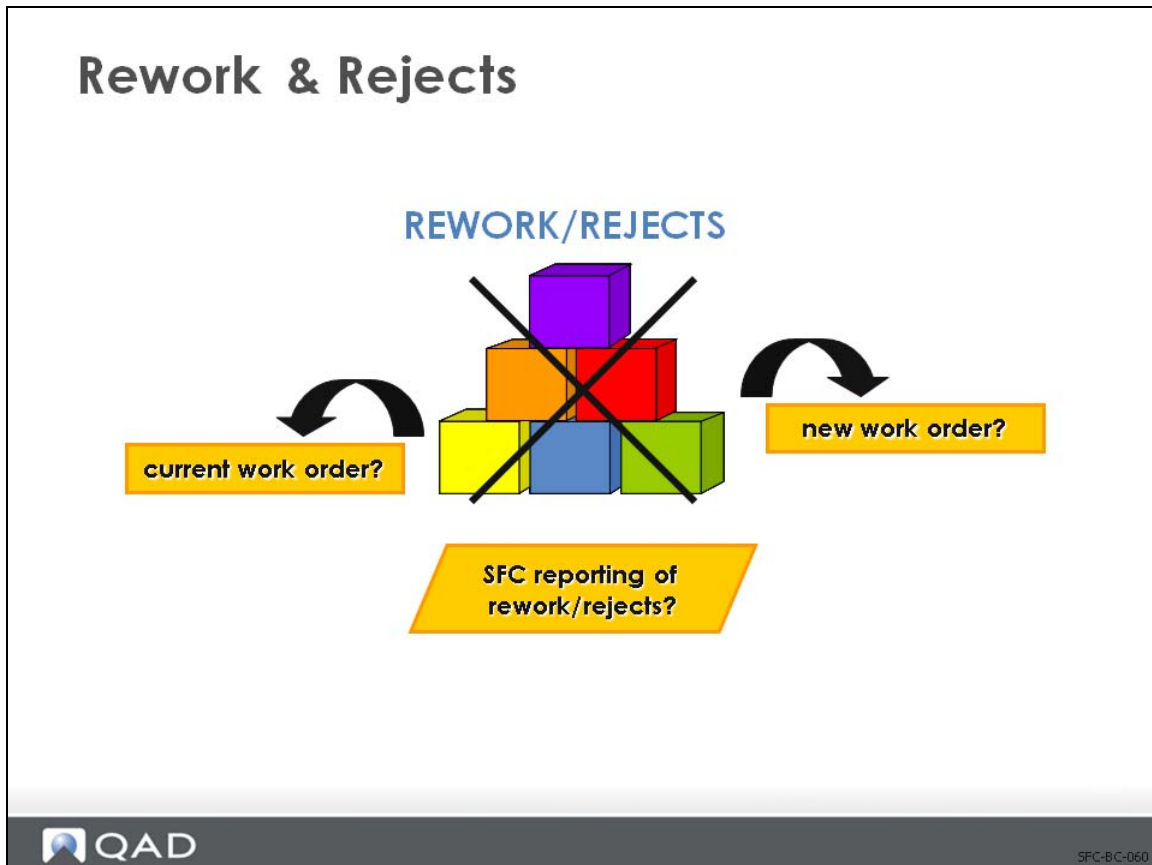
Reporting Method



Determine where labor reporting is important on the shop floor. Is it at every operation or at milestone operations?

Determine whether to use actual or standard labor reporting.

Rework and Rejects



How are costs for rework/rejects captured?

- In the original production work order?
- In a new work order, type “R”?

Rework/rejects entered in SFC are recorded for reporting purposes only and have no consequence for the general ledger (GL). Based on costing approach, determine whether to record rework/rejects in SFC

Quality Reporting


Labor Feedback by Work Order

x
Go To
Actions
Copy
Print
Preview
Attach

Work Order: wo001
ID: 2287245
Employee: 10-EMP01

Work Order: wo001 Operation: 30 PACK FOR SHIPPING	ID: 2287245 Op Status:
Document:	
Employee: 10-EMP01 Alex Erikson Department: 0550 Work Center: 1060	Pay Code: Time Ind: Hours Minutes
Shift:	Machine: 1001
Project:	

Quantity Completed: <input type="text" value="10.0"/>	Effective Date: 10/14/2010
Rejects: <input type="checkbox"/>	Operation Complete: <input checked="" type="checkbox"/>
Rework: <input type="checkbox"/>	Move to Next Operation: <input type="checkbox"/>
	Previous Ops Complete: <input checked="" type="checkbox"/>
Start Setup: <input type="text" value="00:00:00"/>	Elapsed Setup: 0.000
Elapsed/Stop Setup: <input type="text" value="00:00:00"/>	Elapsed Run: 0.000
Start Run: <input type="text" value="00:00:00"/>	
Elapsed/Stop Run: <input type="text" value="00:00:00"/>	
Comment: <input type="text"/>	
Down Time: <input type="text" value="00:00:00"/>	Down Time Reason: <input type="text"/>


SFC-BC-070

Testing procedures can be devised and routed along with the product throughout the production process. Actual test results can be entered in Labor Feedback Transactions with real-time notification of out-of-tolerance conditions.

During setup, identify tests performed as part of an operation. Use Item Specification Maintenance to attach test specifications to routing operations. This procedure is discussed in detail in the Quality Management module materials.

Review Questions

- 1 What is a subsystem in relation to Shop Floor Control?
- 2 In subcontract Shop Floor Control, where are quantities tracked or recognized?
- 3 What is the primary consideration when setting up Shop Floor Control reporting?
- 4 How is Shop Floor Control used to ensure product quality?

Answers to Review Questions

- 1 Shop floor feedback gathering applications, such as a bar-code reader, are Shop Floor Control subsystems.
- 2 Quantities are tracked or recognized when the PO receipt is processed to receive items into WIP.
- 3 When setting up reporting, the key choice is whether to book standard hours or report actual labor hours.
- 4 You can specify and report on testing procedures as part of each operation to ensure quality.

Summary

Summary of Business Consideration Topics

- Processes and procedures
- Reporting requirements
- Customer expectations
- Product configuration

Chapter 3

Set Up Shop Floor Control

Chapter Objective

Set Up Shop Floor Control

In this section you will learn how to:

- ✓ Identify key business considerations to analyze before setting up and using Shop Floor Control
- **Set up Shop Floor Control to most effectively use it in your organization**
- Effectively use and manage Shop Floor Control in QAD Enterprise Applications



SFC-SU-010

Proper setup of SFC will:

- Reduce ongoing administrative maintenance
- Make collection of labor, burden, and variances meaningfully comply with the accounting requirements of your organization
- Align departments and work centers so that capacity reports can effectively manage capacity requirements of the shop floor

Prerequisites

Prerequisites

- Shop Floor Control (SFC) requires that you:
 - Identify a released work order
 - Set up at least one employee



SFC-SU-020

Labor feedback is entered through a work order, employee, or work center/machine. In all cases, you also specify a released work order.

Labor and material movements are tracked in SFC. Set up at least one employee. If you are using SFC to record operation transactions and not labor for individual employees, create a pseudo employee and record all time, operation moves, and completions against it.

Shop Floor Control Setup



This illustration is a suggested sequence for setting up data for the Shop Floor Control module. It is based on information that flows from one type of data to another and operation prerequisites.

Review Shop Calendars

Shop Floor Control Setup



- **Shop Calendar**
- GL Accounts and Routings
- Work Order Control
- Employee Data
- Reason Codes
- Shop Floor Control

 QAD SFC-SU-040

QAD Enterprise Applications allows separate shop calendars for each site/work center/machine. Each can have its own work days and work day duration entered in Work Center Calendar Maintenance.

Enter work-center specific holidays through Work Center Calendar Excpt Maint.

Enter holidays that affect all calendars through Holiday Maintenance.

Work Center Calendar Setup

Work Center Calendar Setup

The screenshot displays two overlapping windows from the QAD software interface. The background window, titled 'Work Center Calendar Mainten...', shows a form for setting up a calendar for 'Site: 0001 mfg site' and 'Work Center: 001'. It includes a 'Machine:' field and a 'Shift: 1' label. Below this is a table with columns for 'Hours', 'Start Time', 'Productivity', and 'Pattern' for each day of the week. The foreground window, titled 'Work Center Calendar Excpt M...', shows the same site and work center information, plus a 'Date: 2/25/2016' and 'Reference: MAINT'. It also features a table for shift hours: Shift 1 (0.00), Shift 2 (-2.00), Shift 3 (0.00), and Shift 4 (0.00).

