



**ERP Consulting  
Web Development  
Custom Programming Solutions  
Desktop & Web Applications for Manfact**

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# **NorthClark Computing, Inc.**

## **Capacity Planning**

### **User Guide**

#### **Web and Desktop Applications for Manfact by Epicor**

**July 1, 2007**

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## **Introduction**

NorthClark's *Capacity Planning and Scheduling* program is designed to help you manage the production schedule and identify situations where your available resources may be over or under utilized. This program is designed to streamline the process of managing the production process. The Capacity Planning and Scheduling program is a Windows based desktop application that may be used to view, create, and modify Work Order, Project and Miscellaneous schedules in your Manfact system. Key features of this application include:

- ❑ Ability to load any combination of Manfact Work Orders, MRP Planned Orders and Project Budgets (estimate to complete), to create a schedule.
- ❑ Add user-defined “miscellaneous tasks” to the schedule.
- ❑ Available capacity is entered by user-defined “Capacity Centers”. Multiple work centers and resources may be rolled-up to load a single Capacity Center.
- ❑ Labor and machine hours may be rolled up to different Capacity Centers, allowing these constraints to be analyzed separately for a group of work centers.
- ❑ The Manfact shop calendar is used to identify normal workdays, holidays, and shutdown days. Different Capacity Centers may use different calendars if desired. A Capacity Override feature allows you to enter exceptions to the calendar such as planned overtime.
- ❑ Capacity is entered by shift, and the schedule is loaded by shift to account for variances in crew sizes throughout the day.
- ❑ Operation scheduling options include: Start When Previous Operation Complete (traditional), Spread Over Life of Work Order / Task, Concurrent With Previous Operation, Forward Schedule From Work Order Start Date, Backward Schedule From Work Order End Date.
- ❑ A graph may be displayed to highlight Capacity Centers that are over/under capacity. From here, the user may drill-down to see the work orders or tasks that impact a Capacity Center, make changes to schedule dates as desired, and recalculate the plan.
- ❑ Capacity and scheduling reports by Production Group are generated in the form of an Excel spreadsheet.
- ❑ At the user’s request, schedule date changes are automatically posted to Manfact work orders and projects.
- ❑ Ability to define predecessor/successor relationships between tasks and/or work orders.

## Quick Start Guide

Following is a brief outline of the steps necessary to create your first Capacity Plan and Schedule using the NorthClark system:

1. Choose **Open/Create Database** from the **File** menu. Browse to any desired folder on your network and create a new Capacity Planning database.
2. Choose **Processing Options** from the **Processing** menu. Define your plan dates, and select from a variety of planning options.
3. Choose **Load Resources From Manfact** from the **Tools** menu. If your plan will include Work Orders, then choose the option to load **Work Centers**. Repeat this step and choose the option to load **Resource Codes** if your plan will include Projects.
4. Choose **Create Capacity Centers** from the **Tools** menu. Choose **Create One Capacity Center per Work Center** for a detailed plan, or **Create One Capacity Center per Department** for a summarized plan.
5. Review the available capacity figures on the **Cap. Centers** tab and update if necessary. In particular, correct any entries where the available capacity is zero.
6. Click the **Save** icon on the toolbar, or choose the **Save Changes and Post Later** option on the **File** menu at anytime during this procedure to save your work.
7. Choose **Load Projects, WO's and MRP** from the **Processing** menu to import information from your Manfact system according to the **Processing Options** your entered.
8. Choose **Calculate Capacity Plan** from the **Processing** menu.
9. Identify Capacity Centers that are over/under utilized by viewing the information on the **Cap. Results** and **Load Detail** tabs.
10. Output the plan as a graph or Excel spreadsheet by selecting options from the **Graph** and **Reports** menus.

## Main Menu Options

Following is a brief description of the options available from the Main Menu of the Capacity Planning application.

Menu	Option	Description
File	Open/Create a Database	Opens an existing Access file or allows the user to create a new one.
	Save Changes and Post Later	Choose this option to save your schedule and capacity planning information to a database on your local hard-drive or network folder. This allows you to save your work, and pick-up where you left off at a later time.
	Revert to Last Save	This option will restore your schedule to its condition as of the last time you saved it to disk.
	Print Current Display	Output the active spreadsheet to the printer.
	Export to Excel	Export data from the active spreadsheet to Microsoft Excel™.
	Exit	Close the application
Edit	Copy	Copy data to the Windows clipboard.
	Cut	Cut data from the field and copy it to the Windows clipboard.
	Paste	Paste data from the Windows clipboard.
	Fill	Update all of the selected cells from the Windows clipboard.
	Zoom	View, print and/or edit the expanded contents of a field.
	Add a Row	Insert a Row
	Delete a Row	Delete Current Row
View	Expand All	Expand and show all levels of the project.
	Collapse All	Collapse all of the lower level items and show only the top-level project.
	Unhide All Columns	Expose all columns previously hidden.
	Auto Fit Columns	Automatically adjust the width of each column to accommodate your data.
	Display Options	Set user preferences affecting the appearance of the screen.
Processing	Load Projects, WO's and MRP	Imports current load information from the Manfact system.
	Calculate Capacity Plan	The system calculates over/under utilization of each resource by time period.

<b>Menu</b>	<b>Option</b>	<b>Description</b>
	Post Schedule Changes to Manfact	Update Manfact Work Order and Project information based on the new Schedule.
	Processing Options	Establish planning horizon and enter various planning parameters
Tools	Add a Budget Row to a Project	Insert a new budget line into an existing Project.
	Add a Misc Task to the Schedule	Add a new, user-defined Task to the Schedule.
	Delete Task(s) From Schedule	Removes an item from the Schedule (does not affect Manfact)
	Load Resources From Manfact	Copy a list of Work Centers and/or Project Resource codes from the Manfact system.
	Create Capacity Centers	Use this utility to quickly create new Capacity Centers based on Work Center data.
	Update Manufacturing Calendar	Synchronizes the Schedule Calendar with the Manfact Manufacturing Calendar
	Reschedule All	Recalculates the Schedule Start and/or End Dates for each Task based on the Schedule Method chosen for each Task.
	Roll Up Project Schedule Dates	For multi-level projects, a parent project's start/end dates are adjusted to match the earliest/latest dates of all sub-projects.
	Reschedule WO's Within Project Dates	Work Order start/end dates are adjusted to so they fall within the start/end dates of a parent project.
	Push Start Dates Forward to Plan Start	If a Task Start Date is less than the Plan Start Date, the Task Start Date is made equal to the Plan Start Date.
	Find a Task to Schedule	Search for a text string within any column on the schedule to locate a Task.
Graph	By Time	Capacity Utilization Graph by Time
	By Center	Capacity Utilization Graph by Capacity Center
Reports	Production Group Definition	Organize Capacity Centers into Production Groups for reporting purposes.
	Generate Production Capacity Workbook	Generate a Capacity Planning Report in the form of an Excel spreadsheet.

## Spreadsheet “Right Click” Menu

These options are displayed when you right-click on the spreadsheet entry form:

Copy	Copy data to the Windows clipboard.
Cut	Cut data from the field and copy it to the Windows clipboard.
Paste	Paste data from the Windows clipboard.
Fill	Update all of the selected cells from the Windows clipboard.
Reschedule Project	Schedule Tab Only – Allows you to Reschedule a single line item.
Sort by Ascending	Right-Click on the column and you may sort the column in ascending order.
Sort by Descending	Right Click on the column and you may sort the column in descending order

## Capacity Planning and Scheduling

The main screen is comprised of seven “tabs”:

- Schedule                      Displays a list of all tasks affecting your shop in outline format.
- Operations                    Displays the details of individual tasks and allows you to reschedule the whole task or operations within the task using multiple criteria.
- Cap Centers                    Allows you to define areas in your shop where you wish to monitor available capacity. A Capacity Center may be a department, a work center, or any combination of work centers and/or project resource codes.
- Resources                      This screen contains a list of all of the resource codes and work centers used in your schedule. Each item must be assigned a Capacity Center where labor and machine hours are to be posted.
- Capacity Override            Use this screen to enter exceptions to normal working hours not already defined in the Manfact shop calendar.
- Capacity Results              This screen is displayed when you choose the Calculate Capacity Plan option from the Processing menu.
- Load Detail                    From the Capacity Results screen, double click on any Capacity Center to see a list of tasks contributing load for the time period.

## Schedule

This screen displays your production schedule in outline format. The estimated hours required to complete each task (ETC) will contribute load to the capacity plan.

The screenshot shows the 'Capacity Planning' application window. The 'Schedule' tab is active, displaying a table with the following columns: Top-Level Project/Group, Type, Task Identifier, Do Before Rows, Do After Rows, Required Date, Schedule Start Date, Schedule Due Date, Work Days, and Original Start Date. The table contains 15 rows of data, including projects and MRP tasks.

	>	Top-Level Project/Group	Type	Task Identifier	Do Before Rows	Do After Rows	Required Date	Schedule Start Date	Schedule Due Date	Work Days	Original Start Date
1	-	0 100	Projec	100				08/21/06	08/21/06	1.0	08/21/06
2		1 100	Projec	100.2				08/21/06	08/21/06	1.0	08/21/06
3		1 100	Projec	100.3				08/21/06	08/21/06	1.0	08/21/06
4	-	1 100	Projec	100.4				09/21/06	09/21/06	1.0	08/21/06
5		2 100	Work	1				09/14/06	09/21/06	6.0	09/18/06
6		2 100	Projec	100.4.1				08/21/06	08/21/06	1.0	08/21/06
7		2 100	Projec	100.4.2				08/21/06	08/21/06	1.0	08/21/06
8		0 MAGTORS	MRP	69			08/21/06	08/18/06	08/21/06	2.0	08/21/06
9		0 MAGTORS	MRP	70			08/17/06	07/25/06	08/17/06	18.0	08/09/06
10		0 MAGTORS	MRP	122			08/21/06	08/22/06	08/24/06	3.0	08/21/06
11		0 MAGTORS	MRP	123			08/17/06	08/26/06	09/08/06	8.0	08/10/06
12		0 MAGTORS	MRP	124			09/14/06	08/29/06	09/14/06	13.0	09/06/06
13		0 MAGTORS	MRP	125			10/19/06	09/28/06	10/19/06	15.0	10/11/06
14		0 MAGTORS	MRP	126			11/30/06	11/08/06	11/30/06	15.0	11/21/06
15		0 MAGTORS	MRP	127			01/04/07	12/18/06	01/04/07	12.0	12/27/06

Database: C:\Documents and Settings\Owner\My Documents\North Account: MDEM05.11 Need Reschedule Calculate Capacity

There are three ways to add a task to the schedule:

- ❑ Select the Load Projects, WO's and MRP From Manfact option from the Processing menu.
- ❑ Select the Add a Budget Row to a Project option from the Tools menu.
- ❑ Select the Add Misc. Task to the Schedule option from the Tools menu.

### Reschedule a Task

The process of scheduling a project, work order, or MRP planned order accomplishes two main goals. First, it determines the number of work days required to complete the task (duration). The duration determines either the end date or start date of the task depending on whether you are using forward or backward scheduling.

The second goal of the scheduling operation is to calculate the number of labor and/or machine hours to be loaded into the Capacity Center for the dates work is scheduled to be performed. So, even if a task is manually scheduled (meaning you will supply the start and end dates for the task), the system must "schedule" each task in order to calculate the load.



