NorthClark Computing

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

# NorthClark Computing, Inc.

# Routing Maintenance

# User Guide

Web and Desktop Applications
for Manfact by Epicor

**June, 2007**

# TABLE OF CONTENTS

# Introduction

NorthClark's Routing Maintenance System is used to create and maintain Routing records in your Manfact system (also known as Bills of Operation or "BOO" records). The Routing Maintenance procedure is a Windows based desktop application that includes the following capabilities:

- View, create and modify Routing records in your Manfact system.
- View the impact of various lot sizes on both cost and lead-time.
- Define multiple Tasks for each Routing Line Item.
- Select Task Descriptions from a list of pre-defined standard operation descriptions.
- An unlimited amount of text may be entered as Instructions for each Task.
- Associate a list of Part Numbers and Quantities from the Bill of Material with a specific Task.
- The list of Part Numbers from the Bill of Material will be displayed in a separate Window (same information as the pick-list). The user may select one or more items from the list by clicking the check-box displayed next to each Part Number.
- Create customized Routing Reports and Work Order Traveler documents using Microsoft Word™ Templates.

## Support for Engineering, History and Work Order Routings

The NorthClark system may be used to access the following types of Routing records:

- Production Routings (BOO)
- Engineering Routings (ENGBOO)
- Historical Routings (BOOHIST) – View Only
- Work Order Routings (WO) – Task Management Only

Historical Routing (BOOHIST) records may be viewed and printed, but not modified.

Due to the complexities involved in modifying a Work Order routing, changes to the Manfact WO record are not currently supported in the NorthClark application. Manfact's WO.C procedure must be used to add or delete routing line items from the Work Order. NorthClark's Routing Maintenance module will however, allow maintenance of Task details associated with existing Routing steps on a Work Order.

### *Updating Routing (BOO) History*

The system will update the Manfact NCC_BOOHIST and NCC_BOOLIHIST files when the Revision Level of a Routing is incremented.

## Main Menu Options

Following is a brief description of the options available from the Main Menu of the Routing Maintenance application.

| Menu | Option | Description |
|---|---|---|
| File | New | Clear all current data on all displays and create new routing. |
| | Delete | Selecting this option will remove the Routing record from the file.  You will be asked if you are sure you want to perform this action. |
| | Save | Save your changes to the database. |
| | Print | Print the current active spreadsheet. |
| | Export to Excel | Export data from the active spreadsheet. |
| | 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. |
| | Insert Row | Insert a Row immediately above your current row. |
| | Delete Row | Delete the Row you are in. |
| | Copy Row | Copy the entire row to the Windows clipboard |

***Main Menu Options (cont.)***

| Menu | Option | Description |
|---|---|---|
| View | Adjust Columns to fit Data | Automatically adjust column width to fit data in column. |
| | Adjust Rows to fit Data | Automatically adjust row height to match data in a row. |
| | Adjust Spread to fit Data | Automatically adjust spreadsheet to fit data in both column and row. |
| | Reset Columns to Default Width | Resets Columns to Default Width. |
| | Reset Row to Default Height | Resets Rows to Default Height. |
| | Show Hidden Columns | Show Columns that are hidden. |
| | Arrange/Hide Columns | Allows user to arrange columns as needed for view. *See further discussion in General Information section*. |
| Search | Search | Serves the same function as the [Search] button. |
| | Clear Search | Serves the same function as the [Clear Search] button. |
| | Save as Default Search | Serves the same function as the [Save as Default Search] button. |
| | Restore to Default | Serves the same function as the [Restore to Default] button. |
| Tools | Part Search | *See Tools Section – Part Number Search* |
| | Work Center Search | *See Tools Section – Work Center Search* |
| | Copy Routing | *See Tools Section – Copy Routing* |
| | Clear Routing | Clears all current routing step data. You will be asked if you are sure you want to perform this action. |
| | System Administration | Enter system parameters for this application. Note, this option may be disabled if you do not have sufficient security privileges to perform this function. |
| Help | User Guide | Displays this document. |
| | About | Displays the current revision level of the application. |

## Spreadsheet "Right Click" Menu

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

| **Item** | **Description** |
|---|---|
| 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. |
| Insert Row | Insert a Row immediately above your current row. |
| Delete Row | Delete the Row you are in. |
| Copy Row | Copy the entire row to the Windows clipboard |
| Select Column | Allows you to sort by the selected column. |
| Select Row | Used to select all the cells in a given row to facilitate copy/paste functions |
| Arrange Columns | Allows user to arrange columns as needed for view. *See further discussion in General Information section*. |
| Work Center Search | *See Tools Section – Work Center Search* |