Day	Hours	Start Time	Productivity	Pattern
Sunday	0.00	00:00	100.00%	
Monday	8.00	00:00	100.00%	
Tuesday	8.00	00:00	100.00%	
Wednesday	8.00	00:00		
Thursday	8.00	00:00		
Friday	8.00	00:00		
Saturday	0.00	00:00		
Shift Total	40.00			
All Shifts	40.00			

Shift	Hours
Shift 1	0.00
Shift 2	-2.00
Shift 3	0.00
Shift 4	0.00

Review GL Accounts and Routings

Shop Floor Control Setup



- ✓ Shop Calendar
- **GL Accounts and Routings**
- Work Order Control
- Employee Data
- Reason Codes
- Shop Floor Control

 QAD SFC-SU-050

Labor reporting relies on accurate standard operation times (setup, run, and lead time) and costs (labor, burden, and subcontract) from routings definitions. For this reason, it is good to check the following:


- For each department, review the GL accounts used for posting labor-related costs in Department Maintenance. For product lines, review GL accounts in Product Line Maintenance
- For each work center, review the queue time, wait time, and machines per operation, as well as the labor and burden costs in Work Center Maintenance
- Review each routing definition in Routing Maintenance

Department Maintenance

Department Maintenance

The screenshot displays the 'Department Maintenance' form. At the top, there is a navigation bar with 'Go To', 'Actions', 'Copy', 'Print', 'Preview', and 'Attach' buttons. Below this, the 'Department: 0010' is selected, and the 'Default Sub-Account' is set to 'Default Sub-Account:'. The form contains the following fields and data:

- Department: 0010
- Default Sub-Account: [] Override:
- Default Cost Center: [] Override:
- Description: Manufacturing
- Labor Capacity: 8 (highlighted with a red box)
- Cost of Production: 5770 Mech |
- Labor: 5120 Mech mfg
- Burden: 5220 Mech mfg
- Labor Usage Variance Acct: 5140 Mech mfg
- Labor Rate Variance Acct: 5150 Mech mfg
- Burden Usage Variance: 5240 Mech mfg
- Burden Rate Variance: 5250 Mech mfg

 SFC-SU-054

Product Line Maintenance

Product Line Maintenance

Product Line Maintenance
Go To Actions Copy Print Preview Attach

Product Line: 30 Tax Class:

Product Line: 30
Description: Mfg Sub Assemblies

Taxable:


Tax Class:

Default Sub-Account: Override:

Default Cost Center: Override:

Work Order Accounts

Floor Stock Account:	1600	Mech		
Material Usage Var:	5040	Mech		
Material Rate Var:	5050	Mech		
Mix Variance:	6830	Mech		
Cost of Production:	5770	Mech		
Sub Usage Var:	5440	Mech		
Subcontract Rate Var:	5450	Mech		
Work in Process Acct:	1550	Mech		
Method Variance Acct:	6800	Mech		


SFC-SU-055

Routing Maintenance

Routing Maintenance

Routing Code: 01020 Work Center: 1060 Machine: 1001

Routing Code: 01020 Implantable Ultrasound Start Date: End Date:

Operation: 30

Standard Operation:

Work Center: 1060 Packaging -Ultra

Machine: 1001

Description: PACK FOR SHIPPING

Machines per Operation: 1 Milestone Operation:

Overlap Units: 0 Subcontract LT: 0

Queue Time: 0.25 Setup Crew: 1.00

Wait Time: 0.25 Run Crew: 4.00

Setup Time: 0.5 Tool Code:

Run Time: 5.0 Supplier:

Move Time: 0.0 Inventory Value: 0.00

Start Date:

End Date:

Yield Percent: 100.00% Subcontract Cost: 0.00

Comments:

How long per unit?

Click here to add comments

Review Work Order Control

Shop Floor Control Setup

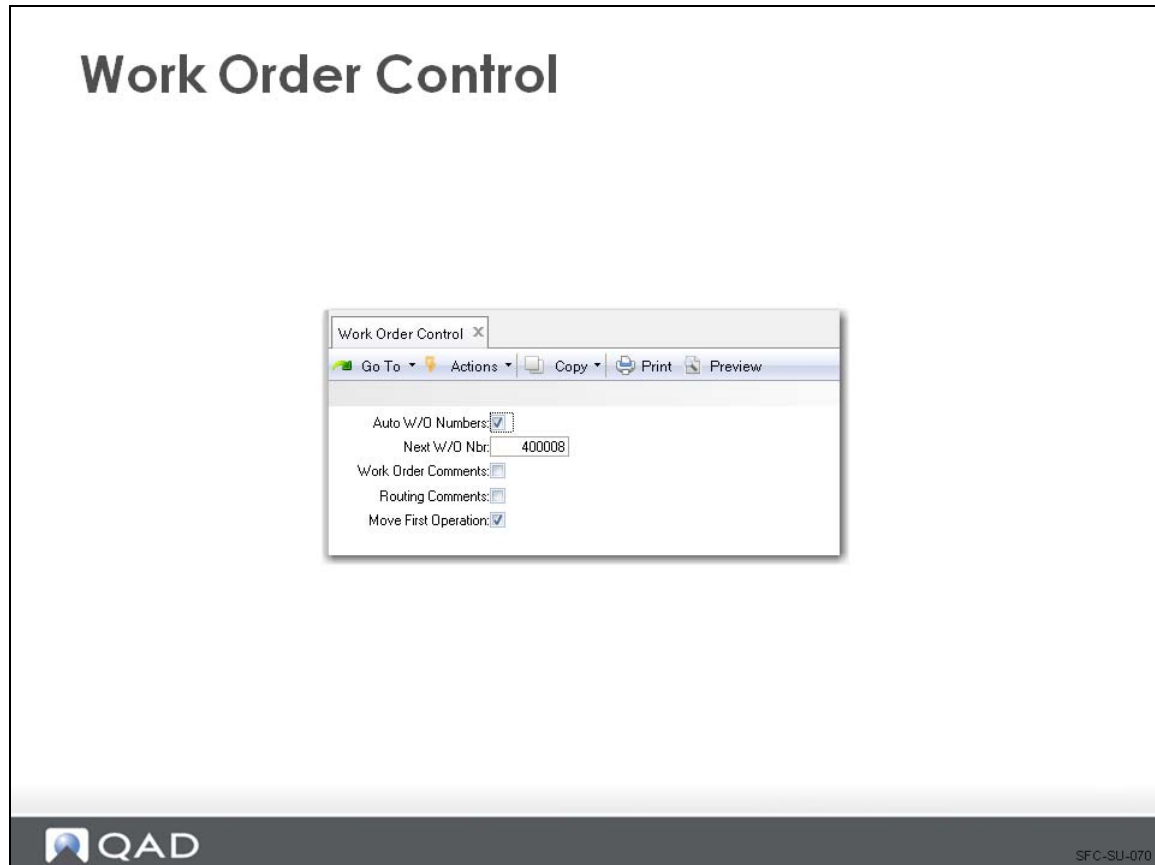


- ✓ Shop Calendar
- ✓ GL Accounts and Routings
- **Work Order Control**
- Employee Data
- Reason Codes
- Shop Floor Control

 QAD SFC-SU-060

Note In QAD Enterprise Edition, financial control settings are updated separately from operational settings in Work Order Accounting Control. This functionality supports detailed segregation of duties assigned with role-based security. In QAD Standard Edition, all control settings are updated in Work Order Control.

Work Order Control



Auto W/O Numbers. Indicates if the system assigns work order numbers automatically. If unchecked, the user must assign work order numbers manually.

Next W/O Number. If Auto Number is checked, determines the next system assigned number.

Work Order Comments. Indicates whether comments are normally entered for each work order. The setting of this field does not control whether comments can be entered; instead it sets the default for the Comments field during work order maintenance.

Routing Comments. Indicates whether comments are normally entered for each routing operation. The setting of this field does not control whether comments can be entered; instead it sets the default for the Comments field during routing maintenance.

Move First Operation. Indicates whether the work order release function sets the status of the first operation to Queue.

- Yes sets the status for the first operation to Queue upon work order release.
- Sometimes this action is inappropriate. For example, if a lengthy picking effort is required, the work order often is not ready as soon as it is released. In that case, set this field to No. Once the picking is complete, use the Operation Move function to change the status to Q (Queue).

Work Order Accounting Control

Work Order Accounting Control



SFC-SU-075

Post Variances at SFC. Indicates whether variances are only calculated and posted at the time of work order receipt.

- Yes processes variances when labor is entered in SFC. No holds labor, burden, and usage variances until work order receipt.
- Setting this field to No reduces the number of GL transactions created when there are many shop floor labor transactions processed before material receipts are recorded.
- If you have long run times or if you are using SFC employee efficiency reports, set this field to No, suppressing variance calculations until finished product is received

Quality Complete Method. Specify the default method for Work Order Accounting Close to use to calculate the base process quantity complete for a joint order set. Valid values are SUM, SUMC, MAX, MIN, and ORD. You cannot leave this field blank.

Enter Employee Data



Shop Floor Control Setup

- ✓ Shop Calendar
- ✓ GL Accounts and Routings
- ✓ Work Order Control
- **Employee Data**
- Reason Codes
- Shop Floor Control

QAD SFC-SU-080

Employee Maintenance establishes the default department, project, and work location for employee labor reporting. You can override these defaults on any labor feedback transaction.

To use SFC, at least one employee record is required.

- If you are using SFC to record operation transactions and not labor for individual employees, create a pseudo employee and record all time, operation moves, and completions against it.
- If you are recording labor by employee, enter the appropriate information in Employee Maintenance. Be sure to assign the correct department and ensure that the Employment Status is set to Active.