While viewing the Schedule Display, you may choose the *Reschedule Task* option from the pop-up menu that is displayed when you click the right mouse button. The task to be rescheduled depends on which row is currently active. For example, let's say you want to reschedule work order number 12345. Begin by clicking on any cell on any row for this work order (either the work order itself or the operations underneath it). Now when you right-click to view the pop-up menu, you will see an option to "Reschedule WO 12345".

***The following columns are displayed:***

<b>Column Name</b>	<b>Description</b>
[+] or [-]	Click on the plus/minus button to expand or collapse your view of a project, work order, or MRP planned order in your schedule.
Level	The outline level of the task.
Top-Level Project/Group	For Projects and Work Orders, the top-level Project Number is displayed. For MRP planned orders, the Planning Group is displayed.
Load Type	<p>Each line will be one of the following types:</p> <p><b>Project:</b> A project summary line representing the totals of all Budget and Work Order lines beneath it.</p> <p><b>Budget:</b> This line includes Estimate to Complete (ETC) hours from the Manfact PROJBUD file.</p> <p><b>Work Order:</b> A summary line representing the totals of all operation steps included on the work order.</p> <p><b>Oper:</b> One step on a work order routing.</p> <p><b>MRP:</b> A summary line representing the totals of all operation steps included on an MRP planned order.</p> <p><b>MRP Oper:</b> One step on the routing for an MRP planned order.</p> <p><b>Misc:</b> A miscellaneous task added by you.</p>

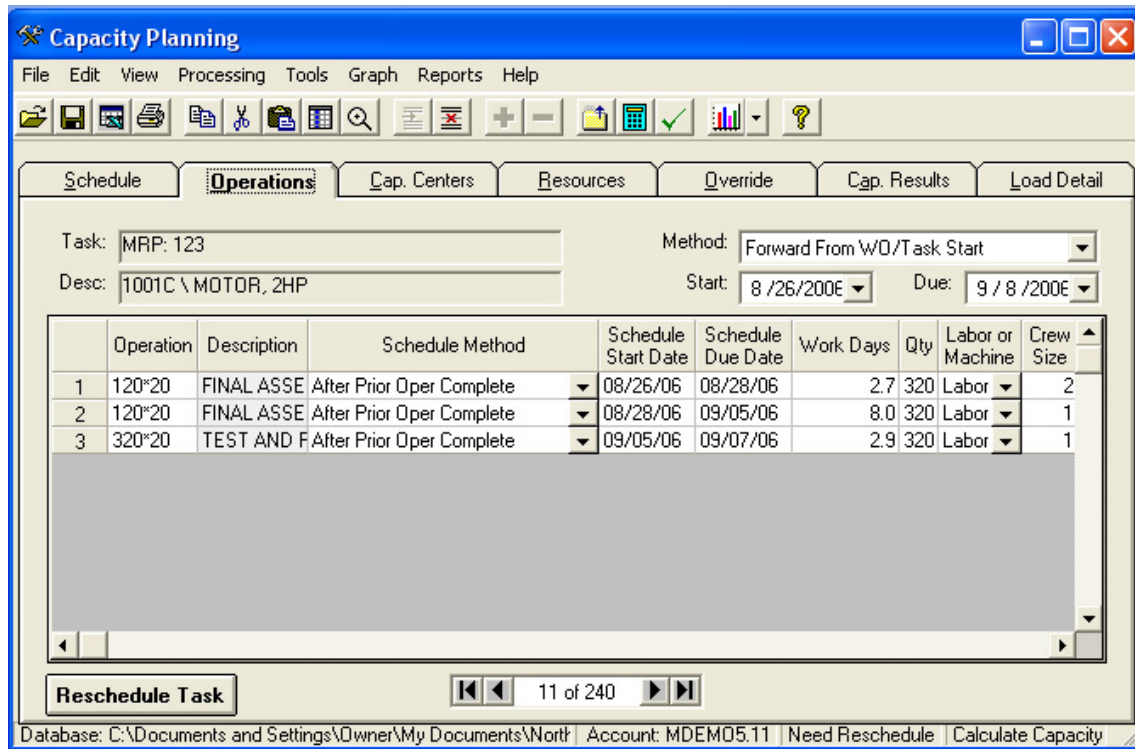
Column Name	Description
Task Identifier	<p>The identifier is different for each type of load:</p> <p><b>Project:</b> Project Number</p> <p><b>Budget:</b> Resource Code (and optionally fiscal period)</p> <p><b>Work Order:</b> Work Order Number</p> <p><b>Oper:</b> Work Center (Dept * Operation)</p> <p><b>MRP:</b> MRP Planned Order Number</p> <p><b>MRP Oper:</b> Work Center (Dept * Operation)</p> <p><b>Misc:</b> User defined</p>
Description	<p><b>Project:</b> Project Description</p> <p><b>Budget:</b> Resource Description</p> <p><b>Work Order:</b> Assembly (Parts) Description</p> <p><b>Oper:</b> Work Center Description</p> <p><b>MRP:</b> Assembly (Parts) Description</p> <p><b>MRP Oper:</b> Work Center Description</p> <p><b>Misc:</b> User defined</p>
Assembly Number	<p>The Assembly (Part) Number is displayed for Work Orders and MRP Planned Orders.</p>
Status	<p>The status of a Project or Work Order: New, Firm Planned, Released, or Backordered.</p>

Column Name	Description
Schedule Method	<p>Choose the Scheduling Method you want to use for each task from the drop-down window.</p> <p><b>Forward from WO/Task Start:</b> The system calculates the Due Date of the order by forward scheduling each operation from the specified Start Date.</p> <p><b>Backward from WO/Task Due:</b> The system calculates the Start Date of the order by backward scheduling each operation from the specified Due Date.</p> <p><b>MANUAL (NO CALCULATION): BOTH THE START AND DUE DATE ARE SUPPLIED BY THE USER. THE SYSTEM PERFORMS NO AUTOMATIC SCHEDULING CALCULATION.</b></p>
Do Before Rows	You may specify one or more tasks that cannot be started until this task is complete (successors). Enter the Row Number for each task, separated by commas.
Do After Rows	You may specify one or more tasks must be completed before this task starts (predecessors). Enter the Row Number for each task, separated by commas.
Required Date	For Projects and Work Orders, the system obtains the earliest date from any sales orders tied to the work order or project. For MRP planned orders, the MRP Due Date is used. You may change this date if desired.
Schedule Start Date	When using Forward or Manual scheduling, enter the scheduled start date for the task.
Schedule Due Date	When using Backward or Manual scheduling, enter the scheduled due date for the task.
Work Days	The system calculates the number of working days between the Start Date and the Due Date based on the Calendar.
Original Start Date	The scheduled start date that was assigned to the task when the data was loaded from Manfact.
Original Due Date	The scheduled due date that was assigned to the task when the data was loaded from Manfact.
Original Duration	The system calculates the number of working days between the Original Start Date and the Original Due Date based on the Calendar.
Qty	Based on the line type, this column displays the Work Order Quantity, MRP Planned Order Quantity, or Operation Quantity.

<b>Column Name</b>	<b>Description</b>
Setup Hours	For Work Order and MRP Operations, remaining setup hours are loaded from the routing.
Run + Rework Hours	For Work Order and MRP Operations, remaining labor and rework hours are loaded from the routing. For budget lines, estimate to complete hours are loaded from the PROJBUD file.
Machine Hours	For Work Order and MRP Operations, remaining machine hours are loaded from the routing. Although there is no mechanism for budgeting machine hours in Manfact, you may enter machine hours for budget lines in this application if desired. Your entries <u>will</u> be recalled if the budget is loaded again in the future.
Line Hours	Clock-time to complete this task is calculated by dividing either Labor or Machine Hours (depending on the Scheduling Method you selected) by the Maximum Crew Size.
Actual Labor Hours	The actual labor hours posted to a work order or project are displayed and may not be changed.
Actual Mach Hours	The actual machine hours posted to a work order or project are displayed and may not be changed.
ETC Labor Hours	Setup Hours + Labor Hours – Actual Labor Hours
ETC Mach Hours	Machine Hours – Actual Machine Hours
ETC Line Hours	Clock-time to complete this task is calculated by dividing ETC Labor or Machine Hours (depending on the Scheduling Method you selected) by the Maximum Crew Size.
Percent Complete	Actual Hours / Estimated Hours
Queue Time	Interoperation time or “lag” time increases the duration of the task without adding additional load to the capacity plan. Queue time occurs before the task begins.
Move Time	Interoperation time or “lag” time increases the duration of the task without adding additional load to the capacity plan. Move time occurs after the task is completed.

## Operations

Use this screen to work with individual rows from the Schedule Display.



You may choose to reschedule the operations on this display.

- ❑ Select the scheduling method from the drop-down window.
- ❑ Enter the new scheduling date.
- ❑ Click on the [Reschedule] button to reschedule the Operations.

**The following columns are displayed:**

Column Name	Description
Operation	The Work Center(s) or Resource associated with this task.
Description	The description of the Work Center

Column Name	Description
Schedule Method	<p>Choose the Schedule Method from the drop-down window.</p> <p><b>After Prior Operation Complete:</b> This is the method Manfact uses for Work Order and MRP Planned Order operations. This method assumes that each step will be performed serially in the sequence of the routing.</p> <p><b>Spread Over Life Of Wo Task:</b> After all other “serial” operations have been scheduled, the system sets the operation’s start and due dates equal to the start and due dates of the project or work order. For capacity loading, the total number of hours estimated for the operation are spread evenly over the duration of the task.</p> <p><b>Concurrent With Prior Oper:</b> After all other “serial” operations have been scheduled, the system sets the operation start date equal to the start date of the previous step. The operation is then forward scheduled from that point.</p> <p><b>Forward from WO/Task Start:</b> After all other “serial” operations have been scheduled, the system sets the operation start date equal to the start date of the parent project or work order. The operation is then forward scheduled from that point.</p> <p><b>Backward From WO/Task Due:</b> After all other “serial” operations have been scheduled, the system sets the due date equal to the due date of the parent project or work order. The operation is then backward scheduled from that point.</p> <p><b>Manual:</b> Both the Start and Due Date are supplied by the user. The system performs no automatic scheduling calculation.</p>
Schedule Start Date	The date this operation is scheduled to begin.
Schedule Due Date	The date this operation is scheduled to be complete.
Work Days	The system calculates the number of working days between the Start Date and the Due Date based on the Calendar.
Qty	Based on the line type, this column displays the Work Order Quantity, MRP Planned Order Quantity, or Operation Quantity.
Labor or Machine	Defines whether work center is a labor or machine work center or resource.
Crew Size	Enter the number of individuals who work in this work center or resource.
Setup Hours	For Work Order and MRP Operations, remaining setup hours are loaded from the routing.