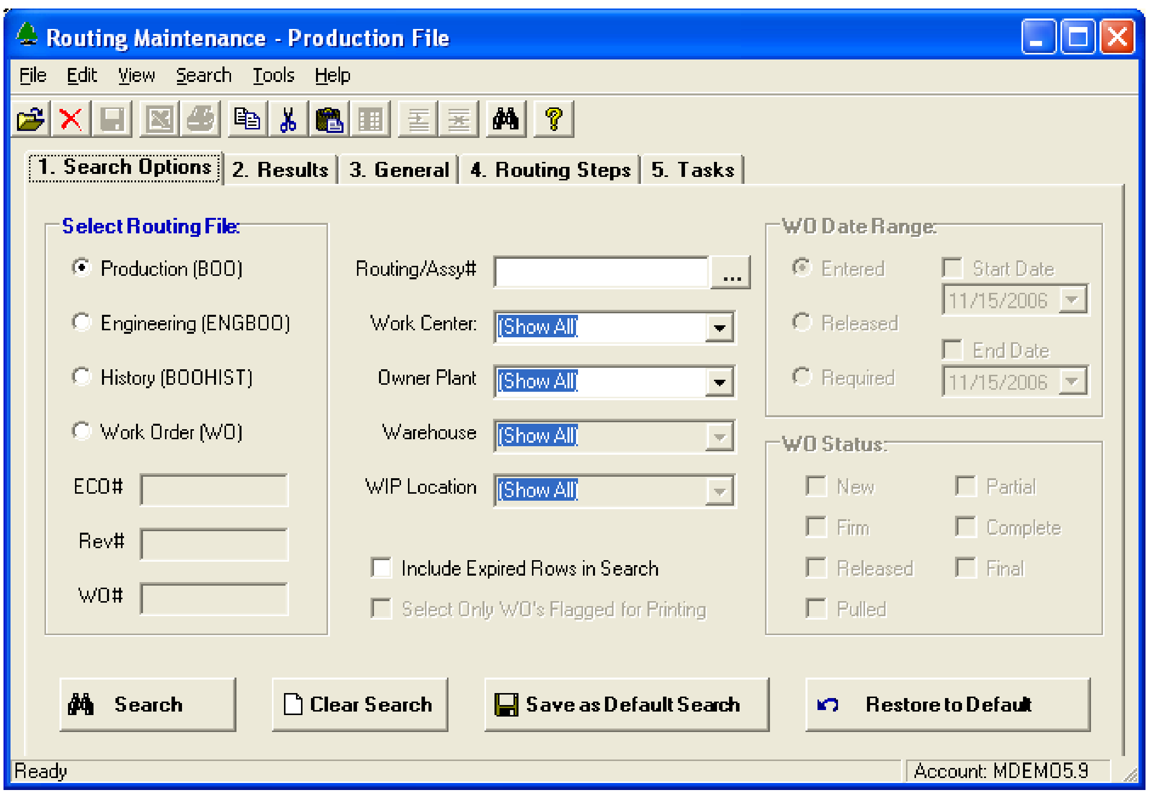
# Routing Maintenance

The main screen of the Routing Maintenance application is comprised of five tabs:

- Search Options – Generate a list of Routing records based on a variety of search criteria.
- Results – List of records generated from the search performed.
- General – Header information for a selected Routing record.
- Routing Steps – Detail information for the selected Routing record.
- Tasks – Define multiples Tasks for each Routing Step.

## Search for a Routing

The *Search Options* tab is displayed with the Routing Maintenance application is started:

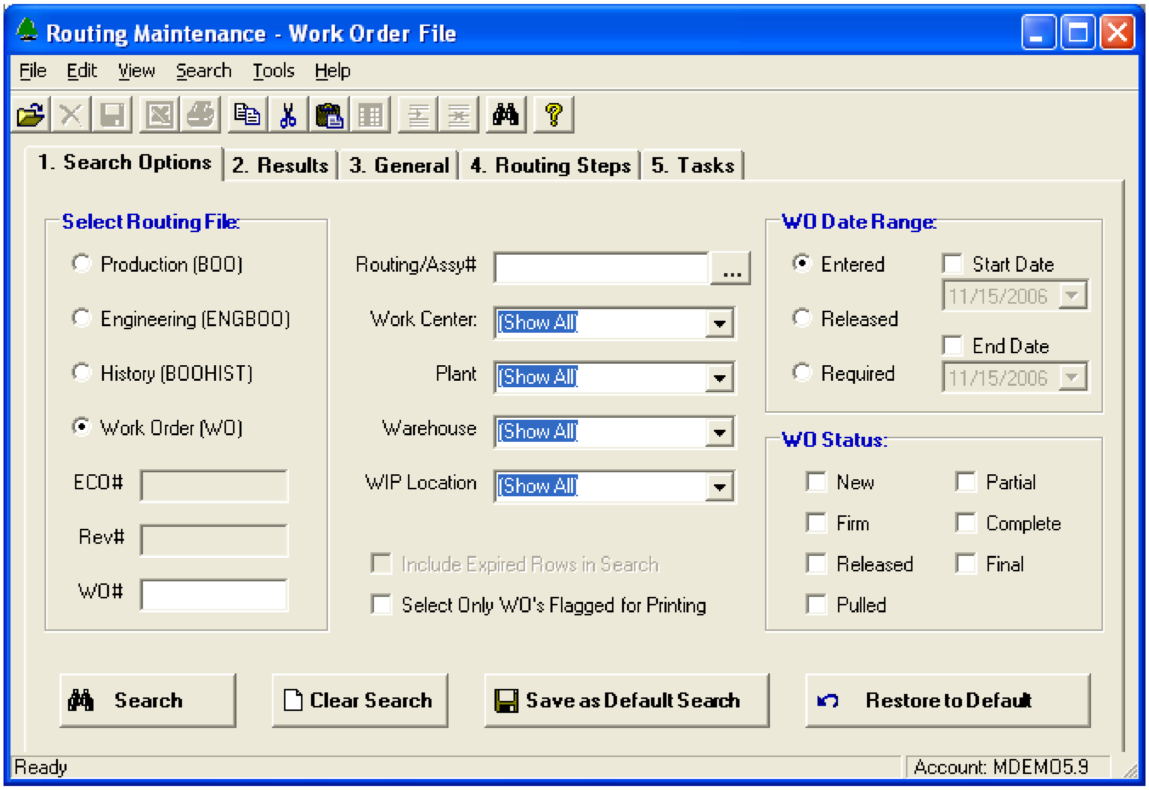



Begin by selecting the Manfact Routing file you want to work with, Production, Engineering, History, or Work Order. If you know the identifier of the Routing you wish to update, or if you want to create a new record, you may proceed directly to the ***General*** tab. Otherwise, fill in some or all of the available search criteria and click the [Search] button to locate records in your Manfact database. The ***Results*** tab will display your listing in spreadsheet form.