Employee View

Employee - View

Employee View X
Go To Actions Tools Attach Print Preview


Attachments

Employee Code: Active

Name:

Employee Business Relation

<p>External Employee <input type="checkbox"/></p> <p>Supplier Code <input type="text"/></p> <p>Registration Currency <input type="text"/></p>	<p>User <input checked="" type="checkbox"/></p> <p>Login <input type="text" value="UserA"/></p>
<p>Start Date <input type="text" value="01/05/2007"/></p> <p>End Date <input type="text"/></p>	<p>Job Title <input type="text" value="Engineer"/></p> <p>Department Code <input type="text" value="0100"/></p> <p>Default Project <input type="text"/></p>


SFC-SU-090

Employment Status. A code identifying the employment status of this employee.

Check that the Employment Status field is set to AC (active).

Department. The department in which this employee normally works. This department links labor and downtime report for this employee to the correct GL accounts

This field is a default useful for reviewing employees by department

Define Reason Codes

Shop Floor Control Setup



- ✓ Shop Calendar
- ✓ GL Accounts and Routings
- ✓ Work Order Control
- ✓ Employee Data
- **Reason Codes**
- Shop Floor Control

 SFC-SU-100

In SFC, reason codes are used to record and report down time. The following screens use reason codes:

- Labor Feedback – Down Time, Rejects, and Rework fields
- Non-Productive Labor

Reason Codes Maintenance

Reason Codes Maintenance

Reason Type: DOWNTIME
Reason Code: 1
Description: PREVENTATIVE MAINTENANCE

QAD SFC-SU-110

Set up reason codes in Reason Codes Maintenance. For example, possible codes for reason type DOWN include:

- 1: Preventive maintenance
- 2: Company-wide meeting
- 3: Electrical problems

Set Up Shop Floor Control

Shop Floor Control Setup



- ✓ Shop Calendar
- ✓ GL Accounts and Routings
- ✓ Work Order Control
- ✓ Employee Data
- ✓ Reason Codes
- **Shop Floor Control**

 QAD SFC-SU-120

Settings in Shop Floor Control determine the format of labor feedback data.

Shop Floor Control

Shop Floor Control

Shop Floor Control x

Go To Actions Copy Print Preview

Move Next Operation:

Time Indicator: D

Standard Hours: 8.000

Standard Period: D

Back Next

QAD SFC-SU-130

Move Next Operation. If Yes, when an operation is reported as completed, the system automatically moves the work order to the next operation with status of Queue.

Time Indicator. Identifies how labor hours are normally reported. If set to D, labor time is entered in decimal hours; if set to H, labor time is entered in hours:minutes:seconds.

If you are using a shop floor data collection system, set this field based on the type of output that system produces

Standard Hours. This field shows the number of hours per period. Used to determine when labor hours represent overtime.

Standard Period. A code identifying the standard work period. The period can be day (D) or week (W).

Summary

Summary of Shop Floor Control Setup

- ✓ Shop Calendar
- ✓ GL Accounts and Routings
- ✓ Work Order Control
- ✓ Employee Data
- ✓ Reason Codes
- ✓ Shop Floor Control

Exercise: Shop Floor Control Setup

- 1 Using Domain Calendar Maintenance (36.2.4.1), verify a default shop calendar of five eight-hour days, Monday through Friday.
- 2 Using Department Maintenance (14.1), review the accounts codes for labor reporting defined for the Manufacturing department (0010).
- 3 Using Product Line Inquiry (1.2.2) for product line 10, review the work order accounts used for labor reporting.
- 4 Using Work Order Control (16.24), configure these settings:
 - Set Auto W/O Numbers to Yes.
 - Note the value of the Next W/O Number.
 - Set both comments fields to No.
 - Set Move First Operation to Yes.
- 5 Using Work Order Accounting Control (36.9.11), verify that Post Variances at SFC is set to Yes.
- 6 Using Employee View (36.1.7.3), review the record for Employee 10-EMP02. This record is used for all labor reporting.
- 7 Using Reason Codes Maintenance (36.2.17), add the following codes:

Reason Type	Reason Code	Description
Downtime	Mat 1	Out of Material
Downtime	Mat 2	Material Out of Spec
Downtime	Mach 1	Machine PM
Downtime	Mach 2	Machine Down
Reject	Size	Out of Spec
Reject	Config	Out of Spec
Rework	Pack	Repack unit

- 8 Using Work Center Maintenance (14.5), verify the following settings for Work Center 1000:

Field	Data
Machine Bdn Rate	0.05
Setup Rate	5.00
Labor Rate	4.50
Labor Burden Rate	0.02
Labor Burden%	0.01%

- 9 Using Shop Floor Control (16.20.24), verify the following settings:

Field	Data
Move Next Operation	Yes
Time Indicator	D
Standard Hours	8
Standard Period	D

Exercise: Operation Scheduling

This exercise demonstrates the difference between work order due dates based on system-calculated lead times based on standard order quantity and operation scheduling based on actual work order quantities. It also demonstrates forward scheduling.

- 1 Using Work Order Maintenance (16.1), create a work order for item 02003 at site 10-200 for a quantity of 100. Let the release and due dates default.
 - Either let the system assign the work order number or manually assign a work order number such as Test 01 so you can easily find your work order later.
 - Set the work order status to “E” - exploded.
 - Note the system scheduled due date.
- 2 Using Work Order Routing Maintenance (16.13.13), route your work order. Note the due date for operation 30 is the same as the order due date.
- 3 Using Work Order Maintenance (16.1), create another work order for item 02003 at site 10-200 for a quantity of 500. Let the release and due dates default.
 - Either let the system assign the work order number or manually assign a work order number such as Test 02 so that you can easily find your work order later.
 - Set the work order status to E (exploded).
 - Note the system scheduled due date.
- 4 Using Work Order Routing Maintenance (16.13.13), check the start and due dates for all operations on your work order. Why are the start dates before the release date?
- 5 Using Work Order Maintenance (16.1), create another work order for item 02003 at site 10-200 for a quantity of 500.
 - Either let the system assign the work order number or manually assign a work order number such as Test 03 so that you can easily find your work order later.
 - Set the work order status to E (exploded).
 - Let the release default to today’s date and delete the due date (make the due date field blank). This forces the system to forward schedule the order from the release date.
 - Cycle through all the work order screens and note the system scheduled due date.
- 6 Using Work Order Routing Maintenance (16.13.13), check the start and due dates for all operations on your work order. Using forward scheduling, you avoid the conflict of operation start dates before the release date.

Chapter 4

Use Shop Floor Control

Chapter Objective

Use Shop Floor Control

In this section you will learn how to:

- ✓ Identify key business considerations to analyze before setting up and using Shop Floor Control
- ✓ Set up Shop Floor Control to most effectively use it in QAD Enterprise Applications
- **Effectively use and manage Shop Floor Control in QAD Enterprise Applications**




SFC-USE-010

The benefits of the use of Shop Floor Control include:


- Reducing the amount of WIP inventory
- Increasing delivery performance of work orders
- Identifying capacity issues
- Managing work order costs of material, labor, and burden
- Correcting administrative errors
- Managing scrap, rework, and rejects
- Providing feedback reports

Shop Floor Control Process

Shop Floor Control Process




- Dispatch Report
- Enter Labor Transactions
- Process Move/Complete Transactions
- Process Scrap Transaction
- Review Reports

 QAD SFC-USE-020


When processing work orders in Shop Floor Control, use Work Order Routing Browse to quickly view work order details such as item number, operation, description, work center, machine, quantity ordered, quantity complete, and start date.

Dispatch Report

Shop Floor Control Process



- **Dispatch Report**
- Enter Labor Transactions
- Process Move/Complete Transactions
- Process Scrap Transaction
- Review Reports

 QAD SFC-USE-022

Review Dispatch Report

Dispatch Report

- Look Ahead report
 - What work is coming to the work center?
 - What's the workload?



SFC-USE-023

The Dispatch Report identifies work orders arriving at a work center, as well as those work orders already there. This information is useful for determining the anticipated load of the work center. It assists the dispatcher or production supervisor in establishing priorities for the orders. These lists are printed daily and are used to schedule work.

In QAD Enterprise Applications, the dispatch report includes all scheduled operations for a work center or machine. The operations are listed in ascending sequence of scheduled start date. The report usually includes all past due operations and operations due to begin work within a user-specified time period. The specified period is established in the Window Days option before running the Work Order Dispatch Report.