Column Name	Description
Run & Rwk Hours	For Work Order and MRP Operations, remaining labor and rework hours are loaded from the routing. For budget lines, estimate to complete hours are loaded from the PROJBUD file.
Mach Hours	For Work Order and MRP Operations, remaining machine hours are loaded from the routing. Although there is no mechanism for budgeting machine hours in Manufact, you may enter machine hours for budget lines in this application if desired. Your entries <u>will</u> be recalled if the budget is loaded again in the future.
Line Hours	Clock-time to complete this task is calculated by dividing either Labor or Machine Hours (depending on the Scheduling Method you selected) by the Maximum Crew Size.
Actual Labor	The actual labor hours posted to a work order or project are displayed and may not be changed.
Actual Mach	The actual machine hours posted to a work order or project are displayed and may not be changed.
ETC Labor	Setup Hours + Labor Hours – Actual Labor Hours
ETC Mach	Machine Hours – Actual Machine Hours
ETC Line	Clock-time to complete this task is calculated by dividing ETC Labor or Machine Hours (depending on the Scheduling Method you selected) by the Maximum Crew Size.
% Comp	Actual Hours / Estimated Hours
Queue Time	Interoperation time or “lag” time increases the duration of the task without adding additional load to the capacity plan. Queue time occurs before the task begins.
Move Time	Interoperation time or “lag” time increases the duration of the task without adding additional load to the capacity plan. Move time occurs after the task is completed.
Seq #	Sequence Number of the work center in this task.
Occurrence	Number of occurrences of this work center in the task.

## Capacity Centers

Use this screen to define areas in your shop where you wish to monitor available capacity. A Capacity Center may be a department, a work center, or any combination of work centers and/or resources.

The screenshot shows the 'Capacity Planning' software window with the 'Cap. Centers' tab selected. The table below represents the data visible in the software:

	Capacity Center	Description	Labor or Machine	Calendar	Total Capacity	Availability %	Shift 1 Crew	Shift 1 Hours	Shift 1 Eff%	Shift 1 Total	Shift 2 Crew	Shift 2 Hours	Shift 2 Eff%
1	120*10	SUB-ASSEM	Labor		36	100	5	8	90	36	0	0	100
2	120*20	FINAL ASSE	Labor		43.2	100	6	8	90	43.2	0	0	100
3	120*30	WELD & RIV	Labor		33.2	100	3	8	85	20.4	2	8	85
4	210*10	N.C. MACHIN	Machi		35.2	100	3	8	90	21.6	2	8	85
5	210*20	3 AXIS MACH	Machi		64.8	100	5	8	90	36	4	8	85
6	220*10		Labor		15.2	100	1	8	90	7.2	1	8	100
7	220*20	LATHES	Labor		51.2	100	3	8	95	22.8	3	8	85
8	220*30	MILLS	Labor		41.76	100	3	8	87	20.88	3	8	85
9	220*40	DRILLS	Labor		58.24	100	4	8	91	29.12	4	8	85
10	220*50	BROACH	Labor		16.8	100	2	8	105	16.8	0	0	100
11	220*60	GRIND/DEB	Labor		50.4	100	3	8	105	25.2	3	8	100
12	220*70	WELDING	Labor		12.8	100	2	8	80	12.8	0	0	100
13	320*10		Labor		32	100	2	8	100	16	2	8	100
14	320*20	TEST AND F	Labor		32	100	3	8	80	19.2	2	8	85
15	400*10	O/P MACHIN	Labor		4	100	1	4	100	4	0	0	100

Database: C:\Documents and Settings\Owner\My Documents\North Account: MDEM05.11 | Need Reschedule | Calculate Capacity

There are two ways to add to your list of Capacity Centers:

- ❑ Select the Add Row option from the Edit menu and type the required information into each cell. The new row will be added to the end of the spread. This option will allow you to create capacity centers that are not tied to Manfact Departments or Work Centers
- ❑ Select the option to Create Capacity Centers from the Tools menu. This option will require you to create capacity centers to either Manfact Departments or Work Centers.

Each Capacity Center may be used to measure either Labor or Machine capacity. If you wish to monitor both labor and machine hours for a given work center or department, you will need to define two Capacity Centers.

**Enter the following information for each Capacity Center:**

Column Name	Description
Capacity Center	Capacity Centers are user defined. For example, a Capacity Center might represent a department, a group of work centers, a group of Machines, or a single work center or machine.



<b>Column Name</b>	<b>Description</b>
Description	Enter a description of this Capacity Center
Labor or Machine	Select whether Labor or Machine hours will be used to load this Capacity Center from the drop-down window
Calendar Code	Optionally, you may specify a valid Manfact Calendar Code to be used for this Capacity Center. If you leave it blank, the Calendar specified in the Process Options screen is used.
Total Capacity	The total number of hours available per day is calculated for all shifts as: Shift 1 Total + Shift 2 Total + Shift 3 Total
Availability %	Enter the % of available capacity for the capacity center.
Shift 1 Crew	Enter the number of people or machines available on first shift.
Shift 1 Hours	Enter the total man-hours or machine-hours available per day per man or machine on this shift.
Shift 1 Eff %	Enter the percentage that is used to reduce the total capacity available per day to account for non-production activities.
Shift 1 Total	Crew Size X Hours per Day X Efficiency Percent
Shift 2 Crew	Enter the number of people or machines available on second shift.
Shift 2 Hours	Enter the total man-hours or machine-hours available per day per man or machine on this shift.
Shift 2 Eff %	Enter the percentage that is used to reduce the total capacity available per day to account for non-production activities
Shift 2 Total	Shift 2 Crew Size X Hours per Day X Efficiency Percent
Shift 3 Crew	Enter the number of people or machines available on second shift.
Shift 3 Hours	Enter the total man-hours or machine-hours available per day per man or machine on this shift.
Shift 3 Eff %	Enter the percentage that is used to reduce the total capacity available per day to account for non-production activities
Shift 3 Total	Shift 3 Crew Size X Hours per Day X Efficiency Percent

## Resources

This screen contains a list of all of the resource codes and work centers used in your schedule. Each item must be assigned a Capacity Center where labor and machine hours are to be posted.

	Type	Work Center or Resource	Description	Capacity Center Labor	Capacity Center Machine	Schedule Method	Crew Size
1	R	E1	ENGINEERI	220*10		Spread Over Life of WO/Task	1
2	R	E2	ENGINEERI	220*20		Spread Over Life of WO/Task	1
3	R	E3	ENGINEERI	220*20		Spread Over Life of WO/Task	1
4	R	MFGLAB	MANUFACT	120*10		Spread Over Life of WO/Task	1
5	R	T1	TECHNICAL	120*20		Spread Over Life of WO/Task	1
6	R	T2	TECHNICAL	120*20		Spread Over Life of WO/Task	1
7	W	120*10	SUB-ASSEM	120*10		After Prior Oper Complete	
8	W	120*20	FINAL ASSE	120*20		After Prior Oper Complete	
9	W	120*30	WELD & RIV	120*30		After Prior Oper Complete	
10	W	210*10	N.C. MACHII	210	210*10	After Prior Oper Complete	
11	W	210*20	3 AXIS MAC	210	210*20	After Prior Oper Complete	
12	W	220*10		220*10		After Prior Oper Complete	
13	W	220*20	LATHES	220*20		After Prior Oper Complete	
14	W	220*30	MILLS	220*30		After Prior Oper Complete	
15	W	220*40	DRILLS	220*40		After Prior Oper Complete	

There are three ways to add resources to your list:

- ❑ Select Add a Row from the Edit Menu and type the required information into each cell.
- ❑ Select the option to Load Resources From Manfact from the Tools menu.
- ❑ When you choose the option to Load Projects, WO's and MRP From Manfact, any Work Centers or Resource Codes not already in your list are loaded automatically.

*Note, when the program loads resources automatically, you will still need to update this screen with Capacity Center information for each resource.*

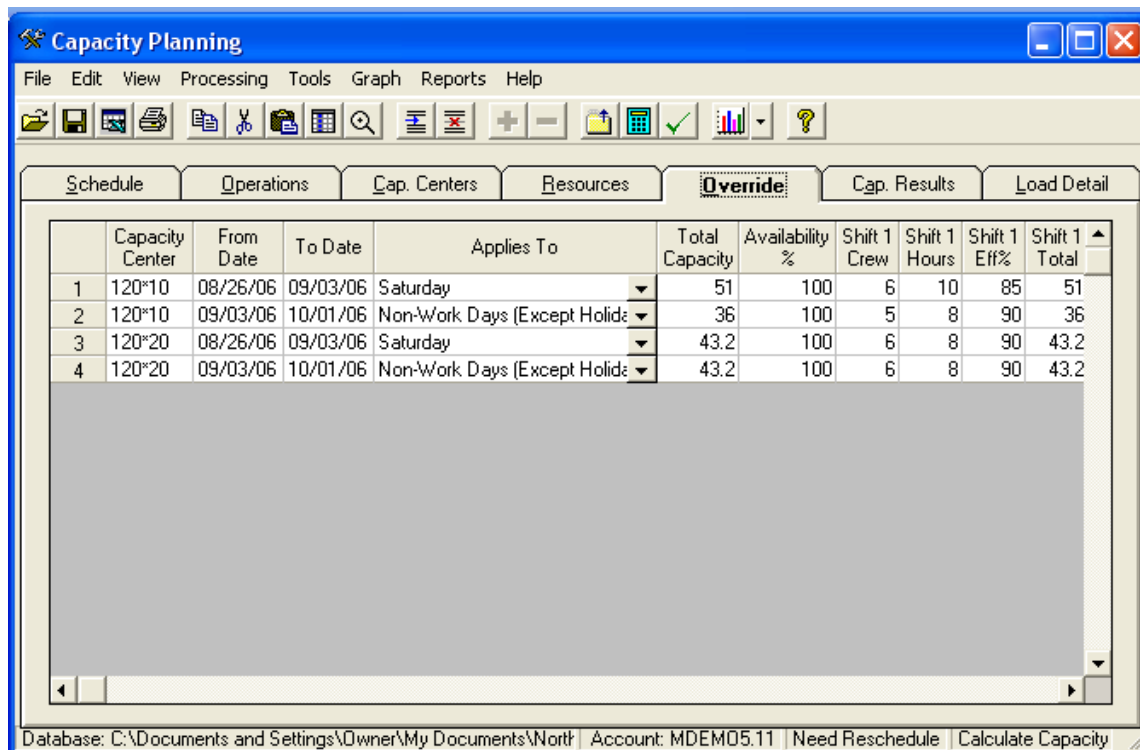
**Enter the following information for each Resource:**

Column Name	Description
Resource Type	Select "W" for a Work Center, or "R" for a project Resource Code from the drop-down window. This information will be filled in automatically when the information is loaded from Manfact.

Column Name	Description
Work Center / Resource	Enter a valid Manfact Work Center or Resource Code.
Description	A description of this work center or resource is displayed.
Capacity Center - Labor	Enter the Capacity Center where you wish to post Labor Hours.
Capacity Center - Machine	Enter the Capacity Center where you wish to post Machine Hours.
Schedule Method	Choose the Scheduling Method you want to use as a default for this resource from the drop-down window.  (See Operations Display for a description of the Scheduling Method options)
Crew Size	For resource lines only, enter a default crew size.

### Capacity Override

Use this screen to enter exceptions to normal working hours not already defined in the Manfact shop calendar.



To create a row select Add a Row from the Edit Menu. This will add a row at the end of the spread.