Use the [Clear Search] button to restore all search fields to the system default.

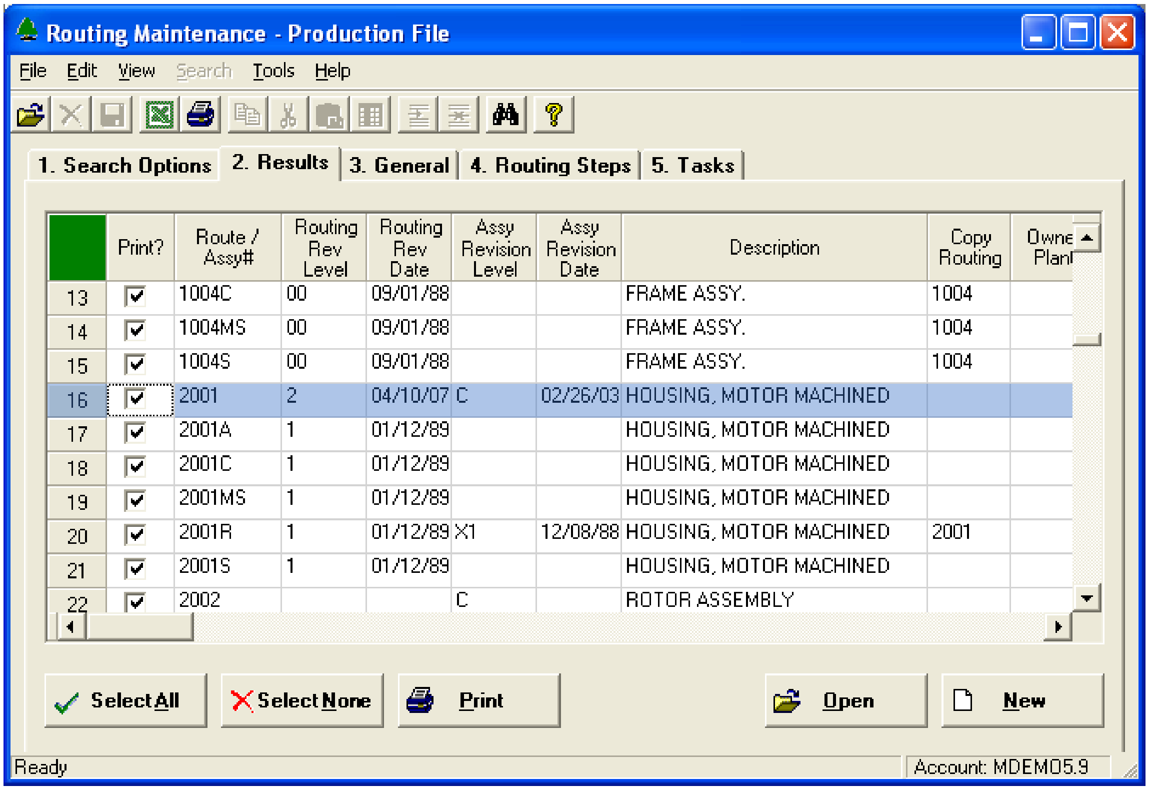
You may also create a default search to be used on a regular basis by clicking on the [Save as Default Search] button. When the search has been modified you may return the settings to default by clicking on the [Restore to Default] button.

Note that certain prompts will be disabled, depending on the Routing file you have chosen. This example shows the search options that are available when the Work Order file is selected:



## Search Results

The system displays a list of records that meet your search criteria. From here you may print selected Routings or Work Orders, or open a record for editing.




Choose one of the following options to open a record for editing:

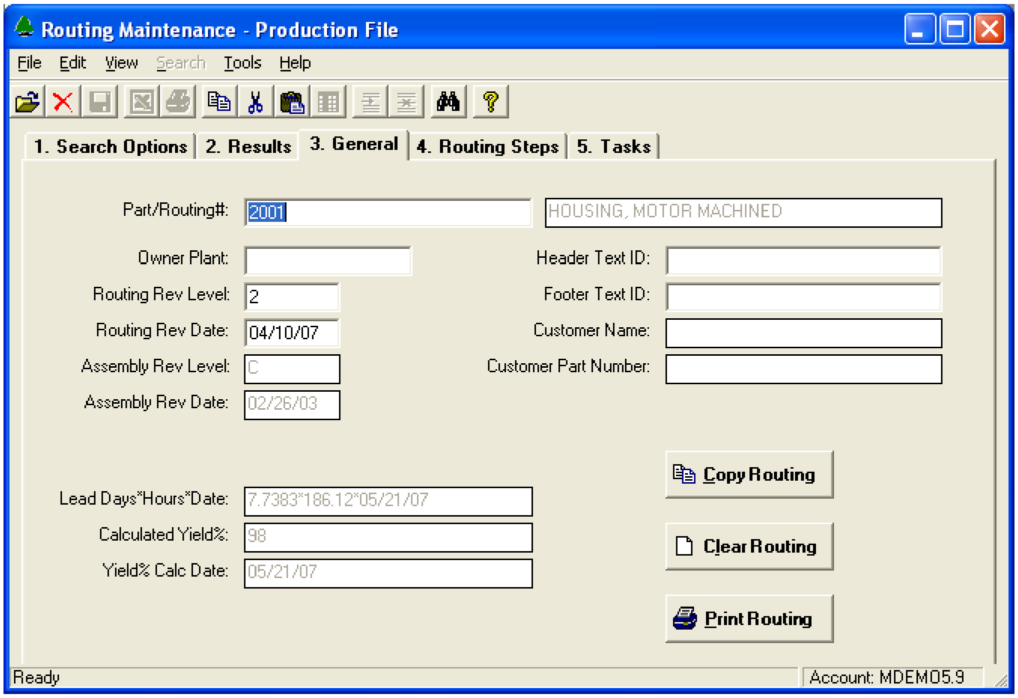
- Click on any cell on the desired row and click the **[Open]** button.
- Double-click on the Row Number displayed to the left of the desired item.
- Click the **[New]** button to create a new Routing.