Work Order Dispatch Report

Work Order Dispatch Report

Site: 10-100 To: 10-100 Work Center: 1000 (1)

Site: 10-100 To: 10-100
Work Center: 1000 To:

Window Days: 3

Page Break on Work Center:

Work Order Dispatch Report 10/14/10 21
QAD 10USA P

Work Center: 1000 Machine: 1001 General Assembly-Ultra Site: 10-100

Item Number	Work Order	Operation	Start	Due Date	Std Setup	Std Run Time	Open Qty	St
01010	wo001	10	09/20/10	10/07/10	5.0	100.0	10.0	
Medical Ultrasound	ID: 2287245	ASSEMBLE COMPONENTS						

Work Order Dispatch Report 10/14/10 21
QAD 10USA P

Work Center: 1050 Machine: 1001 Product Test-Ultra Site: 10-100

Item Number	Work Order	Operation	Start	Due Date	Std Setup	Std Run Time	Open Qty	St
01010	wo001	20	10/07/10	10/18/10	2.0	50.0	10.0	
Medical Ultrasound	ID: 2287245	TEST FINISHED UNIT						

Work Order Dispatch Report 10/14/10 21
QAD 10USA P

Work Center: 1060 Machine: 1001 Packaging -Ultra Site: 10-100

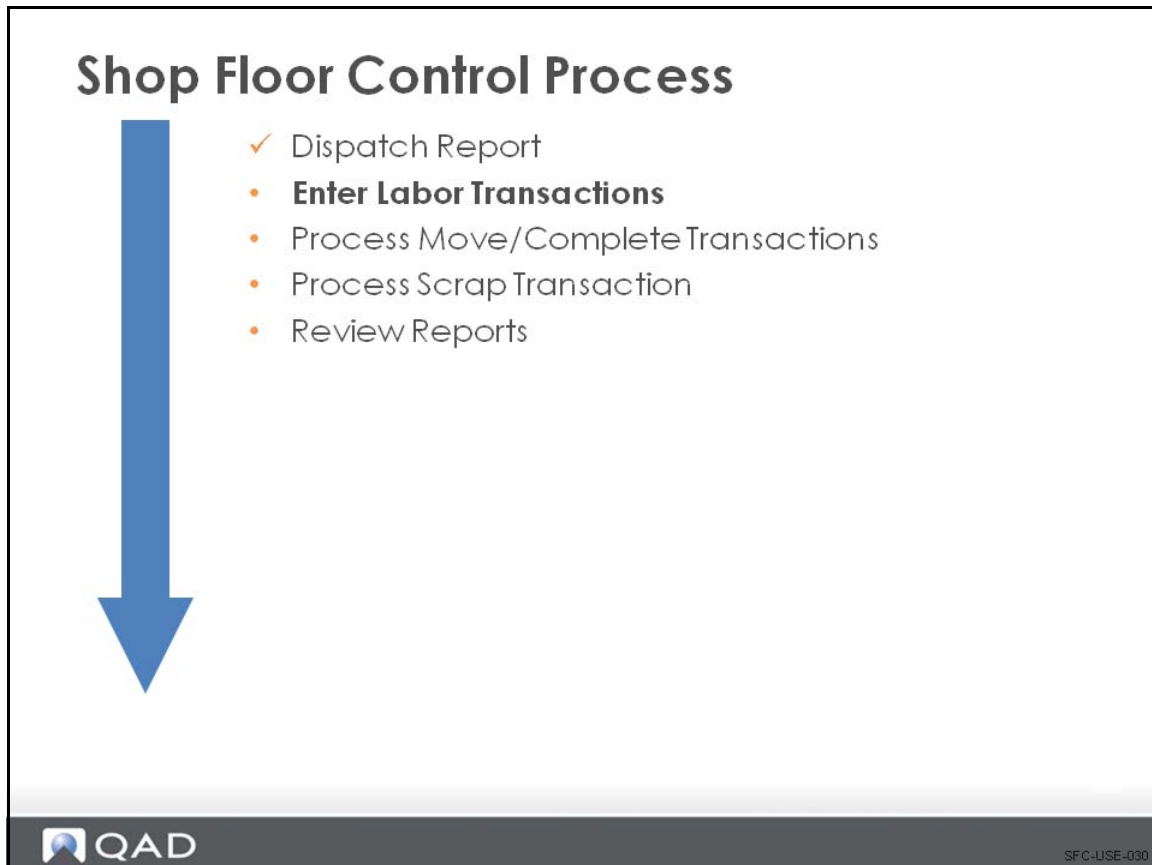
Item Number	Work Order	Operation	Start	Due Date	Std Setup	Std Run Time	Open Qty	St
01010	wo001	30	10/18/10	10/20/10	0.5	20.0	10.0	
Medical Ultrasound	ID: 2287245	PACK FOR SHIPPING						

QAD SFC-USE-024

The work order dispatch report shows shop floor personnel the work in their work center and coming to their work center. For each operation in the work center, it shows the quantity of items on each order and the setup and run hours associated with that operation. It is a valuable planning tool for shop floor supervisors.

The work order dispatch report is organized by work center within site. It has user-defined Window Days, which is the number of days into the future the report looks. Within the work center, the report is sorted by item and operation.

Enter Labor Transactions



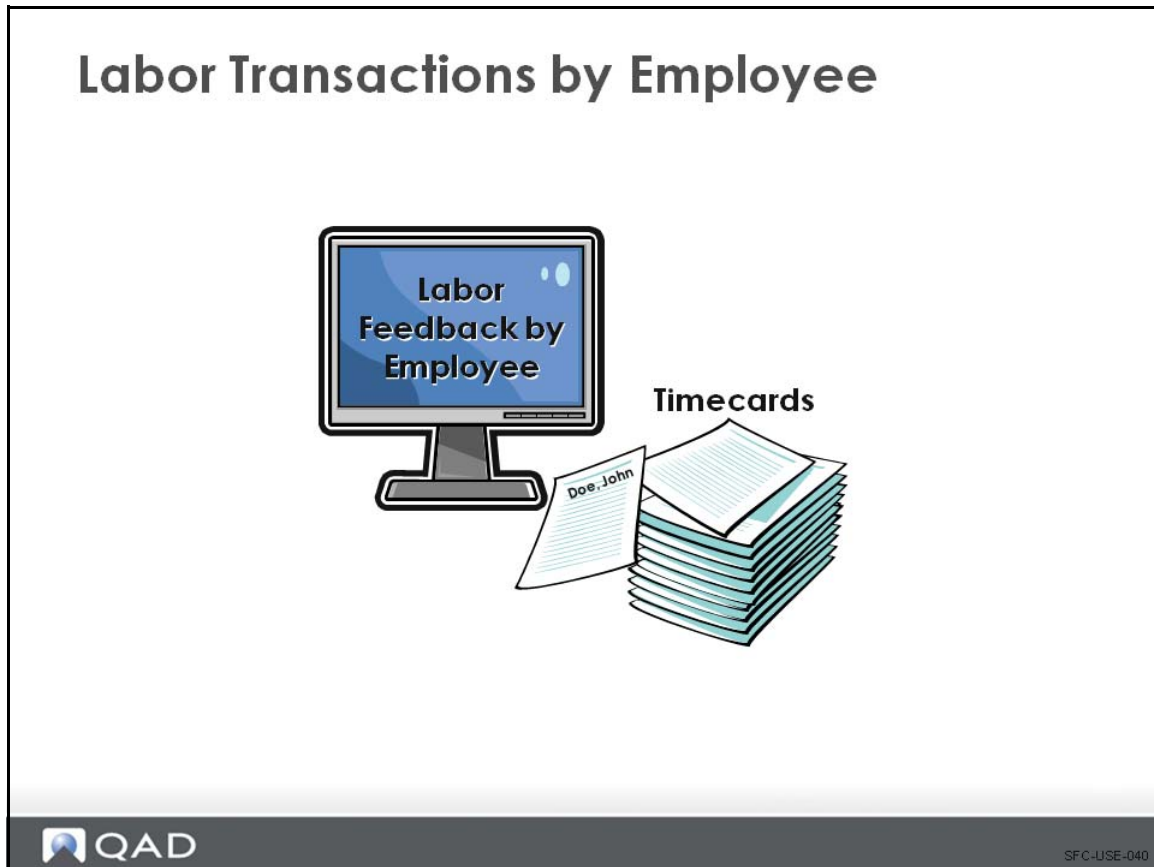
Labor transactions report the movement of an order from one operation to another and record the quantity completed and rejected at each operation.

Labor reporting relies on accurate standard operation times and costs from the routing definitions.

Labor reporting is done by:

- Employee
- Work order
- Work center

Labor Transactions by Employee



Each of the three labor feedback transaction screens—by work order, by employee, and by work center—has the same fields and collects the same information, but in different order. Your work flow or personal preference can determine which screen you use for data entry.

Labor Feedback Transactions

Labor Feedback by Employee

Go To Actions Copy Print Preview Attach


Employee: 10-EMP01 Dept: 0010 Pay Code:

Employee: 10-EMP01 Alex Erikson Dept: 0010	Shift: Pay Code:
Document:	
Work Order: wo001 Work Center: 1000 ID: 2287245 Machine: Operation: 30 PACK FOR SHIPPING	Project: Time Ind: Hours Minutes Operation Status:

Quantity Completed: Effective Date: 10/14/2010

Rejects Operation Complete
 Rework Move to Next Operation
 Previous Ops Complete

Start Setup: Elapsed Setup: 0.000
 Elapsed/Stop Setup:
 Start Run: Elapsed Run: 0.000
 Elapsed/Stop Run:
 Comment:
 Down Time: Down Time Reason:


SFC-USE-050

Use Labor Feedback by Work Order, by Employee, or by Work Center to enter actual labor. By default, this reports an operation as completed and moves the work order to the next operation on the routing. All three Labor Feedback screens contain the same information, only the order of the fields is different for data entry purposes.