**Enter the following information on each row:**

<b>Column Name</b>	<b>Description</b>
Capacity Center	Enter the identifier of the Capacity Center you wish to affect.
From Date	Enter the effective date of this capacity override.
To Date	Enter the end date of this capacity override. Information will be ignored after this date
Applies To	Select which days you want this override instruction to apply to: <ul style="list-style-type: none"> <li><input type="checkbox"/> All Dates in Range</li> <li><input type="checkbox"/> All Normal Work Days in Range</li> <li><input type="checkbox"/> All Non-Work Days in Range</li> <li><input type="checkbox"/> Saturday</li> <li><input type="checkbox"/> Sunday</li> <li><input type="checkbox"/> Monday</li> <li><input type="checkbox"/> Tuesday</li> <li><input type="checkbox"/> Wednesday</li> <li><input type="checkbox"/> Thursday</li> <li><input type="checkbox"/> Friday</li> </ul>
Total Capacity	The total number of hours available per day is calculated for all shifts as:  Shift 1 Total + Shift 2 Total + Shift 3 Total
Availability %	Enter the % of available capacity for the capacity center
Shift 1 Crew	Enter the number of people or machines available on first shift. The initial value will default to the standard capacity center crew but may be overridden here.
Shift 1 Hours	Enter the total man-hours or machine-hours available per man or machine per day on this shift.
Shift 1 Eff %	Enter the percentage that may be used to reduce the total capacity available per day to account for non-production activities.
Shift 1 Total	Crew Size X Hours per Day X Efficiency Percent
Shift 2 Crew	Enter the number of people or machines available on second shift.
Shift 2 Hours	Enter total man-hours or machine-hours available per day per man or machine on this shift.

Column Name	Description
Shift 2 Eff %	Enter the percentage that may be used to reduce the total capacity available per day to account for non-production activities.
Shift 2 Total	Shift 2 Crew Size X Hours per Day X Efficiency Percent
Shift 3 Crew	Enter the number of people or machines available on third shift.
Shift 3 Hours	Enter total man-hours or machine-hours available per day per man or machine on this shift.
Shift 3 Eff %	Enter the percentage that may be used to reduce the total capacity available per day to account for non-production activities.
Shift 3 Total	Shift 3 Crew Size X Hours per Day X Efficiency Percent

## Capacity Results

This screen is displayed when you choose the Calculate Capacity Plan option from the Processing menu. It shows you the variance between total load and available capacity for each Capacity Center, for each time bucket you defined using the Processing Options screen.

	Capacity Center	Description	Labor or Machine	Period	From Date	To Date	Total Capacity	Released Hours	Planned Hours	Total Load	Variance
1	120*10	SUB-ASSEM	Labor	Past	08/21/06	08/20/06			42	42	
2	120*10	SUB-ASSEM	Labor	Week	08/21/06	08/27/06	231	600	51	651	-
3	120*10	SUB-ASSEM	Labor	Week	08/28/06	09/03/06	267		54	54	
4	120*10	SUB-ASSEM	Labor	Week	09/04/06	09/10/06	252		54	54	
5	120*10	SUB-ASSEM	Labor	Week	09/11/06	09/17/06	252		85	85	
6	120*10	SUB-ASSEM	Labor	Week	09/18/06	09/24/06	252		89	89	
7	120*10	SUB-ASSEM	Labor	Week	09/25/06	10/01/06	252			0	
8	120*10	SUB-ASSEM	Labor	Week	10/02/06	10/08/06	180		46	46	
9	120*10	SUB-ASSEM	Labor	Week	10/09/06	10/15/06	180		30	30	
10	120*10	SUB-ASSEM	Labor	Week	10/16/06	10/22/06	180		20	20	
11	120*10	SUB-ASSEM	Labor	Week	10/23/06	10/29/06	180		12	12	
12	120*20	FINAL ASSE	Labor	Past		08/20/06			1239	1239	-1
13	120*20	FINAL ASSE	Labor	Week	08/21/06	08/27/06	259	55	183	238	
14	120*20	FINAL ASSE	Labor	Week	08/28/06	09/03/06	302		237	237	
15	120*20	FINAL ASSE	Labor	Week	09/04/06	09/10/06	302		225	225	

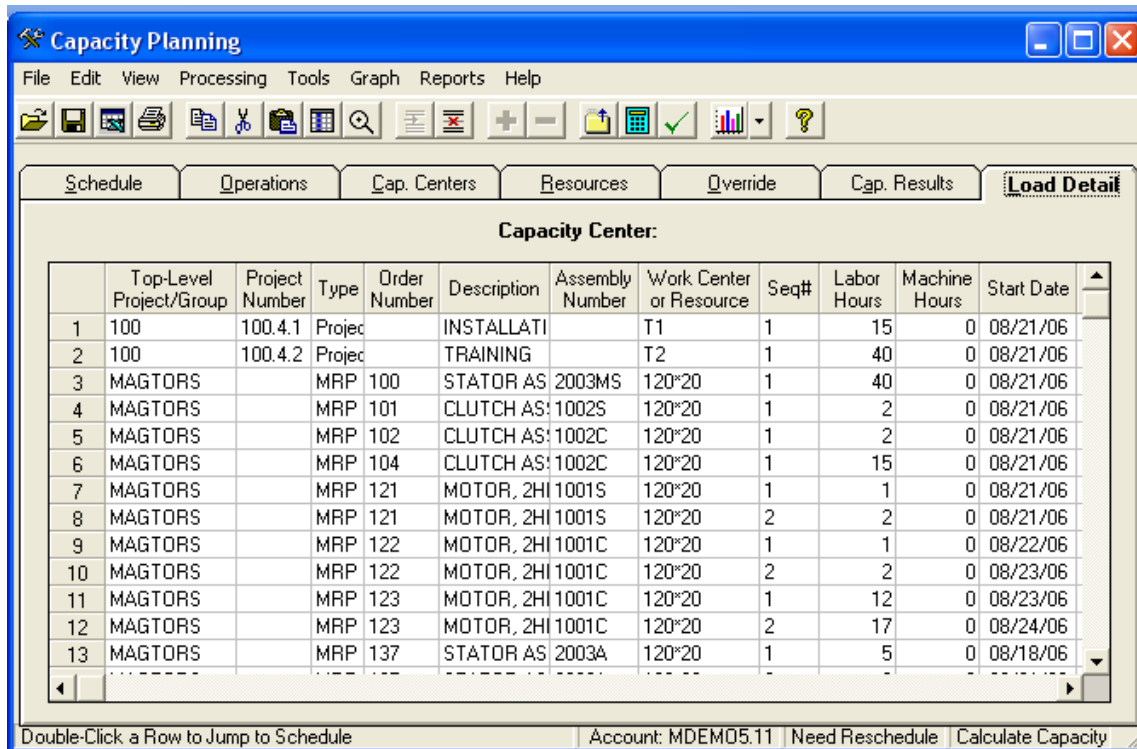
Double-click on a row, or select it with the [Enter] key, to view Load Detail for a particular Capacity Center and time period.

*The following information is displayed:*

<b>Column Name</b>	<b>Description</b>
Capacity Center	Capacity Center identifier (user defined)
Description	Description of the Capacity Center
Labor or Machine	Defines whether the Capacity Center is a Labor or Machine Capacity Center.
Period	The period of time represented by this bucket: Past, Day, Week, Month, Quarter, or Year.
From Date	The beginning date of this period.
To Date	The ending date of this period.
Total Capacity	The total available man-hours or machine hours available during the period.
Released Hours	Hours that have already been assigned to released work orders or projects.
Planned Hours	Hours that have been planned by MRP.
Total Load	The total number of hours loaded into this Capacity Center during the period.
Variance	Total Capacity – Total Load

## Load Detail

From the Capacity Results screen, double click on any Capacity Center to see a list of tasks contributing load for the time period.



From here, you may double-click on any item, or select it using the [Enter] key, to jump to the line on the Schedule screen where the task appears.

*The following information is displayed:*

Column Name	Description
Top-Level Project or Planning Group	For Projects and Work Orders, the top-level Project Number is displayed. For MRP planned orders, the Planning Group is displayed.
Project Number	The project number this Work Order or Budget item is assigned to.
Type	Project, Work Order, MRP Planned Order, or Misc. task.
Order Number	Work Order or MRP Planned Order number.
Description	Assembly (Part) description
Assembly	Assembly (Part) number

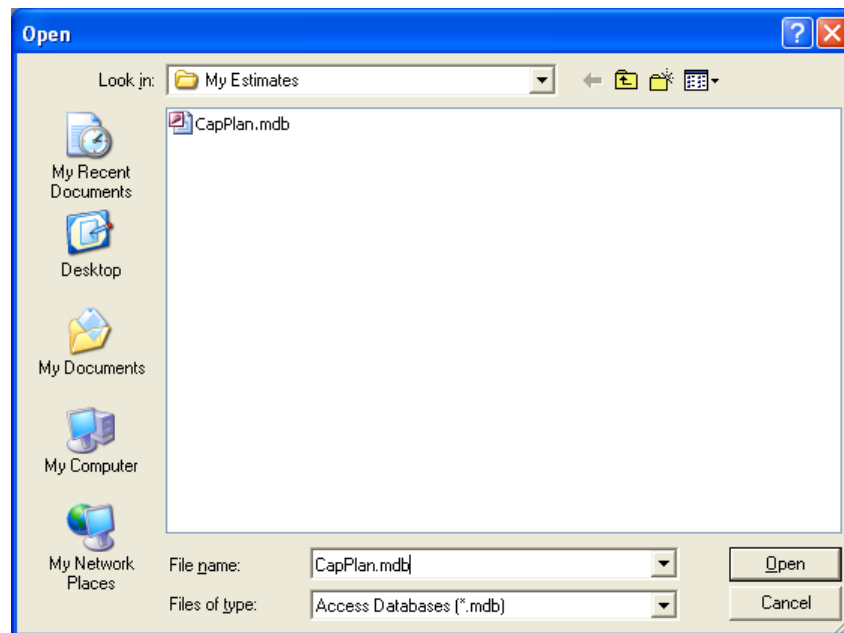
<b>Column Name</b>	<b>Description</b>
Work Center or Resource	The Work Center or Resource that contributed this load.
Seq#	The operation sequence number where a work center appears on the routing.
Labor Hours	Labor hours contributed during this time period.
Machine Hours	Machine hours contributed during this time period.
Start Date	Start Date of the operation.
Due Date	Due Date of the operation.



## Capacity Planning Database

### Open / Create a Database

Your schedule and capacity planning information are stored in a Microsoft Access Database. Choose the **Open/Create Database** option from the **File** menu and use the Open Dialog to locate or create your file. Note, the file name will default to the last database you opened.



You can create a new database using this screen. This feature is useful if you wish to save more than one schedule. Simply type in a name at the file name prompt, and the system responds:

Unable to Locate File. Do You Wish to Create It?

Click [Yes] to create the new database, or [No] to cancel.

### Save Changes and Post Later

Choose this option to store your Capacity Plan and Schedule in your local Access Database, without updating the Manfact system.

### Revert to Last Save

Choose this option to discard any unsaved changes, and restore your schedule to the condition it was in when you last saved.

## Processing

### Processing Options

This screen includes various options and parameters that affect the information that are loaded into your schedule, as well as how the capacity plan is calculated.

The screenshot shows the 'Capacity Planning Options' dialog box. It is divided into several sections:

- Capacity Loading:** Contains six checkboxes:  Include Work Orders,  Include Projects,  Include MRP Planned Orders,  Exclude Unreleased Projects,  Exclude Unreleased Work Orders, and  Exclude Expense Work Orders. There is also a 'Work Center' text field.
- Planning Buckets:** Contains five spinners: Days (0), Weeks (10), Months (0), Quarters (0), and Years (0).
- Use Budget as Load For:** Contains three radio buttons:  Projects Without Work Orders,  All Projects, and  Never Use Project Budget.
- Plan:** Contains 'Start Date' (8/21/2000), 'End Date' (10/29/2000), and 'Calendar' fields.
- Other Options:** Contains a 'Budget Revision' field, a 'Decimal Places' spinner (0), and six checkboxes:  Automatically Reschedule Operations,  Automatically Roll Up Project Dates,  Use Budget Periods As Schedule Dates,  Load Budget When ETC is Negative,  Load Operations With No Remaining Hours, and  Automatically Remove Expired Capacity Override Entries.
- WIP Locations:** Contains a list of five items, all of which are checked:  WIP-1 - WORK IN PROCESS,  WIP-2 - WORK IN PROCESS,  WIP-3 - WORK IN PROCESS,  WIP-4 - WIP FOR AVERAGE, and  WIP-F - FIFO WORK IN PROCESS.