Once you have made your selection, the information from the header of the Routing record will be displayed on the General tab.

The checkbox in the first column allows you to select records for printing. The **[Select All]** and **[Select None]** buttons provide a convenient way to select or clear all the checkboxes at once. Once the desired rows have been chosen, click the [Print] button, and a screen will be displayed allowing you to enter further printing options. Please refer to the *Routing / Traveler Printing* topic for more information.

## Routing Header Information

Use this screen to view and update information from the header of the Routing record. This screen is displayed automatically when you select a record from the Results tab. You may also access an existing record, or create a new record, by entering the identifier at the Part#/Routing prompt.



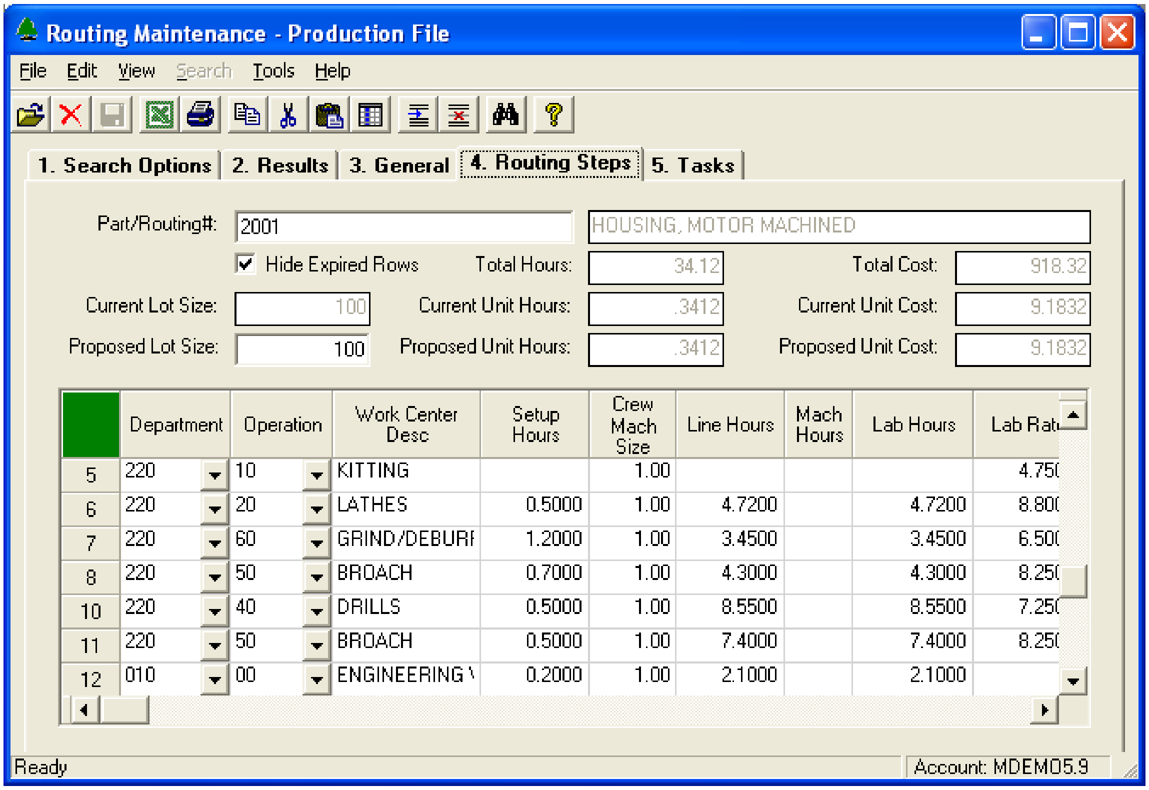

- To completely clear this screen, select the ***New*** option from the ***File*** menu.
- Use the [Clear Routing] button to delete all rows from the Routing.
- To delete an entire Routing from the file, select the ***Delete*** option from the ***File*** menu.
- Use of the **[Copy Routing]** function to clone an existing routing.
- The Manfact system will be updated when you choose the ***Save*** option from the ***File*** menu or the Toolbar.
- Click the **[Print Routing]** button, and a screen will be displayed allowing you to enter further printing options. Please refer to the *Routing / Traveler Printing* topic for more information.