Employee. At least one employee code is required. It is not necessary for this code to correspond to an actual person. You can set up a single employee code and use it only for reporting purposes.

Department. The work order routing determines the default department code. The system creates GL transactions using the accounts associated with the department code.

Work Center. The work order routing also determines the default work center code. The system uses the work center setup, run, and burden rates when it calculates costs and creates GL transactions.

Project. A project field is available for expense tracking by project.

Operation Complete, Move Next Operation, Previous Ops Complete. An operation is set to Complete status automatically during labor feedback transactions. This status change occurs when the work order quantity is finished at the current operation and the Move to Next Operation and Operation Complete fields are set to Yes. The defaults are Yes for Operation Complete, Move to Next Operation, and Previous Ops Complete. The Move to Next Operation default setting can be changed in Shop Floor Control.

Quantity Completed. The quantity completed is the number of good units produced. It is used in calculations for variances, work center efficiency, and GL transactions.

Rejects. The quantity rejected is the number of nonconforming units produced that cannot be moved to the next operation. It is not used for calculating variances, work center efficiency, or GL transactions.

If the quantity rejected is going to reduce the expected receipt quantity significantly, then use Work Order Maintenance to reduce the order quantity to the expected quantity. This enables MRP to review and plan for this shortfall. Burden is applied to all down-time hours entered here. This down time is not associated with the work order in QAD Enterprise Applications.


Rework. The quantity reworked is the number of unacceptable units requiring additional processing. It is not necessary that all of these result in good units that can be moved to the next operation. Like the quantity rejected, it is not used for calculating variances, work center efficiency, or GL transactions.

Start Setup, Elapsed/Stop Setup, Start Run, Elapsed/Stop Run. When entering labor time, enter either the start and stop times or the elapsed labor time. Report time in either decimal or in hour/mins. format. The format can be specified on each labor reporting transaction; however, a default is set up in Shop Floor Control.


Down Time. Non-productive labor can be entered with the reason code assigned to this down time. Down time is entered in elapsed time.

Enter Non-Productive Labor Feedback Transactions


Non-Productive Labor Transaction




Enter staff meeting as...



PAYROLL DEPT.



"Non-productive" labor


SFC-USE-060

Use Non-Productive Labor Feedback to enter indirect labor time for such activities as preventive maintenance, machine breakdown, waiting for work, repairing tools, cleaning, and meetings.

Indirect labor transactions are important if SFC labor reporting is used for payroll purposes — when it is necessary to account for all of an employee's time—and for efficiency and utilization reports.

Non-Productive Labor Feedback

Non-Productive Labor Feedback

Non-Productive Labor Feedback X
Go To Actions Copy Print Preview Attach

Employee: 10-EMP01 Pay Code: Project:

Employee: 10-EMP01 Alex Erikson
Shift:

Pay Code: Project:
Effective Date: 10/14/2010

Work Center: 1000 Machine:
Site: 10-100 Dept: 0100 Design Engineering


Reason: 10
Type: Down
Time Ind: Hours Minutes

Start Down: 00:00:00
Elapsed/Stop Down: 12:50:00

Elapsed Down: 12.833

Comment: Correct Product Defect

Please confirm update


SFC-USE-070

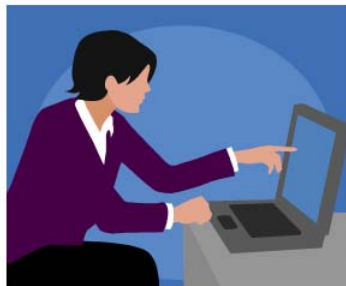
Reason. Non-productive labor feedback transactions reference reason codes set up in Reason Codes Maintenance with a reason type of Down. Shop floor reports use this information to calculate utilization and efficiency.

Error Correction

Error Correction

Labor Feedback Transaction

- Qty Completed = 6
- Operation Complete = Yes



SFC-USE-080

Operations that have been processed as complete in Labor Feedback transactions cannot be directly modified or deleted. However, you can re-enter a second transaction with a negative value to reverse the effect of the incorrect transaction.

Error Correction

Work Order Routing Maintenance

- Change Operation Status from "C" to "Q"



Labor Feedback Transaction

- Qty Completed = - 4



SFC-USE-090

To make a correction:

- If the work order is still open, change the status of the operation from Complete to Queue in Work Order Routing Maintenance.
- In Labor Feedback, enter a negative quantity or negative elapsed time, depending upon the error, to reverse the effect of an incorrect transaction

If the work order is closed, reopen the work order in Work Order Maintenance first, then follow these steps.

Exercise: Labor Transactions Reporting

Create Inventory

Note Direct the output for all reports to Page.

- 1 Use Receipts Unplanned (3.9) to receive the following components into location 020, site 10-200:
 - 10 rolls of item 62050
 - 10000 EA of item 90031
- 2 Use Inventory Detail by Item Browse (3.2) to view your on-hand inventory balances of the two items.

Create and Release Work Orders

- 1 Use Work Order Maintenance (16.1) to create the following work orders at site 10-200:
 - Two work orders for item 02003, both for 100 units and due this coming Friday.
 - Two work orders for item 02003, both for 100 units and due a week from this coming Friday.
 - A work order for 100 units of item 02003, due two weeks from this coming Friday.
- 2 Use Work Order Browse (16.2) to review your orders.
- 3 Use Multiple WO Release and Print (16.7) to release your orders.
Select your orders by entering today's date in the first Release Date field and leaving the second Release Date field blank. Note the status field defaults to F - firm planned, so that orders with status E are not selected.

Review Work Orders

- 1 Use Work Order Browse (16.2) to review your orders. Note the status change.
- 2 Use Work Order Dispatch Report (16.18) to view your work orders for site 10-200.
 - Set the window days to cover the periods in which your work orders are scheduled.
 - Note the Operation Status of each operation of each order.

Report Labor

The following activities use the Labor Feedback by Work Order function. You could also use either Labor Feedback by Work Center, or Labor Feedback by Employee. All these functions work the same and all require a work order number, an employee code, and a work center as the key fields.

Report Labor at Operation 10

- 1 In Labor Feedback by Work Order (16.20.1), use the lookup icon to find your first order due this Friday.
- 2 Enter operation 10.
- 3 Use employee 10-EMP02.
- 4 Note the Quantity Completed defaults to the order quantity.
Note This function does not show the standard times for the operations. To see the standard times for any operation, use Work Order Routing Maintenance (16.13.13).
- 5 Report Elapsed Setup Time of 0.25 hrs.
- 6 Report Elapsed Run Time of 3.3 hrs.
- 7 Confirm that all information is correct.
- 8 Note the message line at the bottom of the frame saying the operation has been moved. What does that mean?
- 9 Use Operation Transaction Browse (16.20.13.8) and Operation Transaction Detail Inquiry (16.20.13.9) to review the completed transaction. Use the up/down arrows to scroll through the transactions.

Report Labor at Operation 20

Use Labor Feedback by Work Order (16.20.1) to report labor against the same order due this coming Friday.

- 1 Enter operation 20.
- 2 Report 100 units complete and elapsed run time of 3.3 hrs.
- 3 This operation has no setup time.

Report Labor at Operation 30

Use Labor Feedback by Work Order (16.20.1) to report labor against the same order due this coming Friday.

- 1 Enter operation 30, report 99 units complete.
- 2 Uncheck the box for Operation Complete. This action leaves the operation in Running status.
- 3 Check the box for Rejects, enter elapsed run time of 10 hrs.
- 4 This operation has no setup time.
- 5 Click Next, a pop-up box appears to record the reject.
- 6 Select Config - Out of Spec and record one unit.
- 7 Click Next, and then Back; then confirm all information is correct.

- 8 Use Operation Transaction Detail Inquiry (16.20.13.9) to review the completed transaction. Observe only 99 units have been completed.

Report Non-Productive Labor

Use Non-Productive Labor Feedback (16.20.4) to report down time that has idled the worker.

- 1 Use employee 10-EMP02 at work center 1000 at site 10-200.
- 2 Use the lookup icon to select down time reason Mat 1.
- 3 In the Elapsed/Stop Down field, enter 1.5.
- 4 In the comments field, enter “Waiting for rework material.”
- 5 Confirm all information is correct.

Report Rework at Operation 30

The rework material has arrived and we have reworked the reject unit. Now we report that status and close the operation.

- 1 Use Labor Feedback by Work Order (16.20.1) for operation 30 of your order due this coming Friday.
- 2 Enter Quantity Completed as 1, check boxes for Rework and Operation Complete.
- 3 Enter 1 hr for elapsed run time.
- 4 In the comment field, enter: Reworked unit with new package.
- 5 Click Next. A pop-up box appears for you to enter quantities and reasons for rework.
- 6 There is only one reason code available for rework. Record the reason for the reworked unit.
Note If you failed to uncheck the Operation Complete box in the previous step, you receive an “Operation Closed” message and cannot proceed. To correct this use Work Order Routing Maintenance (16.13.13) to change the operation status from C, Closed to R, Running.
- 7 Confirm all information is correct.
- 8 Use Work Order Browse (16.2) to review your orders. Observe the status is R (Running).