At the bottom of the dialog are four buttons: 'OK', 'Cancel', 'Select All', and 'Select None'.

#### Capacity Loading:

There are six check-boxes displayed in the Capacity Loading section of the screen:

- Include Work Orders
- Include Projects
- Include MRP Planned Orders
- Exclude Unreleased Projects
- Exclude Unreleased Work Orders
- Exclude Expense Work Orders

These options are considered when you choose the **Load From Manufact** option to update your schedule with any combination of Work Orders, MRP Planned Orders and Projects from your Manufact system.

***Using Budget (Estimate to Complete) As Load:***

If you have elected to include projects in your schedule, you may also choose to use labor hours entered on the Project Budget file as load in your capacity plan. The following options are provided:

- Use Budget For Projects Without Work Orders
- Use Budget For All Projects
- Never Use Project Budget

The first option will load the budget for all projects or sub-projects that do not have work orders associated with them. The assumption here is that if one or more work orders are linked to the project, the work order routing will provide more detailed load information.

If your company does not use work orders, or if accurate routing information is not available, you may prefer to load the budget for all projects. *Note, if you choose this option, be careful not to double your load by including both the budget and work orders for a project.*

The third option, never use project budget, is useful if you have chosen to load projects for the purpose of viewing your work order information in the context of the project structure, but want all of the schedule and load detail to be based on routings.

***Budget Revision Level:***

The Budget Revision Level is used when reading information from the Manfact PROJBUD file. Normally, you will want to leave this field blank to use the current version of the budget.

***Decimal Places:***

Enter the number of decimal places you wish to see displayed for labor and machine hours.

***Planning Buckets, Plan Start and End Dates:***

Use the four text boxes in this section to define the number of Daily, Weekly, Monthly, and Yearly buckets to be included in your planning horizon. You may change these values by clicking on the up/down arrows next to each box, or by typing the desired value directly into each box.

As you change the number of buckets, the start and end dates of each bucket are calculated based on the Plan Start Date. These buckets are displayed on the Plan Dates tab shown on the right side of the screen. The Plan End Date is calculated and displayed by the system.

***Calendar:***

The Manufacturing Calendar is defined in the Manfact system using the TABLE.SHOPCAL entry screen. This includes the days of the week your company normally operates, as well as holidays and shutdown days.

The Manfact system allows you to define multiple calendars. For example, different plants might use different calendars. If your company has defined more than one calendar, you will need to enter the name of the calendar you wish to use for this application. Leave this field blank if your company uses only one calendar, or if you wish to use the default calendar.

***Automatically Reschedule Operations:***

The project schedule dates and the corresponding load on capacity centers must be updated any time you change critical information about a task. This would include information such as estimate to complete hours, predecessor/successor relationships, etc.

This routine creates one line in the schedule for each resource within a project. However, when you enable the Automatic Reschedule Operations option, the system will perform these calculations immediately each time you make a change. This may not be desirable if you are working with a very large schedule or a computer that is too slow.

If you disable automatic rescheduling, you will need to select the ***Reschedule All*** option from the ***Tools*** menu periodically to calculate the schedule. Please refer to the Scheduling Tools topic for more information.

***Automatically Roll-up Project Dates:***

Normally, you will want to enable this option so that your project start and end dates will be updated automatically when dates are changed on subordinate work orders. However, you may wish to disable the automatic roll-up in the case where you wish to establish a start or end date for the project, then allow the corresponding work orders to inherit the project dates. Please refer to the Scheduling Tools topic for more information.

***Use Budget Periods as Schedule Dates:***

This feature is intended for users who have time-phased their project budget in the Manfact system by fiscal period. Normally, the Load From Manfact feature is enabled, a separate line is created for each resource *and* fiscal period. The month start date and month end date for each period is used as the schedule dates for each row.

***Load Budget When ETC is Negative:***

Normally, only tasks with an Estimate to Complete (ETC) greater than zero are loaded into the schedule. Selecting this option allows you to include tasks where the total actual hours incurred to date exceed the budget amount.

***Load Operations with No Remaining Hours:***

Selecting this option allows you to include tasks where the actual hours exceed the planned hours.

***Automatically Remove Expired Capacity Override Entries:***

Selecting this option allows Capacity Override Entries with an end date prior to today's date to be automatically removed when the database is opened.

**Planning Groups, WIP Locations, Account Codes and Plan Dates:**

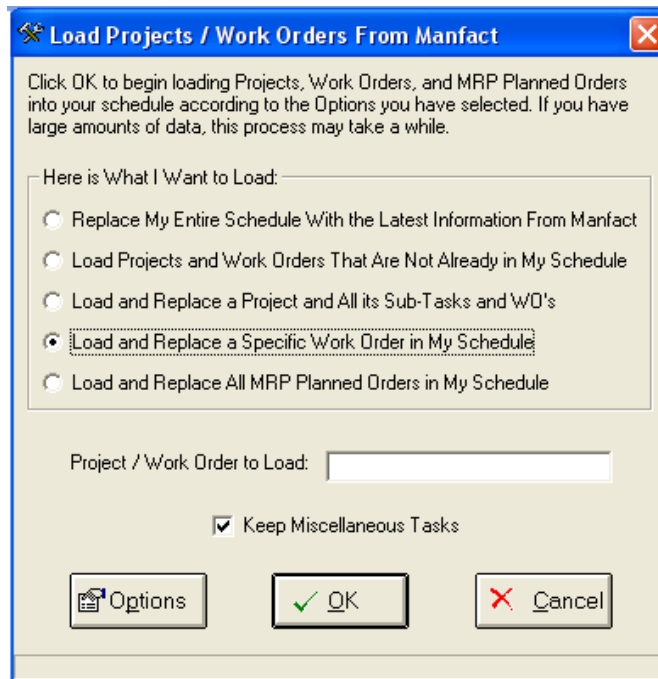
The tabs on the right side of the screen allow you to enter additional criteria to determine what information will be included in your schedule.

- ❑ If you are loading Work Orders, you must select the WIP Location(s) to be included in the plan.
- ❑ If you are loading MRP Planned Orders, you must select the Planning Group(s) to be included in the plan.
- ❑ If you are loading Projects, you must select the Account Code(s) to be included in the plan.
- ❑ You can view the Plan Dates to be included in your capacity plan by selecting Plan Dates.

**Load Projects, WO's and MRP From Manfact**

Before selecting this option, you should visit the Processing Options screen and verify that you have set the processing parameters as desired.

This process allows you to begin building your schedule using the information available from Manfact. You may load any combination of Projects, Budgets, Work Orders, and MRP Planned Orders.



Choose one of the following options to build your schedule:

- ❑ **Replace My Entire Schedule With the Latest Information From Manfact**  
Choose this option the first time you run this procedure. It will load your schedule according to the parameters you selected using the Processing Options screen.
- ❑ **Load Projects and Work Orders That Are Not Already in My Schedule**  
Choose this option if you already have a schedule you are happy with, and you only want to load projects and work orders that have been recently added to Manfact.
- ❑ **Load and Replace a Project and All It's Sub-Tasks and Work Orders**  
This option may be useful if recent changes to a Project structure may impact your schedule. Enter the Project Number in the prompt called Project / Work Order to Load.
- ❑ **Load and Replace a Specific Work Order in My Schedule**  
This option may be useful if recent changes to a work order may impact your schedule. Enter the Work Order Number in the prompt called Project / Work Order to Load.
- ❑ **Load and Replace All MRP Planned Orders in My Schedule**  
If MRP has been run recently, you may wish to update the planned order information in your schedule, without affecting the project and work order information you have in place.
- ❑ You may choose to keep or discard and Miscellaneous Tasks you may have created. Check the ***Keep Miscellaneous Tasks*** box to preserve your entries.

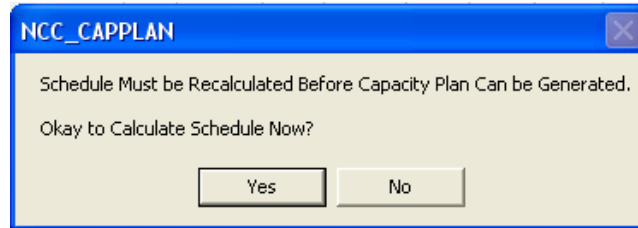
You may return to the Processing Options screen by clicking the **[Options]** button. Click the **[OK]** button when you are ready to begin loading. *Note, depending on the volume of data, this process may be lengthy.*

## **Calculate Capacity Plan**

Once you have established your schedule, the next step is to calculate the capacity plan to determine if sufficient resources are available to complete each task. The following activities must be completed before performing this function:

- ❑ In your Manfact system, use the TABLE.SHOPCAL and MFGCAL01 procedures to establish the shop calendar.
- ❑ In this application, enter required parameters using the Processing Options screen.
- ❑ Enter available capacity using the Capacity Centers Display.
- ❑ Define all applicable Work Centers and/or Resources using the Resources Display.
- ❑ Add tasks to your schedule by selecting the Load From Manfact option from the Processing menu, and/or the Add Miscellaneous Task option from the Tools menu.
- ❑ Modify your schedule as desired using the Schedule Display.

Choose the Calculate Capacity Plan option from the Processing menu, or click on the corresponding icon at the top of the screen. The following message may be displayed:

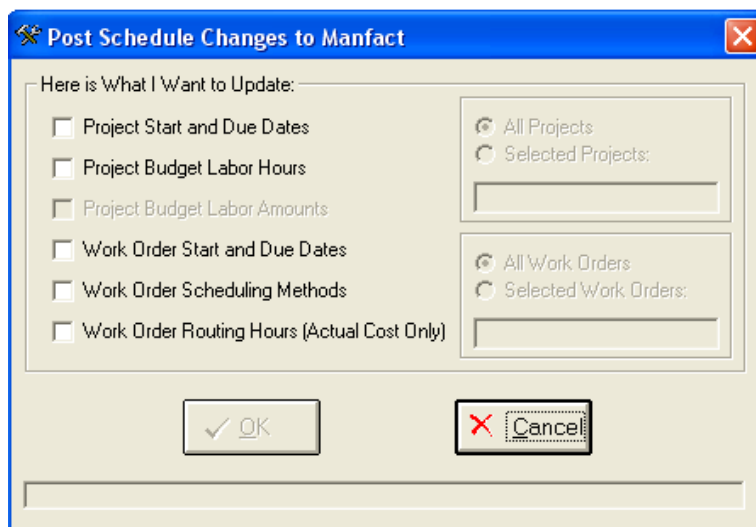


Click on the [Yes] button to Calculate the Schedule. If you receive this message, it means that you have turned off the option to Automatically Reschedule Operations. This feature is enabled/disabled using the Processing Options screen.