***General Field Descriptions:***

| Field | Description |
|---|---|
| Part Id | Routing ID Number |
| Part Description | Description of the ID if a Part Number is used for the Routing ID Number |
| Copy Routing | The Routing ID of a Master used to create this Routing record. |
| Owner Plant | Plant Code for the Owner of the Routing |
| Standard Lot Size | The number of assemblies made in a standard lot. |
| Revision Level | Current Revision Level of the Routing |
| Revision Date | Date the Current Revision became effective. |
| Header Text ID | Routing Text ID Number for standard Routing text.<br>Note: Users may not update BOOTEXT from within this procedure. Users desiring to modify the text will need to access BOO.N via standard Manfact procedures OR create BOOTEXT id's via BOOTEXT.N |
| Footer Text ID | Routing Text ID Number for standard Routing text.<br>Note: Users may not update BOOTEXT from within this procedure. Users desiring to modify the text will need to access BOO.N via standard Manfact procedures OR create BOOTEXT id's via BOOTEXT.N |
| Customer Name | The Customer Name of the Customer Number that has been assigned to the Part if a Part Number is used for the Routing ID Number. |
| Customer Part | The Customer Part Number from the Parts file if a Part Number is used for the Routing ID Number. |
| Lead Days*Hours*Date | The Routing Lead Time in Days * Hours * and the Date it was last calculated. This field is system calculated and may not be maintained by the user. |
| Calculated Yield % | The Yield Percentage of the entire Bill of Operation for all Routing Steps. This field is system calculated and may not be maintained by the user. |
| Yield Calc Date | The last time the Yield was calculated. This field is system maintained and may not be updated by the user. |

## Routing Steps

Use this view to edit Routing line items.  Enter a Proposed Lot Size to see the impact on time and cost.




To modify Routing Step detail, simply begin typing in the spreadsheet, or use the drop-down lists provided to select Department and Operation codes.

Double-clicking on the row header for a given line item will cause the “Tasks” tab to be displayed for the selected Work Center.

***Routing Steps Field Descriptions:***

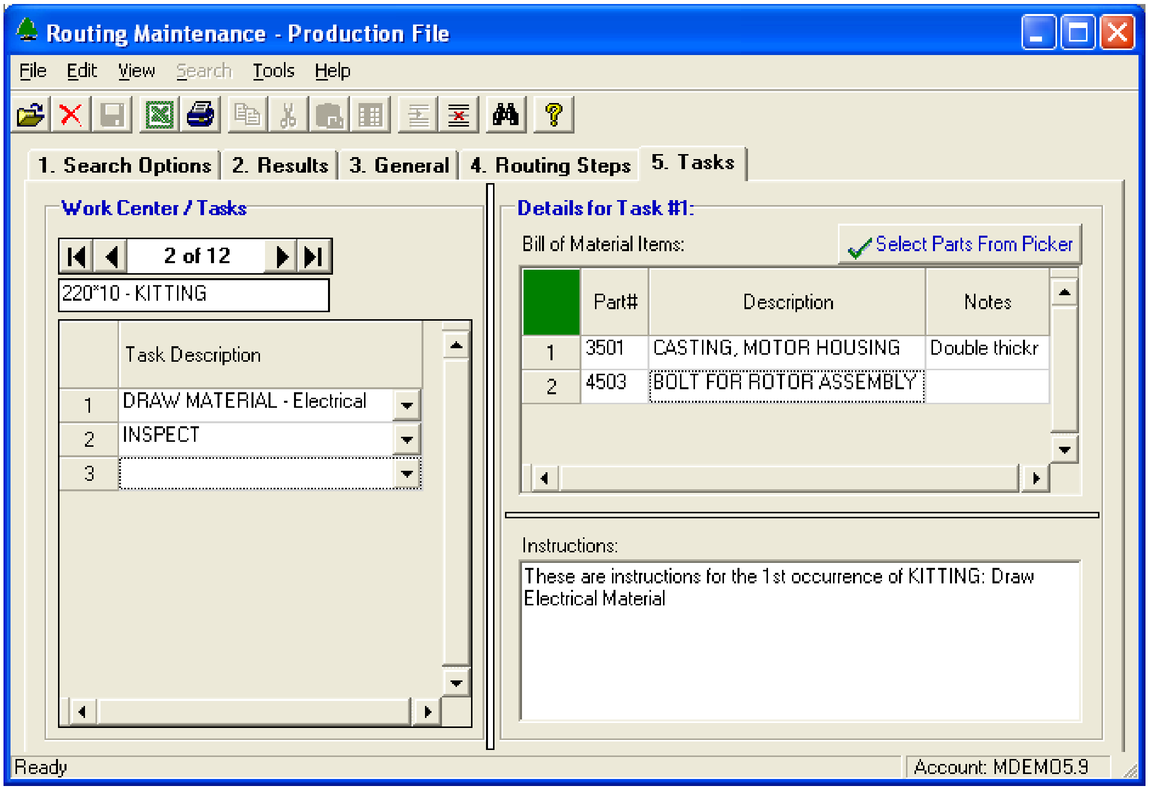
| Field | Description |
|---|---|
| Current Lot Size | The number of assemblies made in a standard lot. |
| Proposed Lot Size | User Entry Field for Lot Size used to perform What If calculations on Cost and Time for the Routing. |
| Total Hours | Setup + Labor + Machine + Rework Hours |
| Current Unit Hours | Total Hours / Current Lot Size |