Run Reports

- 1 Use Work Order Cost Report (16.3.4) to view the cost of the order.
- 2 Use Work Order WIP Cost Report (16.3.5) to view the values in WIP.


Receive Work Order

Use Work Order Receipt Backflush (16.12) to receive your work order into finished goods inventory and to backflush the components used to make the items.


- 1 Enter your work order number. Note the Receive and Backflush options are selected indicating you do both transactions. Click Next.
- 2 Enter the quantity 100. The default location into which these items are received is 010. Click Next.
- 3 Make sure to set Close to Yes to indicate that the order is complete and want to change its status to C, Closed. Click Next.
- 4 Choose Yes to view transaction detail and confirm all information is correct.
- 5 On the backflush screen, leave the default quantity to backflush at 100 and click Next three times to proceed to the Component Issue Detail screen. The system pre-fills the screen with the standard quantities and items for 100 of the end item.
- 6 You used one extra package in reworking the unit. Find item 90031 in the item number field of the second frame and click it. Change the quantity to 202; then click Next.
- 7 Click Back; then choose Yes to display items being issued.
- 8 Verify that the quantities are correct and all are being issued from location 020.
- 9 Proceed to confirm that all information is correct and confirm update.
- 10 Use Inventory Detail by Item Browse (3.2) to check the status of your inventory. You see the 100 each of item 02003 at site 10-200 and the component quantities minus the numbers you backflushed.

Process Move/Complete Transactions

Shop Floor Control Process



- ✓ Dispatch Report
- ✓ Enter Labor Transactions
- **Process Move/Complete Transactions**
- Process Scrap Transaction
- Review Reports

 SFC-USE-100

The Operation Move Transaction and Operation Complete Transaction provide additional control over the movement of orders from operation to operation. These transactions would typically be used for:

- Error correction
- Quality control checkpoints
- Control of work center queues

Operation Complete Transaction

Operation Complete Transaction

Operation Complete Transacti... x
Go To Actions Copy Print Preview Attach

Work Order: wo001 ID: 2287245

Work Order: wo001 ID: 2287245

Item Number: 01010 Medical Ultrasound

Operation: 10 ASSEMBLE COMPONENTS

Document: QUEUE

Operation Status:

Work Center: 1000 Machine: 1001

Department:


Project:

Quantity Ordered:	10.0
Quantity Completed:	0.0
Qty Rejected:	0.0

Effective Date:

Previous Ops Complete:

Comment:


SFC-USE-110

Operation Complete Transaction is an alternative way to close an operation. Current operations and all preceding open operations can also be closed in Labor Feedback.

Note In Operation Complete Transaction, you cannot enter the quantity completed. Enter the quantity completed for a given operation in one of the Labor Feedback transaction screens.

Current and previous operations are closed in Operation Complete Transaction only with the quantity accepted in Labor transactions.

Operation Move Transaction

Operation Move Transaction

Work Order: wo001 ID: 2287245

Operation: 10 ASSEMBLE COMPONENTS St:

Document:

Employee:

Work Center: 1000 Machine: 1001

Effective Date: 10/14/2010

Quantity Ordered: 10.0

Quantity WIP: 0.0

Qty Moved In: 0.0

Tran Nbr: 2544


Type: MOVE

QAD SFC-IJSE-120


Operation Move Transaction moves an order to an operation and facilitates manual control of work center queues.

Process Scrap Transactions

Shop Floor Control Process



- ✓ Dispatch Report
- ✓ Enter Labor Transactions
- ✓ Process Move/Complete Transactions
- **Process Scrap Transaction**
- Review Reports

 QAD SFC-USE-130

Use Operation Scrap Transaction to scrap partially completed finished-goods items at any work order operation. This action generates WO-SCRAP operation history records but has no effect on GL accounts.

Operation Scrap Transaction

Operation Scrap Transaction


Operation Scrap Transaction X

Go To Actions Copy Print Preview Attach

Work Order: wo001 ID: 2287245 UM: EA

Work Order: wo001	ID: 2287245	Work Order Status: R
Item Number: 01010	Medical Ultrasound	
Operation: 20	TEST FINISHED UNIT	Op Status:
Document:		
Effective Date: 10/14/2010	Shift:	UM: EA Conv: 1.0000
Employee: 10-EMP01	Alex Erikson	
Work Center: 1050	Machine: 1001	Product Test-Ultra
Department: 0160	Quality Control	
Project:		


Quantity	Reason	Quantity	Reason
1.0	scrap	0.0	
0.0		0.0	
0.0		0.0	
0.0		0.0	
0.0		0.0	
0.0		0.0	
0.0		0.0	


SFC-USE-140

This program does not record finished material scrap. Use Work Order Receipt to record finished material scrap.

Review Reports

Shop Floor Control Process



- ✓ Dispatch Report
- ✓ Enter Labor Transactions
- ✓ Process Move/Complete Transactions
- ✓ Process Scrap Transaction
- **Review Reports**

QAD SFC-USE-150

Reports are a key output of shop floor control, which produces labor reporting that can be divided into several categories:

- Transactions
- Down Time
- Input/output
- Utilization and efficiency

Operation Transaction Detail Inquiry

Operation Transaction Detail Inquiry

Operation Transaction Detail Inq
Go To Actions Copy Print Preview Attach

Output: PAGE

Tran Nbr: Display E-Signature Details: Output: PAGE

Type: W0-BKFL		Work Order: 0710049	
Transaction Date: 7/24/2010	13:25:43	ID: 2282048	Op: 10
Effective Date: 7/17/2010	Shift:		
Employee: 10-EMP01	Alex Erikson		
Item Number: 05003		Quantity Completed:	700.0
Pills, 100 Tab		Qty Rejected:	0.0
Site: 10-500	Line:	Reject Reason:	
Work Center: 3092	Machine:	Qty Rework:	0.0
Department: 0750		Rework Reason:	
		Qty Scrapped:	0.0
Std Setup Time: 0.1		Actual Setup Time:	10.0
Std Run Time: 0.001		Actual Run Time:	10.0
Labor Cost Std: 3.65		Labor Cost:	95.00
Burden Cost Std: 0.06		Burden Cost:	1.41
Subcontract Std: 0.00		Subcontract Cost:	0.00

SFC-USE-160

The system creates transactions when using the functions that record labor feedback, non-productive labor, down time, and the completion of operations. The data from these transactions can be reported by:

- Work center
- Work order
- Employee

Input/Output Report

The screenshot displays the QAD Input/Output Report interface. At the top, it shows the QAD logo and the report title 'Input/Output Report' for work center 1000. The report is dated 10/14/10 and is page 1 of 1. It provides details for work center 1000 (General Assembly) and work center 1001 (General Assembly-Ultra). Both reports include a table with columns for dates from 10/13/10 to 01/05/11 and rows for Input Plan, Input Actual, Input Cum Dev, Output Plan, Output Actual, Output Cum Dev, Queue Plan, and Queue Actual. The first table (for work center 1000) shows a significant negative cumulative deviation for input, reaching -448 by 10/20/10. The second table (for work center 1001) shows a cumulative deviation for input reaching -4,805 by 10/20/10.

	Past	10/14/10	10/21/10	10/28/10	11/04/10	11/11/10	11/18/10	11/25/10	12/02/10	12/09/10	12/16/10	12/23/10	12/30/10
Input Plan	642	49	0	56	56	41	0	0	0	49	28	0	56
Input Actual	243	0	0	0	0	0	0	0	0	0	0	0	0
Input Cum Dev	-399	-448	-448	-504	-560	-601	-601	-601	-601	-650	-678	-678	-734
Output Plan	613	49	28	0	56	3	94	0	0	2	75	0	0
Output Actual	281	0	0	0	0	0	0	0	0	0	0	0	0
Output Cum Dev	-332	-381	-409	-409	-465	-468	-562	-562	-562	-564	-639	-639	-639
Queue Plan	28	0	-28	56	0	38	-94	0	0	47	-47	0	56
Queue Actual	-39	-39	-39	-39	-39	-39	-39	-39	-39	-39	-39	-39	-39

	Past	10/14/10	10/21/10	10/28/10	11/04/10	11/11/10	11/18/10	11/25/10	12/02/10	12/09/10	12/16/10	12/23/10	12/30/10
Input Plan	7,550	0	0	0	0	125	215	0	0	0	0	0	0
Input Actual	2,745	0	0	0	0	0	0	0	0	0	0	0	0
Input Cum Dev	-4,805	-4,805	-4,805	-4,805	-4,805	-4,930	-5,145	-5,145	-5,145	-5,145	-5,145	-5,145	-5,145
Output Plan	7,335	0	215	0	0	0	0	0	125	0	0	215	0
Output Actual	2,745	0	0	0	0	0	0	0	0	0	0	0	0
Output Cum Dev	-4,590	-4,590	-4,805	-4,805	-4,805	-4,805	-4,805	-4,805	-4,930	-4,930	-4,930	-5,145	-5,145
Queue Plan	215	0	-215	0	0	125	215	0	-125	0	0	-215	0
Queue Actual	0	0	0	0	0	0	0	0	0	0	0	0	0

The Input/Output Report is one of the primary tools for monitoring the load at work centers and finding bottlenecks. It lets a manager compare planned input and output at a work center with actual input and output, by time period. These reports calculate planned input and output from the work order operations based on their start dates, standard setup and run times, and the shop/work center calendar. Actual input and output are obtained from the operation history transactions. The quantities moved to a work center are used to determine input and the quantities completed at a work center to determine output.