If you click [Yes] at the *Okay to Calculate Schedule Now?* prompt, the system will perform the same updates as the *Reschedule All* option available from the *Tools* menu. Please refer to the discussion of Scheduling Tools for more information. *Note, this action will likely result in changes to some or all of the start and/or due dates in your schedule (depending on the scheduling method(s) you are using).* If you choose [No], the capacity calculation will not be performed.

Messages displayed on the status bar on the lower left corner of the screen allow you to monitor the progress of the capacity plan calculation. Once the capacity calculation has been successfully performed, the *Capacity Results* tab is displayed.

## Post Schedule Changes to Manfact



***This option allows you to update the Manfact system with any or all of the following:***

<b>Option</b>	<b>Description</b>
Project Start and Due Dates	The Manfact PROJECT file is updated with the Start and Due Date for each project and sub-project in the schedule.
Project Budget Labor Hours	The Manfact PROJBUD file is updated with remaining labor hours for each project resource included in your schedule. Both Estimate to Complete (ETC) and Estimate At Complete (EAC) values may be affected.
Project Budget Labor Amounts	<p>Before updating labor hours or amounts, the system determines the labor rate for each resource based on existing Estimate At Complete (EAC) information in the PROJBUD file:</p> $\text{Labor Rate} = \text{Total EAC Amount} / \text{Total EAC Hours}$ <p>If there is no existing EAC information for the resource, the default rate entered in the Manfact TABLE.WO screen is used.</p> <p>After labor hours have been updated, the ETC and EAC hours are extended by the Labor Rate to calculate the corresponding labor amounts for each resource.</p>
Work Order Start and Due Dates	<p>If the work order has not been released (status = "N" or "O"), the Release Date in the WO file is updated with the Start Date from your schedule.</p> <p>The Work Order scheduled complete date is updated with the Due Date from your schedule regardless of the work order status.</p> <p>The start and due dates for each operation are also updated to match your schedule. This information is used in a variety of Manfact reporting procedures including dispatch lists.</p>
Work Order Scheduling Methods	The work order scheduling method (forward, backward, or manual) may be updated to match the information in your schedule.
Work Order Routing Hours	<p>The estimated Setup, Run, and Rework hours for each operation are updated to match your schedule.</p> <p><i>Note, this option is not available for standard cost work orders, as it would impact the calculation of variances.</i></p>

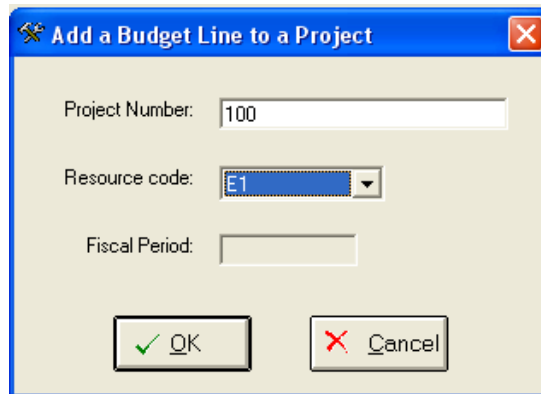
Also, if Projects are selected you have the option of updating All or a specified Project Number. If Work Orders are selected you have the option of updating All or a specified Work Order Number.



## Tools

### Add a Budget Row to a Project

This option allows you to add a new budget line to an existing project in your schedule.

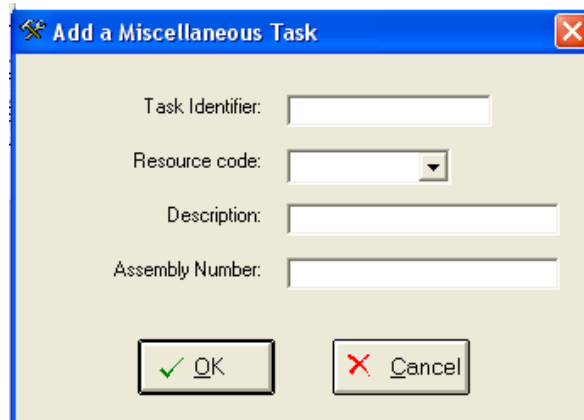


*The system prompts for the following information:*

Prompt	Description
Project Number	The new budget line will be inserted below the project number you specify here. This project number must already appear in your schedule.
Resource Code	The resource code entered at this prompt must first be defined using the Resources tab.
Fiscal Period	This field is prompted only if you have enabled the <i>Use Budget Periods as Schedule Dates</i> option in the Processing Options screen.

### Add a Misc. Task to the Schedule

Use this option to include a miscellaneous task in your schedule. This allows you to include non-production activities in your plan when there are no corresponding projects or work orders in Manfact.



*Note, miscellaneous lines are ignored when you choose the option to Post Schedule Changes to Manfact. The next time you reload your schedule from Manfact, these items will not reappear.*

**The following prompts are displayed when you choose this option from the Tools menu:**

Prompt	Description
Task Identifier	The task identifier for miscellaneous lines is user defined, however each one must be unique.
Work Center or Resource	The resource code entered at this prompt must first be defined using the Resources Display.
Description	Enter a description of this task (free form).
Assembly Number	Optionally, you may enter an assembly number to further describe this task.

Once the required information has been entered, click the [OK] button and the task will be added to your schedule. You may now enter additional information including estimated labor hours, machine hours, and schedule dates using the Schedule / Load Display.

### Delete Task(s) From the Schedule

This option allows you to delete one or more tasks from your schedule. *Note, it is not possible to delete records from Manfact using this application.*

You must first select the task(s) to be deleted using the Schedule Display. To select multiple tasks, click on the row numbers in the left-most column. Hold down the left mouse button, and drag the mouse until the desired rows are highlighted.

Once the desired row(s) have been selected, the system responds with a message:

Okay to Delete Rows \_\_\_ Through \_\_\_ from the Schedule?

Choose [Yes] to delete the selected rows, otherwise choose [No].

*Note, the system may respond with more rows to be deleted than you initially selected. This is because you cannot delete only a portion of a work order or project – all of the operations or sub-tasks beneath*

## **Loading Resources From Manfact**

The tasks in your schedule will place load on various resources. These resources may be a combination of Manfact work centers and/or project resource codes. All of the resources used in your plan must be defined using the Resources tab.

Select the ***Load Resources From Manfact*** option from the ***Tools*** menu to copy resource information from the Manfact database into your plan. You may choose to load either work centers or project resource codes. Choosing one of these options may append rows to your resource list, but it will not replace or override any existing information.

If you choose to load work centers, one row will be added for each record in the Manfact WKC file. If you choose to load project resources, one row will be added for each labor resource that has been defined using TABLE.WO (material, overhead and outside processing resource codes are not loaded).

## **Creating Capacity Centers**

A Capacity Center represents a group of resources that you wish to combine for the purposes of analyzing the demand (load) being placed on those resources. For example, a Capacity Center might represent a department, a group of machines, or a single work center. The ***Cap. Centers*** tab allows you to create as many Capacity Centers as you wish to effectively manage you schedule.

Select the ***Create Capacity Centers*** option from the ***Tools*** menu to automatically setup Capacity Centers based on the information on your Resources tab. You may choose to create one Capacity Center per *Department* (based on the first three characters of the Work Center identifier), or you may choose to create one Capacity Center per *Work Center*.

If you have previously used the WKC.N procedure to load capacity information (crew size, hours per shift, etc.) into your Manfact system, the Create Capacity Centers option will update the Capacity Centers Display with the available data. Once loaded, you may change this information as desired (the Manfact system will not be affected).

## **Update Manufacturing Calendar**

The Manufacturing Calendar is entered on the Processing Options screen. If you change the Shop Calendar you will need to run this procedure to update the calendar used in your schedule.

## Scheduling Tools

The process of scheduling a Work order, MRP Planned Order or Project accomplishes two main goals. First, it determines the number of work days required to complete the task (duration). The duration determines either the end date or start date of the task depending on whether you are using forward or backward scheduling.

The second goal of the scheduling operation is to calculate the number of labor and/or machine hours to be loaded into the Capacity Center for the dates work is scheduled to be performed. So, even if a task is manually scheduled (meaning you will supply the start and end dates for the task), the system must “schedule” each task in order to calculate the load.

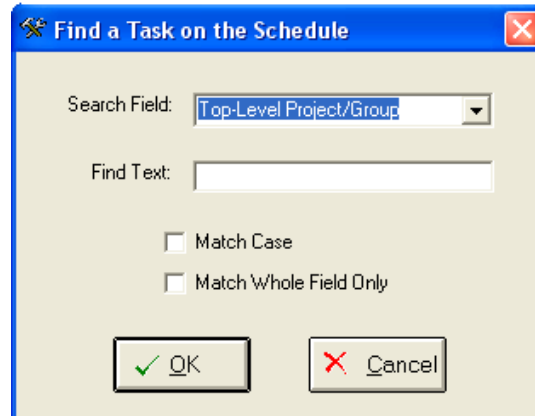
If you have enabled automatic rescheduling (please refer to the *Process Options* topic), the system will compute the load for a task when you change pertinent information such as the start date or the scheduling method. Otherwise, a “Need Reschedule” message will be displayed on the bottom of the screen indicating that the scheduling logic must be performed before the Capacity Plan can be calculated. This message will also be displayed if you make changes to available capacity using the Capacity Centers tab.

*The following options are available from the Tools menu:*

Option	Description
Reschedule All	This option will reschedule each task in your schedule. You should choose this option if you have made changes to your available capacity information (which may result in changes to your schedule dates), or anytime you see the “Need Reschedule” message displayed at the bottom of the screen.
Roll-up Project Schedule Dates	This option will allow you to roll-up schedule dates based on the project structure. The start date of a project will be the earliest date assigned to any sub-project or work order below it, and the end date of a project will be the latest date assigned to any lower level task. <i>Note, this tool is not required if you have chosen to roll up dates automatically (using the Process Options screen).</i>
Reschedule Work Orders Within Project Dates	This option attempts to force all work orders to be scheduled within the start and end dates of the projects they are linked to. If the work order uses the forward scheduling method, it will be updated with the project start date, and then scheduled forward from that point. Conversely, if the work order uses backward scheduling, it will inherit the project end date.
Push All Start Dates Forward to Plan Start	This option will reschedule any past due tasks by setting the start date equal to the plan start, and forward scheduling from that date.

## Find a Task in the Schedule

This feature may be used to locate a specific item on the Schedule Display. For example, if you wanted to locate a specific work order in your schedule, you could search the Task Identifier column for the desired work order number.