| Field | Description |
|---|---|
| Proposed Unit Hours | Total Hours / Proposed Lot Size |
| Total Cost | Total Setup Cost + Total Labor Cost + Total Machine Cost + Total Rework Cost + Total FOH Cost + Total VOH Cost |
| Current Unit Cost | Total Cost / Current Lot Size |
| Proposed Unit Cost | Total Cost / Proposed Lot Size |
| Department | Select the Department number for the manufacturing function to be performed from the drop-down list. |
| Operation | Select the Operation code for the manufacturing function performed from the drop-down list. |
| Work Center Description | Work Center Description for the Dept*Operation combination from the Work Center file. |
| Line | Line Number for the Routing Step. |
| Setup Hours | Standard length of time required for setting up machinery for the workstation. |
| Crew/Mach Size | The standard number of people or machines needed to run this work center routing step. |
| Line Hours | Line hours per lot, in terms of hours, with fractional values up to four decimal places. |
| Mach Hours | Number of machine hours per unit. |
| Lab Hours | Line Hours * Crew Size |
| Lab Rate | Standard Labor Rate from the Work Center file. |
| FOH Percent | Standard Fixed Overhead Percent from the Work Center file. |
| VOH Percent | Standard Variable Overhead Percent from the Work Center file. |
| Setup Cost | Setup Hours * Standard Labor Rate |
| Lab/Mach Cost | (Labor Hours * Standard Labor Rate) + (Machine Hours * Machine Rate) |
| Tot Cost | Setup Cost + Lab/Mach Cost + Rework Cost + FOH Cost + VOH Cost |

| Field | Description |
|---|---|
| Rwk Hours | Standard amount of time to be allocated per unit for reworking parts at this routing step. |
| Queue Time | The standard wait time for jobs at this operation step. |
| Move Time | The standard move time for jobs to move to this operation. |
| Mach No | User Defined Machine Number |
| Tool No | User Defined Tool Number |
| Alt Mach | User Defined Alternate Machine Number |
| Route Instructions | Double Click on Routing Instructions to enter multi lined free form text that will be printed on WO documents. |
| Yield Percent | The manufacturing yield percentage for this operation. |
| Start Date | Starting Effective Date |
| End Date | Ending Effective Date |
| ECO Date ID | Identifier and date of each ECO affecting this step of the routing. |
| Text File ID | Routing Text ID Number for standard Routing text.<br><br>Note: Users may not update BOOTEXT from within this procedure. Users desiring to modify the text will need to access BOO.N via standard Manfact procedures OR create BOOTEXT id's via BOOTEXT.N. |

## Task Definition

Use this screen to associate Tasks with a Routing line item, and enter details about each Task. You may access a line item by selecting it from the Routing Steps tab, or you may scroll through the line items using the Navigator Bar located on the upper left corner of the Tasks tab.



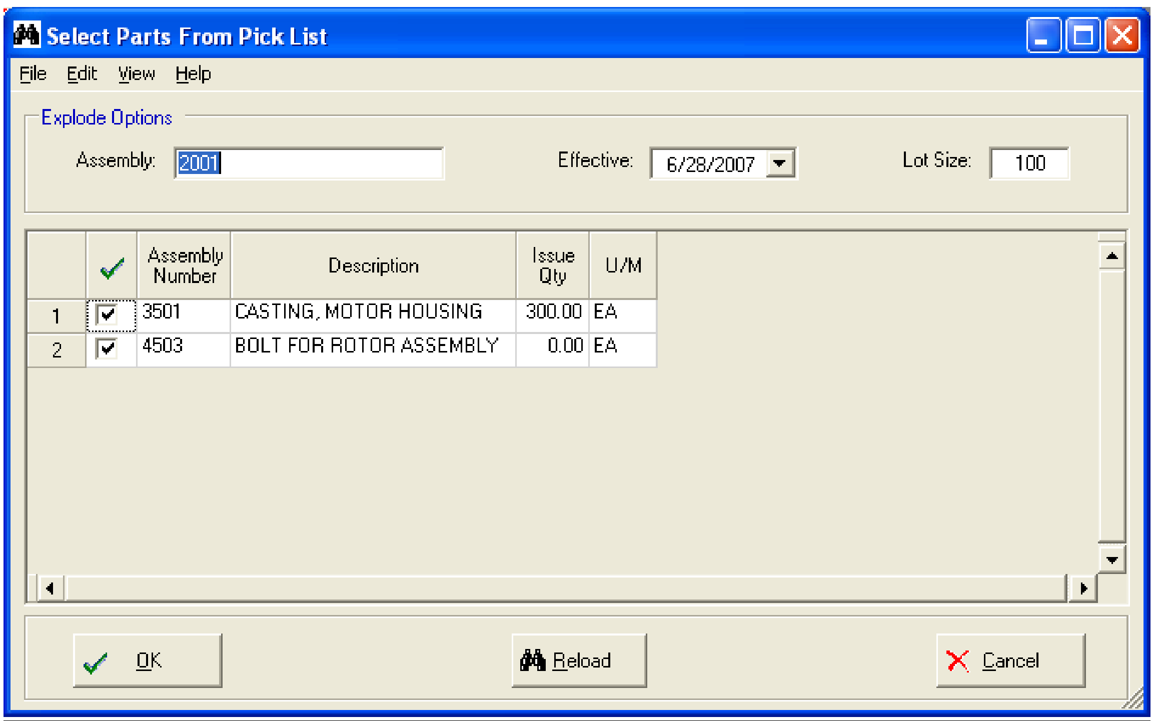

***Information displayed on this screen includes:***

| Field | Description |
|---|---|
| Navigator Bar | The Navigator Bar allows you to scroll through the line items of the current Routing, and view/update the Tasks for each line item. The BOO line item number is displayed in the caption (e.g., 4 of 10). |
| Work Center | The Department, Operation, and Description for the current Routing line item. |
| Task List | Use the drop-down list to select a Task Description, or type a Description into the cell. Default Task Descriptions are defined in the *System Administration* screen. The Bill of Material Items and Instructions for the currently highlighted Task are displayed. |

| Field | Description |
|---|---|
| Bill of Material Items | Use this grid to enter a list of Part Numbers associated with this Task. The Part Number must exist on the Manfact PARTS file. A warning message is displayed if a Part Number is entered that does not appear on the Pick-List for the Routing. The Part Description is displayed by the system and may not be changed. |
| Select Parts From Picker | Click this button to select Part Numbers from the Pick-List. |
| Instructions | Free-form multi-line text entry. |