You can display planned and actual input and output in daily, weekly, or monthly periods.

Planned Input. Planned input is load on a work center or machine expressed as work order operations scheduled to start in a reporting period, determined with the following calculations:

$$\text{Standard Setup} + (\text{Standard Run} \times \text{Quantity Ordered})$$

Actual Input. Actual Input is load that has been moved to the first and subsequent order operations. It is calculated for a reporting period based on move transactions entered using work order release and shop floor control functions using the following calculation:

$$\text{Standard Setup} + (\text{Standard Run} \times \text{Quantity Moved})$$

Planned Output. Planned output is load calculated based on order operations scheduled to be completed in a reporting period using the following calculation:

$$\text{Standard Setup} + (\text{Standard Run} \times \text{Quantity Ordered})$$

Actual Output . Actual output is load calculated for a reporting period based on operation quantity completed transactions for work orders and repetitive schedules. You can report completed quantities for order operations using labor feedback transactions in the Shop Floor Control.

Actual output is determined using the following calculation:

Actual Setup + (Standard Run X Quantity Completed)

Planned Queue . The difference between planned input and planned output

Actual Queue . The difference between actual input and actual output

Down Time Report

Trans	Date	Reason	Department	Shift	Employee	Project	Work Order	ID	Op	Item Number	Down Time
150	02/19/09	Mat 1	PROD		EM100				00		1.5
										Total Work Center	1.5
										Total Site: 10-100	1.5

Use Down Time Report to produce a report on down time by:

- Site
- Work center
- Machine
- Employee
- Effective date
- Work order
- Work order ID number

Work Center Utilization Report

Site	Dept	Work Ctr Machine	Date	Capacity	Actual Hours	Util %
10-100	0010	1000	02/17/09	8.00	16.85	210.63%
10-100	0010	1000	02/19/09	8.00	1.0	12.50%
Total				16.00	17.85	111.56%

Use Work Center Utilization Report to produce a report on work center or machine capacity utilization based on labor reporting. This report identifies bottlenecks or underused work centers and shows how the hours in the work day are being used.

The Work Center Utilization Report calculates work center or machine utilization by dividing the total number of hours worked (recorded through transactions) by the total number of hours available to be worked (as calculated from the shop calendar) and multiplying the result by 100.

Utilization is one of two key measures that managers use to measure performance.

Efficiency by Work Center Report

Tran Nbr	Eff Date	Work Order	ID	Op Item Number	Type	Qty Completed	Standard	Actual	Variance	Efficiency
Site: 10-100 Work Center: 1000 Machine: Prototype Work Center										
145	02/17/09	400008	2280523	10 01010	Run	100.0	3.3	3.3	0.0	100.0%
147	02/17/09	400008	2280523	20 01010	Run	100.0	3.3	3.3	0.0	100.0%
149	02/17/09	400008	2280523	30 01010	Run	99.0	9.9	10.0	0.1	99.0%
151	02/19/09	400008	2280523	30 01010	Run	1.0	0.1	1.0	0.9	10.0%
Machine Total: Run							16.6	17.6	1.0	94.318%
Work Center Total: Run							16.6	17.6	1.0	94.318%
Report Total: Run							16.6	17.6	1.0	94.318%

Efficiency reports help identify problems with routing standards and show how effectively labor is being used. Operation efficiencies are calculated by dividing the total number of standard hours earned (by completing units at operations) by the total number of hours worked and multiplying the result by 100. You can sort this data by work order, work center or machine, or employee for any time period. Efficiency is one of two key measures that managers use to measure performance.

The Efficiency by Work Center Report lists the following in transaction sequence by work center:

- Transaction number and date
- Work order number
- Operation
- Employee number and name
- Labor type (setup or run)
- Quantity completed
- Standard, actual, and variance hours
- Setup and run efficiency percentages

Setup and run totals are provided by work center or machine.

Efficiency by Work Order Report

Efficiency by Work Order Report																
10USA																
Tran	Nbr	Eff	Date	Op	Work	Ctr	Machine	Employee	Name	Type	Qty	Completed	Standard	Actual	Variance	Efficiency
W/O: 0510001 ID: 2281147 Item: 02003 Standard Connector																
183	05/17/10	30	2280					10-EMP01	Alex Erikson	Run	1,150.0	1.15	10.0	8.85	11.5%	
W/O Total: Run																
												1.15	10.0	8.85	11.5%	
W/O: 0510002 ID: 2281148 Item: 50011 Ultrasound Array																
184	05/17/10	10	1030					10-EMP01	Alex Erikson	Run	25.0	0.025	10.0	9.975	0.25%	
186	05/17/10	20	1000					10-EMP01	Alex Erikson	Run	25.0	0.025	10.0	9.975	0.25%	
188	05/17/10	30	1050					10-EMP01	Alex Erikson	Run	25.0	0.05	10.0	9.95	0.5%	
190	05/17/10	40	1050					10-EMP01	Alex Erikson	Run	25.0	0.1	10.0	9.9	1.0%	
W/O Total: Run																
												0.2	40.0	39.8	0.5%	
W/O: 0510003 ID: 2281149 Item: 52201 Motor Mtg Plate 8 Way																
219	05/17/10	10	1020							Run	1,135.0	2.838	2.838	0.0	100.0%	
218	05/17/10	20	2060							Run	1,135.0	4.54	4.54	0.0	100.0%	
217	05/17/10	30	2285							Run	1,135.0	11.35	11.35	0.0	100.0%	
216	05/17/10	50	1050					10-EMP01	Alex Erikson	Run	1,135.0	6.306	10.0	3.694	63.056%	
W/O Total: Run																
												25.033	28.728	3.694	87.14%	
W/O: 0510004 ID: 2281150 Item: 70001 Disinfectant																
223	05/17/10	10	3010		5000					Run	1,200.0	240.0	240.0	0.0	100.0%	
222	05/17/10	20	3010		5000					Run	1,200.0	14.4	14.4	0.0	100.0%	
221	05/17/10	30	3100							Run	1,200.0	24.0	24.0	0.0	100.0%	
220	05/17/10	40	3071					10-EMP01	Alex Erikson	Run	1,200.0	7.2	10.0	2.8	72.0%	
W/O Total: Run																
												285.6	288.4	2.8	99.029%	

Efficiency by Work Order Report shows, by ascending work order number, setup, and run information by operation. It lists the following:

- Work order item number and description
- Quantity Ordered, Open, In WIP, Completed, Rejected, Reworked
- Work order status
- Actual setup and run hours
- Standard setup and run hours
- Setup and run variance hours
- Setup and run efficiency in percentages

Exercise: Reporting Labor

Use the Dispatch report to organize your work for this exercise and keep the tab on your work space.

- 1 Use Labor Feedback by Work Order (16.20.1) to report the three operations for your other work order due this Friday at standard times. The standard times for each operation are:

Op. 10	0.25 hr setup	3.3 hrs run
Op. 20	3.3 hrs run	
Op. 30	10.0 hrs run	

- 2 Using Work Order Receipt Backflush (16.12), receive your work order into finished goods inventory and to backflush the components used to make the items. Be sure to close the order.
- 3 Using Labor Feedback by Employee (16.20.2), report the three operations of one of your orders due a week from Friday. Use employee 10-EMP02. Charge 1.0 hrs setup on operation 10 and 4.0 hours run time on operation 20.
- 4 Using Work Order Receipt Backflush (16.12), receive your work order into finished goods inventory and to backflush the components used to make the items.
- 5 Using Labor Feedback by Work Center (16.20.3), report the three operations on the other order due a week from Friday. Charge no setup time on operation 10 and reject 5 units at operation 20. Charge 9.5 hours at operation 30.
- 6 Using Work Order Receipt Backflush (16.12), receive your work order into finished goods inventory and to backflush the components used to make the items. Receive 95 units, scrap 5 units, and backflush all components.
- 7 Using Labor Feedback by Work Center (16.20.3), report the first two operations on the order due two weeks from Friday. Report operation 10 and 20 at standard. Leave the order open at operation 30.

Review Labor Reports

Direct the output for all reports to page use the up arrow in the output field to select page. As you have only one work center, one employee and a limited set of work orders most reports can be run with the selection criteria left blank.