Prompt	Description
Search Field	Select the field you wish to search on. Select the Field from the drop-down window.
Find Text	Enter the text you are searching for.
Match Case	Check this box if you care whether letters are in upper or lower case.
Match Whole Field Only	Check this box if you want the entire field to equal the text you typed in the <i>Find Text</i> box. Otherwise, it will be considered a match if the text is contained anywhere in the field

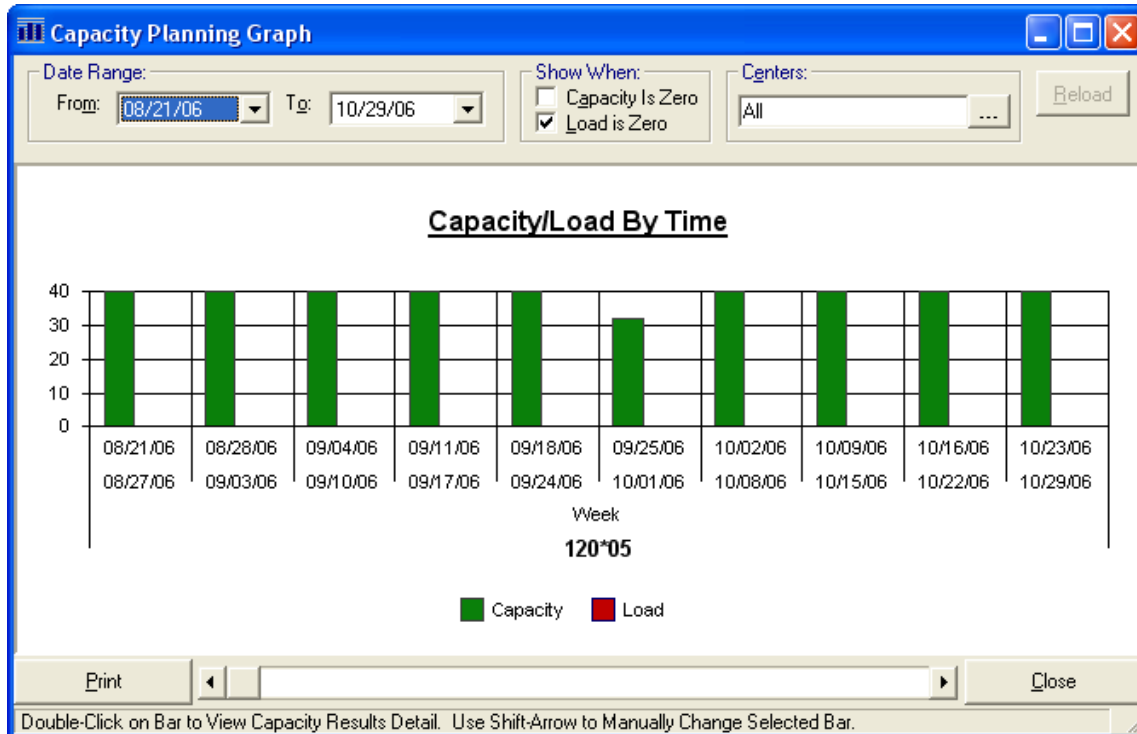
Click the [OK] button to begin the search.

## Reporting

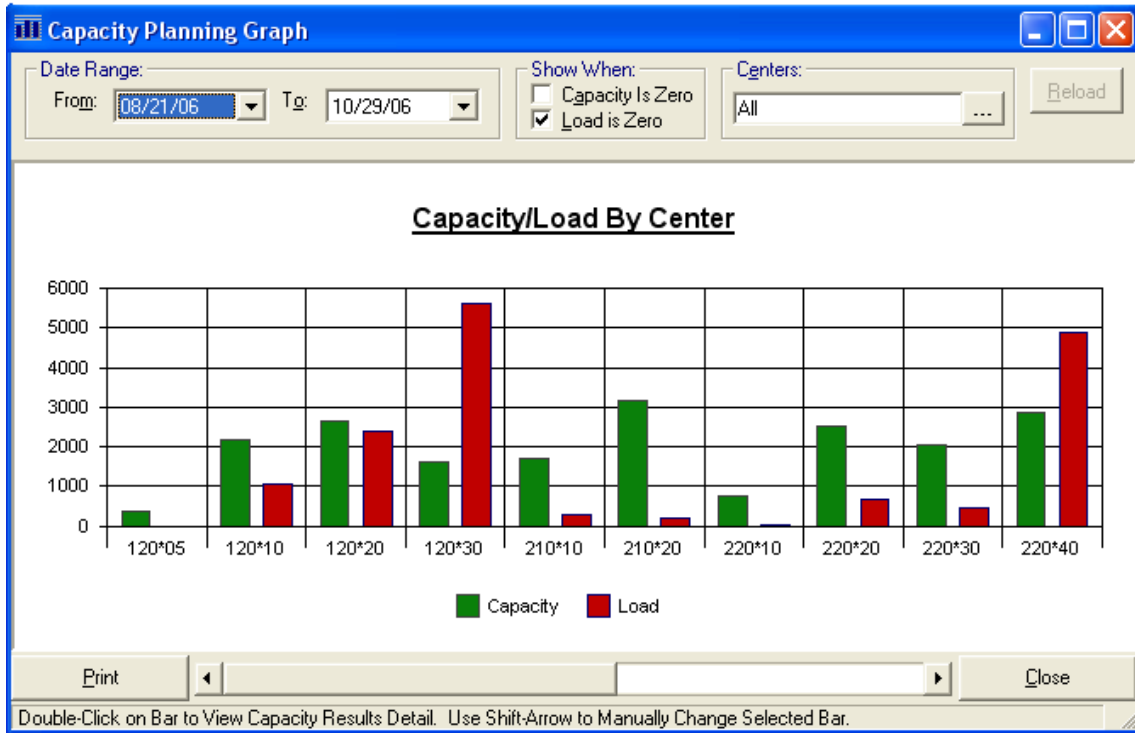
### Graph Capacity Results

This option produces a bar graph that will chart your Capacity Results for all or selected work centers. Two different formats are available.

Capacity/Load by Time displays one bar for each Capacity Center for each period in the planning horizon:



Capacity/Load by Center displays one bar for each Capacity Center representing the total summarized capacity and load for the selected date range:



Double-click on any point in the graph to jump to the corresponding row in the Capacity Results Display.

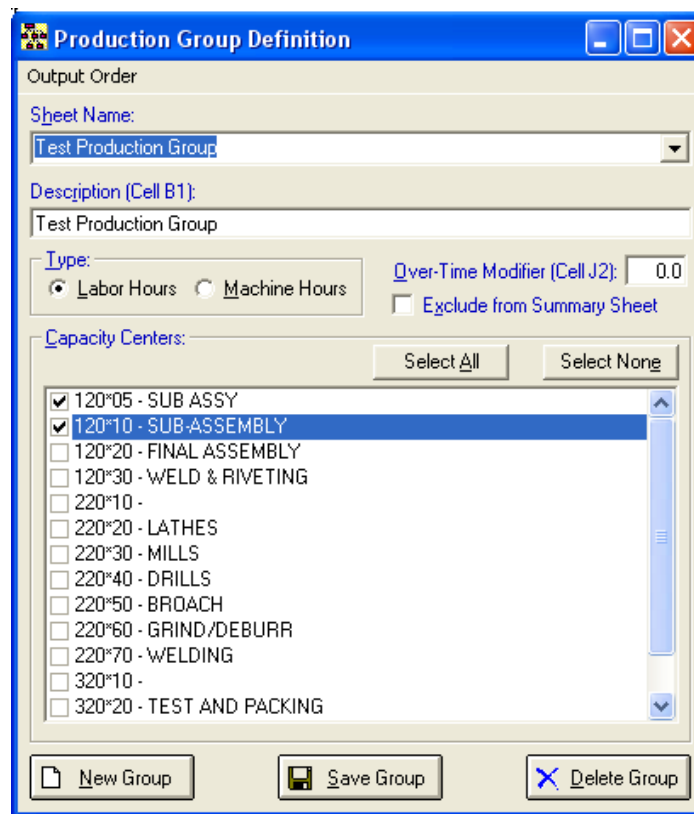
*The following options allow you to change the information displayed in your graph:*

Option	Description
Date Range (From/To)	Use the drop-down lists to select the From and To dates to be included in your graph. <i>Note, the dates available correspond to the dates defined for each bucket in your planning horizon.</i>
Show When Capacity is Zero	Check this box to include Capacity Centers in your graph even though total capacity is zero.
Show When Load is Zero	Check this box to include Capacity Centers in your graph even though total load is zero.
Select Capacity Centers	This option allows you to choose the Capacity Centers to include in your graph.

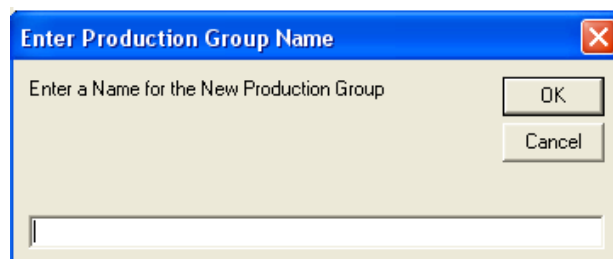
Option	Description
Reload	After changing any of the above options, click the [Reload] button to re-display the graph.
Print	Click the [Print] button to output the graph to your printer.
Close	Click the [Close] button to close the graph and return to the main screen.

### Production Group Definition

This option allows you to define a Production Group that will be included in your Reports.



To create a new group click on the [New Group] button and the following pop-up window will appear.

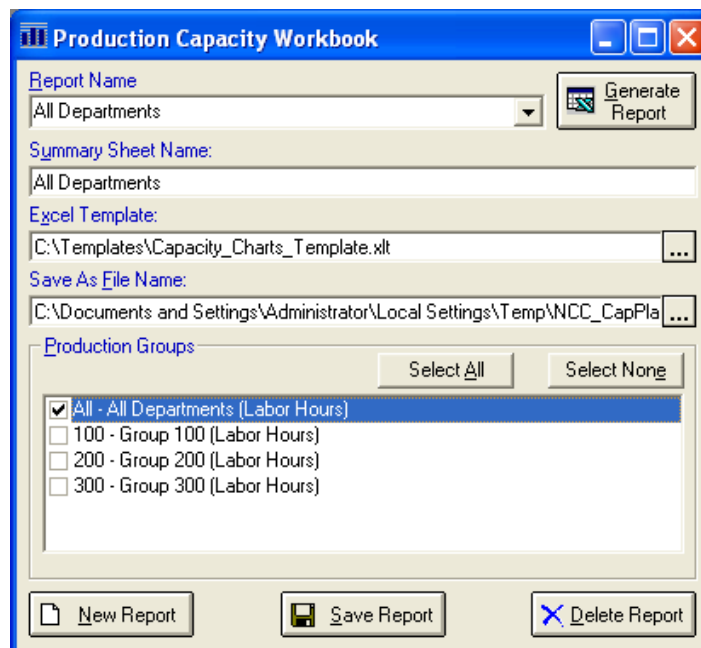




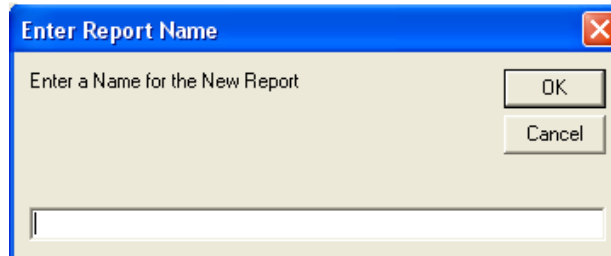
- ❑ Enter the Name for the New Production Group and click [OK].
- ❑ Enter the Description of the New Production Group.
- ❑ Select the type of hours to be reported by clicking on the appropriate radio button (Labor or Machine).
- ❑ Enter the Over-Time Modifier.
- ❑ Click on the Exclude from Summary Sheet check box if you want this Production Group excluded from the Summary Sheet.
- ❑ You may individually select Capacity Centers to be included or click on the [Select All] button to select all Capacity Centers. To erase selections click on the [Select None] button.
- ❑ Once completed click on the [Save Group] button to save the Production Group.
- ❑ You may delete the group at anytime by clicking on the [Delete Group] button.

## Generate Production Capacity Workbook

Choose this option to create an Excel Workbook based on the Production Group Definitions previously established.



To create a new report click on the [New Report] button and the following pop-up window will appear.