## Selecting Part Numbers From the Pick-List

This screen is displayed when the **[Select Parts From Picker]** button is clicked.




The Pick-List information is determined as follows:

| | | |
|---|---|---|
| Released Work Order | - | Read PICKER file |
| Unreleased Work Order | - | Explode WOBOM 1 Level |
| Production Routing | - | Explode BOM 1 Level |
| Engineering Routing | - | Explode ENGBOM 1 Level |
| History | - | Option Not Available |

When this screen is displayed, any Part Numbers already defined for the Task will be pre-selected. The user may then add or remove parts from the list by checking/un-checking each item as desired.

You may change the Lot Size and/or Effective Date, then click the [Reload] button to reload the Pick-List.

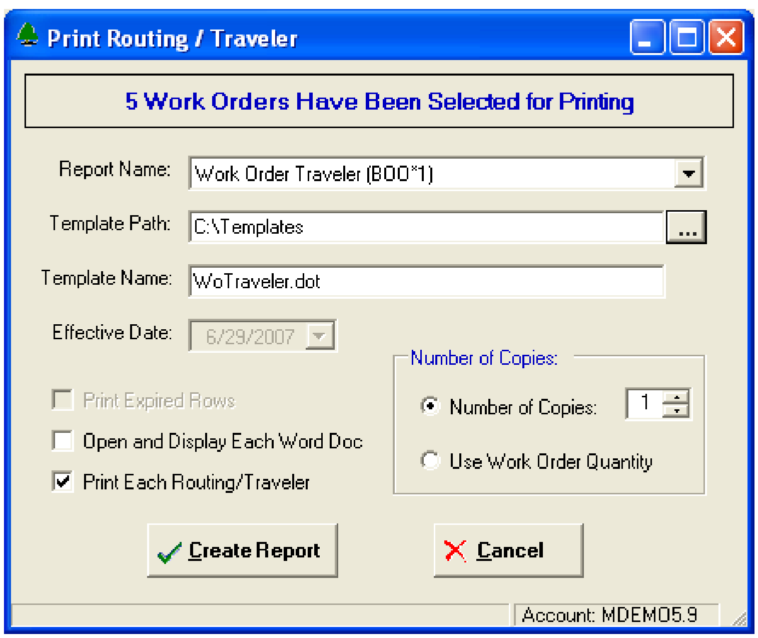
## Routing / Traveler Printing

To print Routings or Work Order Travelers, begin by selecting the Routing File you wish to use (Production, Engineering, History, or Work Order) from the Main screen. There are two ways to select the Routings or Work Order Travelers you wish to print:

1. Select a population of records by entering your criteria on the Search Options tab. Review the Results list, and choose the items you wish to print by clicking the check box located in the first column of the spreadsheet. Click the [Print] button.

2. Open a record for editing, then click the [Print Routing] button located on the General tab.

This screen is displayed when you click either of the Print buttons. The caption at the top of the screen displays the number of records that have been selected for printing:




Select the Name of the Report you wish to print. Before using this feature, your reports must first be defined using the *System Administration* function.

The program creates a Microsoft Word Document for each Routing or Traveler. If you chose the option to "Open and Display Each Word Doc", you will have the opportunity to view the document in electronic form. If you are printing a large number of documents, you will want to turn this option off.

When you select the option to "Print Each Routing/Traveler", the output will be directed to your default Windows printer.

The Effective Date and "Print Expired Rows" options are not applicable to Work Orders.

Technical Note: Any temporary files needed by the application will be stored in the user's working directory, and are automatically deleted when the program shuts down. The location will vary depending on the operating system, but a typical path would be: C:\Documents and Settings\MyUserName\Local Settings\Temp\NCC_BOO.

## Example #1 - Operation Inspection Log

This is an example of a Routing printout that may be created using the application:

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*NorthClark Computing, Inc.* Page 1 of 1

**OPERATIONAL INSPECTION LOG**

**Assembly#:** XTR500 Rev: F **Project:** ___________ **WO#** ___________
**Description:** POWER DRIVE ASSY. **Required Date:** ___________ **Qty:** ___________
**Routing Rev:** Level: G Date: 12/10/96 **Release Date:** ___________
**Notes:**

**QUALITY** _______________ **S/N#** _______________

| Li# | WKC | Description | Stamp |
|---|---|---|---|
| 1 | 120 * 10 | SUB-ASSEMBLY<br>Setup: 0.5000 Run: 3.5000 Rework: Crew: 1.00 Mach: Line: 3.5000<br>STATIONIZED PLANNING ISSUE# __________ | |
| 2 | 120 * 10 | SUB-ASSEMBLY<br>Setup: 0.3000 Run: 2.9000 Rework: Crew: 2.00 Mach: Line: 1.4500<br>STATIONIZED PLANNING ISSUE# __________ | |
| 3 | 320 * 20 | TEST AND PACKING<br>Setup: 1.0000 Run: 2.5000 Rework: Crew: 1.00 Mach: Line: 2.5000<br>STATIONIZED PLANNING ISSUE# __________ | |