- 1 Using Input/Output Inquiry (16.20.13.11), view what your work center efforts looks like so far.
- 2 Using Input/Output Report (16.20.13.12), note the differences between the report and the inquiry.
- 3 Using Operations by Work Center (16.20.13.13), see which operations have been reported and which are still open.
- 4 Using Operations by Work Order (16.20.13.14), view the same information in a different format. Which would be more useful in your business?
- 5 Using Down Time Report (16.20.13.16) and Down Time by Reason Report (16.20.13.17), review the difference between the two.

- 6 Using Work Center Utilization Report (16.20.13.18), review your work centers utilization.
- 7 Using Efficiency by Work Center Report (16.20.13.19), review your work centers efficiency.
- 8 Using Work Order Cost Report (16.3.4), review the costs charged to your work orders.

Note Specific details of product and work order costing and variances are covered in the Product Costing Course.

Summary

Summary

- ✓ Dispatch Report
- ✓ Enter Labor Transactions
- ✓ Process Move/Complete Transactions
- ✓ Process Scrap Transactions
- ✓ Review Reports

Appendix A

Study Questions

Answers to Study Questions

- 1 In QAD Enterprise Applications, Operation Scheduling starts scheduling at the last operation and, working back from the due date, assigns operation start and stop dates for each operation in the routing.
- 2 The Dispatch Report is a list of all work orders scheduled at or to arrive at a work center. The work orders are listed in ascending sequence (earliest start date first) by operation start date.
- 3 Examples of non-productive labor feedback are machine breakdown, waiting for work, repairing tools, cleaning, or meetings.
- 4 True.
- 5 False. The Move Next Operation field setting of Yes places the operation in queue (Q) status.
- 6 True.
- 7 True.
- 8 Yes, at least one.
- 9 No, holidays can be work center-specific.
- 10 Fewer GL transactions, easier to balance GL on work orders with long run times.

Appendix B

General Ledger Effects

GL Consequences of Shop Floor Transactions

General ledger (GL) transactions are created automatically by Shop Floor Control with a prefix of WO. Shop Floor Control uses Department Maintenance to identify accounts for GL posting. These accounts are labor, burden, cost of production, and labor variances. During operation completion, there is an option to complete previous operations. If this option is selected, all previously unreported operations are posted using standard labor hours.

All transactions are created using the standard setup and labor rates from the work center. Burden is posted using the standard burden rates for the work center. Labor costs are posted to the WIP account/cost center. down time and non-productive labor post to the Cost of Production account/cost center. The GL accounts are taken from the department of the work center. If variances are calculated at shop floor control, then labor usage and burden usage variances are calculated.

The following table provides more detailed information on GL effects.

Function	Notes	DR / CR	Account	Defaults From
Labor Feedback by Work Order, Employee, Work Center	Actual labor	DR	Work in Process	Work Order Maintenance
		CR	Labor Absorbed	Department Maintenance
	Labor rate variance	DR	Labor Rate Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance
	Labor usage variance	DR	Labor Usage Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance
	Actual burden	DR	Work in Process	Work Order Maintenance
		CR	Burden Absorbed	Department Maintenance
	Burden rate variance	DR	Burden Rate Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance
	Burden usage variance	DR	Burden Usage Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance
Non-productive Labor Feedback		DR	Cost of Production	Department Maintenance
		CR	Labor	Department Maintenance
		CR	Burden	Department Maintenance
Operation Complete Transaction	Actual Labor	DR	Work in Process	Work Order Maintenance
		CR	Labor Absorbed	Department Maintenance
	Labor rate variance	DR	Labor Usage Variance	Department Maintenance

Function	Notes	DR / CR	Account	Defaults From
		CR	Work in Process	Work Order Maintenance
	Labor usage variance	DR	Labor Usage Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance
	Actual burden	DR	Work in Process	Work Order Maintenance
		CR	Burden Absorbed	Department Maintenance
	Burden rate variance	DR	Burden Rate Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance
	Burden usage variance	DR	Burden Usage Variance	Department Maintenance
		CR	Work in Process	Work Order Maintenance

Appendix C

Reports, Inquiries, Browsers

Shop Floor Control Inquiries and Reports	
Inquiry	Function / Purpose
Operation Transaction Browse	Displays a list of operation transactions by operation.
Operation Transaction Detail Inquiry	Displays a list of the detail for an operation transaction. (See “Operation Transaction Detail Inquiry” on page 81.)
Operations Accounting Report	Shows the GL transactions resulting from discrete manufacturing down time and labor transactions. A similar report is available for Repetitive down time and labor transactions.
Input/Output Inquiry	Displays a list of the actual and planned standard hour input, output, and queue for a work center/machine.
Input/Output Report	Displays a summary report of the actual and planned standard hour input, output, and queue for a work center/machine. (See “Input/Output Report” on page 82.)
Operations by Work Center Report	Produces a report on operation transactions by work center/machine.
Operations by Work Order Report	Produces a report on operation transactions by work order.
Operations by Employee Report	Produces a report on operation transactions by employee.
Down Time Report	Lists transactions for each work center/machine in transaction sequence by date according to user-specified parameters. Total down time is shown for each work center for the period specified. (See “Down Time Report” on page 84.)
Down Time by Reason Report	Lists down time transactions for each reason code in sequence according to user specifications. The system charges down time to the Cost of Production (COP) account. Use Operations Accounting Report to list details on the GL transactions for the COP account.
Work Center Utilization Report	Produces a report on work center/machine capacity utilization based on labor reporting. (“Work Center Utilization Report” on page 85)
Efficiency by Work Center Report	Lists the following in transaction sequence by work center – transaction number and date; work order number; operation; employee number and name; labor type; quantity completed; standard, actual, and variance hours; setup and run efficiency percentages. (Setup and run totals are provided by work center/machine and for the report.) (“Efficiency by Work Center Report” on page 86)
Efficiency by Work Order Report	By ascending work order number, shows setup and run information by operation. It lists the following – work order item number and description; quantity ordered; quantity open; quantity in WIP; quantity completed; quantity rejected; quantity reworked; work order status; actual setup and run hours; standard setup and run hours; setup and run variance hours; setup and run efficiency percentages. (“Efficiency by Work Order Report” on page 87)
Efficiency by Employee Report	Shows the efficiency for all setup and run transactions for an employee during the user-selected period. The report shows work order sequence by date and includes the following – transaction number and date; work order number and ID; operation and work center; labor type (setup or run); quantity completed; standard, actual, and variance hours; setup and run efficiency percentages.

Note For tracking WIP, the following reports, found in the Work Orders module, are useful: Work Order Routing Browse and Work Order Routing Report.

Appendix D

QAD Product Costing

Product Costing in QAD Enterprise Applications

This appendix provides a brief outline of Product Costing in QAD Enterprise Applications. For more information, see *QAD Product Costing Training Guide*. In the standard core product, product costs are kept in two cost sets: the current cost set and the GL (standard) cost set. Additional cost sets can be defined using functionality in the Cost Management module.

All transactions are posted to the General Ledger using the GL cost set data. In a standard cost environment, the GL cost set is kept fixed for a defined period, usually the GL fiscal year. The GL standards are then reset on a regular schedule, usually the fiscal year. The GL cost set can be defined as an Average Cost using functionality in the Cost Management module.

The system can update the current cost set automatically using either the last cost (for purchase orders and work orders) or an average cost. Optionally, you can choose to not have the system update current costs.

In a standard cost environment, differences between the GL cost and the current cost are reported as variances, usually on a fiscal month basis. In an average cost environment, costs are re-averaged as they occur and variances are not reported.

The standard core product maintains product costs in five cost categories in each of the two cost sets. These five categories are: Material, Labor, Burden, Overhead, and Sub-Contract. Additional user-defined cost elements can be defined as subsets of these cost categories using functionality in the Cost Management module.

- Material costs are manually entered and are usually the purchase costs of raw materials and components.
- Labor costs can be system calculated using rates defined in the work center records and times defined in the routing records.
- Burden is variable overhead and Overhead is fixed overhead. Burden can be system calculated using rates defined in the work center records. Overhead is manually entered in the item cost record.
- Subcontract costs are entered manually and are treated as purchase costs.

The cost roll-up process begins with the Routing Cost Roll-Up and continues with the Product Structure Cost Roll-Up. A common procedure is to do all cost setup and rollup work in the current cost set until costs are verified as correct. Costs can then be copied to the GL cost set. Either cost set can be frozen to prevent unintentional cost changes and to improve system response in new item cost rollups.

Product costs can be modified at each site and can be viewed on numerous inquiries and reports.

Product Information Resources

QAD offers a number of online resources to help you get more information about using QAD products.

[QAD Forums \(community.qad.com\)](http://community.qad.com)

Ask questions and share information with other members of the user community, including QAD experts.

[QAD Knowledgebase \(knowledgebase.qad.com\)*](http://knowledgebase.qad.com)

Search for answers, tips, or solutions related to any QAD product or topic.

[QAD Document Library \(www.qad.com/documentlibrary\)](http://www.qad.com/documentlibrary)

Get browser-based access to user guides, release notes, training guides, and so on; use powerful search features to find the document you want, then read online, or download and print PDF.

[QAD Learning Center \(learning.qad.com\)*](http://learning.qad.com)

Visit QAD's one-stop destination for all courses and training materials.

*Log-in required