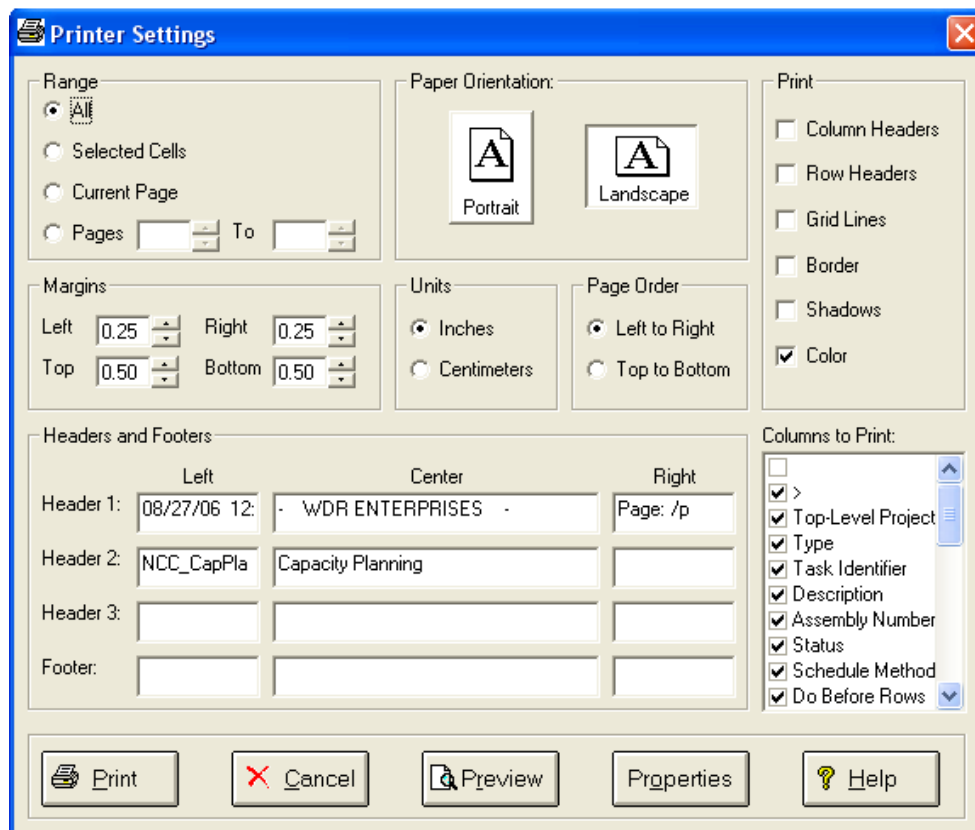


- ❑ Enter a Name for the Report and click [OK].
- ❑ Enter a Summary Sheet Name
- ❑ Enter the path to your Excel template.
- ❑ Enter the path where you want to save the report.
- ❑ Select the Production Groups to be included. To select all click on the [Select All] button. To erase selections click on the [Select None] button.
- ❑ Click on the [Save Report] button to save the report definition.
- ❑ To generate a report click on the [Generate Report] button found in the upper right hand corner of the page.

## General Information

### Printing a Spreadsheet

Below is a sample of the screen that will appear when you select the **Print** option. This will print the current active spreadsheet, so be sure to click on the spreadsheet you wish to print before choosing the Print option.



#### **Range - Selecting a Print Range**

You may choose to print the entire spreadsheet (all), selected cells (those that you have highlighted on the current screen), the current page (only the rows that are currently visible on your screen), or a range of page numbers.

#### **Orientation - Portrait or Landscape**

You may print your report in portrait mode (normal) or landscape mode (sideways). Printing in landscape mode will allow you to fit more columns of information on your report.

#### **Margins - Report Margins**

You can make your report more attractive by setting the top, bottom, left, and right margins. Reduce the left and right margins if you need to fit more columns on the report.

### ***Units - Inches or Centimeters?***

Are the margins you entered expressed in inches or centimeters?

### ***Page Order***

If your report is too wide, it may span multiple pages. When this occurs, do you want the report printed from top to bottom or left to right?

### ***What Do You Want to Print?***

You can customize the appearance of your report by printing (or not printing) column headers, row headers, grid lines, borders, shadow, and color.

### ***Headers and Footers***

Your report may have up to three lines for the heading, and one line for the footer. The system initially displays a default heading, which you may modify if desired.

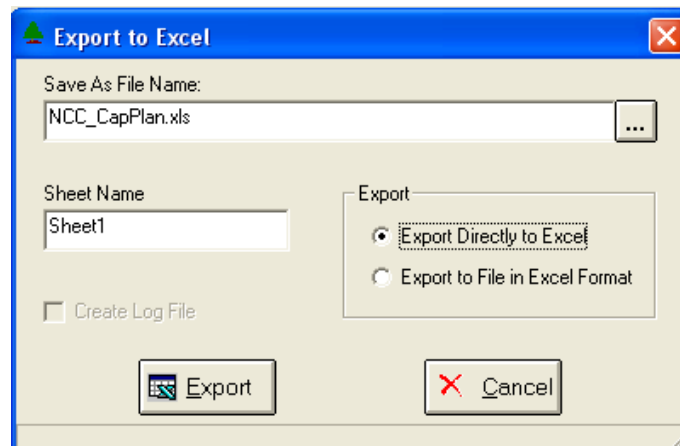
*Tip:* Use /p to designate a page number.

### ***Which Columns Do You Want to Print?***

The columns that are available for printing are listed. Select the columns you wish to include on your report.

## **Exporting a Spreadsheet to Excel**

Below is a sample of the screen that will appear when you select the **Export to Excel** option. This will export the current active spreadsheet, so be sure to click on the spreadsheet you wish to print before choosing the Export option.



### ***Save As File Name***

Enter the pathname of the file you wish to create. You may Browse the files by clicking the button to locate the drive and folder where the file will be stored.

### ***Sheet Name***

Enter the Excel sheet name to create. This will automatically default to Sheet1.

### ***Export to Excel or to a File?***

You may export the contents of the display directly to Excel, or you may choose to create a file in Excel format.

### ***Create a Log File?***

Select this option to create a log file. The log file contains error messages and other information about how your Excel file was created. The name of the log file is "CreateExcelFile.log", and it will be stored in the same folder as your spreadsheet.

### ***Export Button***

After all required information has been entered, click this button to export your data to Microsoft Excel.

## **Editing Features**

### ***Copy, Cut, Paste and Fill***

You may use the standard Windows Copy, Cut, and Paste features to copy data to the Windows clipboard, or to paste data from the clipboard into a cell.

To copy data, hold down the left mouse button and highlight one or more cells, then choose **Copy**. There are multiple ways to enter this command:

1. From the **Edit** menu choose **Copy**.
2. Click the **Right Mouse** button, and then choose **Copy** from the pop-up menu.
3. Click the corresponding icon on the toolbar.
4. Hold down the **Ctrl** key and type the letter **C (Ctrl-C)**.

You can use the Cut command (Ctrl-X) and the Paste command (Ctrl-V) in similar fashion.

To copy the contents of an entire row, click once on the row header (the number displayed on the left side of the first cell), and then choose **Copy**. Now click on the row header that you want to copy the data to and choose **Paste**.

If you want to update several cells with the same value, highlight all of the cells you wish to update then choose **Fill Cells**. This command will update each cell with the current information from the clipboard.

### **Zoom**

This feature allows you to view, print and/or edit the expanded contents of a field. It is especially useful for multi-line information such as notes and long descriptions.

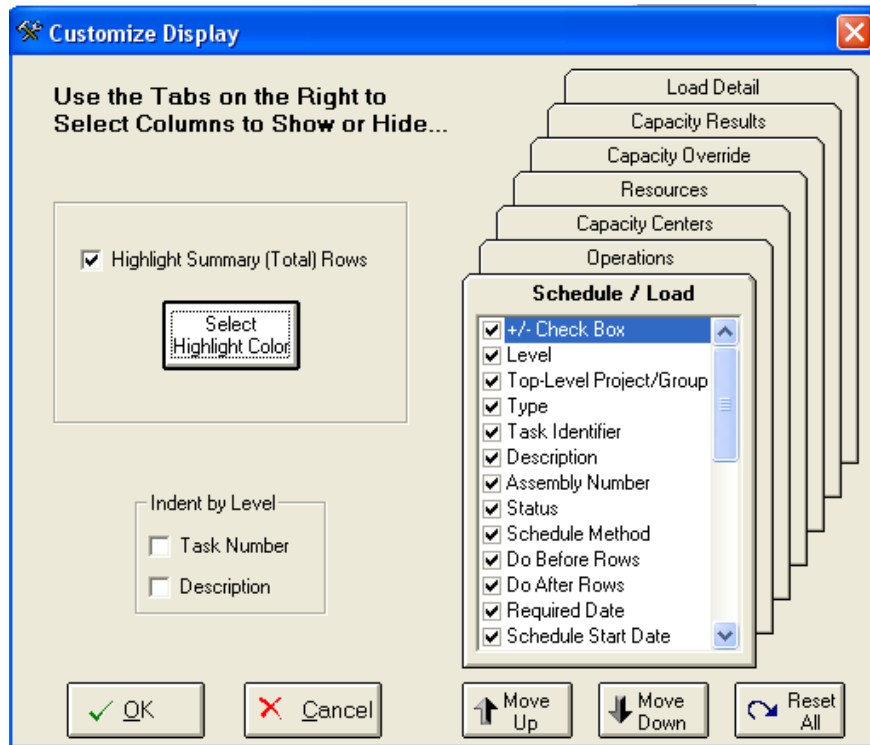
- You may "Zoom in" on any selected item by selecting Zoom from the Edit Menu, clicking the magnifying glass on the toolbar, or selecting Zoom from the right click menu.
- The Column Name will appear in the Title Bar with "Edit" or "View". You may edit the field when it is allowed. Click "**OK**" when finished, or "**Cancel**" to revert to the original data.
- To print the selected item, click on the printer icon and the information will be sent to your local printer.

Locked fields may be viewed but not modified using the Zoom Feature. If the field is locked, "**View**" will appear in the Title Bar, and there will only be a single command button labeled "**Done**".

### **Customizing Your Display / Arranging Columns**

Use the Customize Display Screen to make the following changes:

- Each tab contains a list of fields that corresponds to a screen used in this application. Use the checkboxes to show or hide each field.
- Use the [Move Up] and [Move Down] Buttons to re-arrange the order in which the fields appear on the specific screen Display. Click [Reset All] to return to the system's default settings.
- Select the color to use for highlighting Total Rows. When you click the [Select Color...] button, a dialog is displayed allowing you to select a color palette.
- Select whether you choose to indent by level based on Task Number or Description or leave blank to not indent at all.
- Click "OK" to apply any changes you have made or "Cancel" to revert to the previous settings.



Note, these settings are stored in the Windows Registry for each user.

## Wildcarding

Wildcarding is a powerful feature that allows you to search using a portion of the field. You tell the system you want to use a wildcard by typing three periods “...” or an asterisk “\*” at the beginning or end of your search entry. Here are some examples of wildcard commands and their expected results:

Prompt	User Entry	Result
Part No.	XTR... or XTR*	Returns part numbers that begin with “XTR”
Description	...VALVE... or *VALVE*	Returns parts with the word “VALVE” anywhere in the description.
Category	...A or *A	Returns parts with a category ending with the letter “A”.