## Example #2 - Work Order Traveler

This is an example of a Work Order Traveler that may be created using the application:

NorthClark Computing

*NorthClark Computing, Inc.* Page 1 of 1

**Work Order Traveler**

| | | | | | |
|---|---|---|---|---|---|
| **Assembly#:** | XTR500 Rev: F | **Project:** | | **WO#** | 24 |
| **Description:** | POWER DRIVE ASSY. | **Required Date:** | 03/01/07 | **Qty:** | 10 |
| **Routing Rev:** | Level: G Date: 12/10/96 | **Release Date:** | 02/28/07 | | |
| **Notes:** | | | | | |

QUALITY ________________ S/N# ________________

| Li# | WKC | Description | Stamp |
|---|---|---|---|
| 1 | 120 * 10 | SUB-ASSEMBLY<br>Setup: 0.5000 Run: Mach: Line: 1.4000<br>QTY RECEIVED ______ QTY COMPLETE ______ | |
| 2 | 120 * 10 | SUB-ASSEMBLY<br>Setup: 0.3000 Run: Mach: Line: 0.5800<br>QTY RECEIVED ______ QTY COMPLETE ______ | |
| 3 | 320 * 20 | TEST AND PACKING<br>Setup: 1.0000 Run: Mach: Line: 1.0000<br>QTY RECEIVED ______ QTY COMPLETE ______ | |

# Tools and Utilities

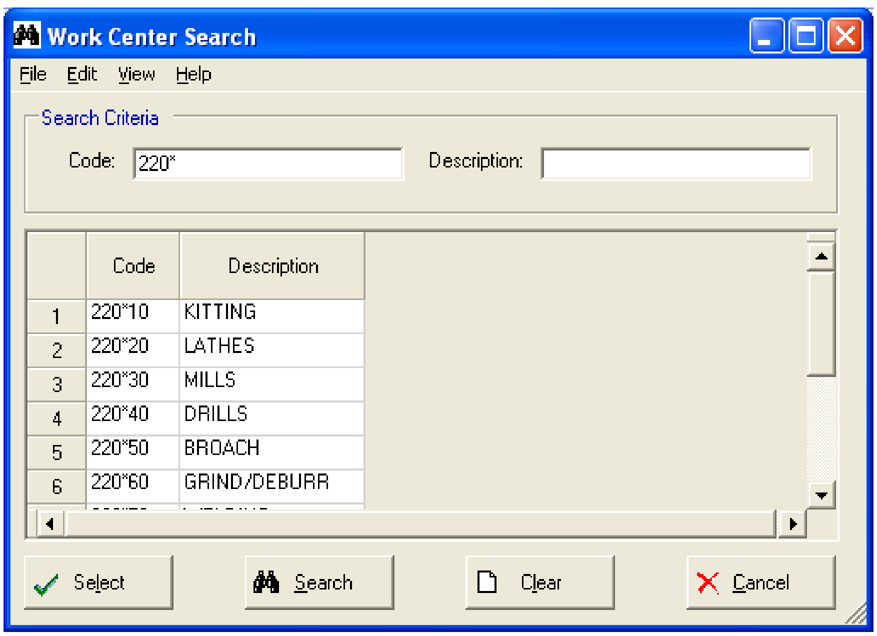
## Part Number Search

The Part Number Search Query helps you locate a Manfact Part Number using a variety of search criteria. *Please see Part Search Query User Guide for more information.*

Note: The NCC Part Number Search Query is sold separately. If this option is not currently available, please contact your System Administrator or NorthClark Computing, Inc. to obtain a copy of NCC_PARTSQ.

## Work Center Search

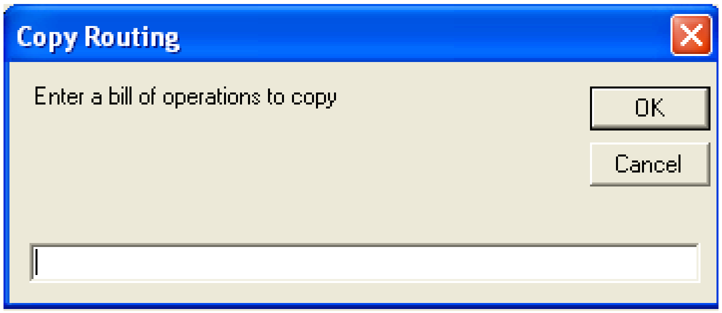
The Work Center Search screen may be accessed from the Tools menu, or from the right-click menu available on the Routing Steps spreadsheet entry form.




Enter the Work Center Identifier and/or Description you want to search for. Use wildcarding to enter a portion of the field if desired. Click the **[Search]** button to see the results. If you are updating a Routing, you may double-click a row, or highlight a row and then click the **[Select]** button to copy the Work Center identifier to the Routing Steps spreadsheet entry form.

## Copy a Routing

To create a new Routing from an existing record, begin by entering the *new* identifier at the Part#/Routing# field on the ***General*** tab. Next, click the **[Copy Routing]** button (this option may also be found on the ***Tools*** menu).




Enter the identifier of the Routing you wish to copy and click **[OK]**. You may be prompted to answer some or all of the following questions. Click **[Yes]** or **[No]** for each prompt:

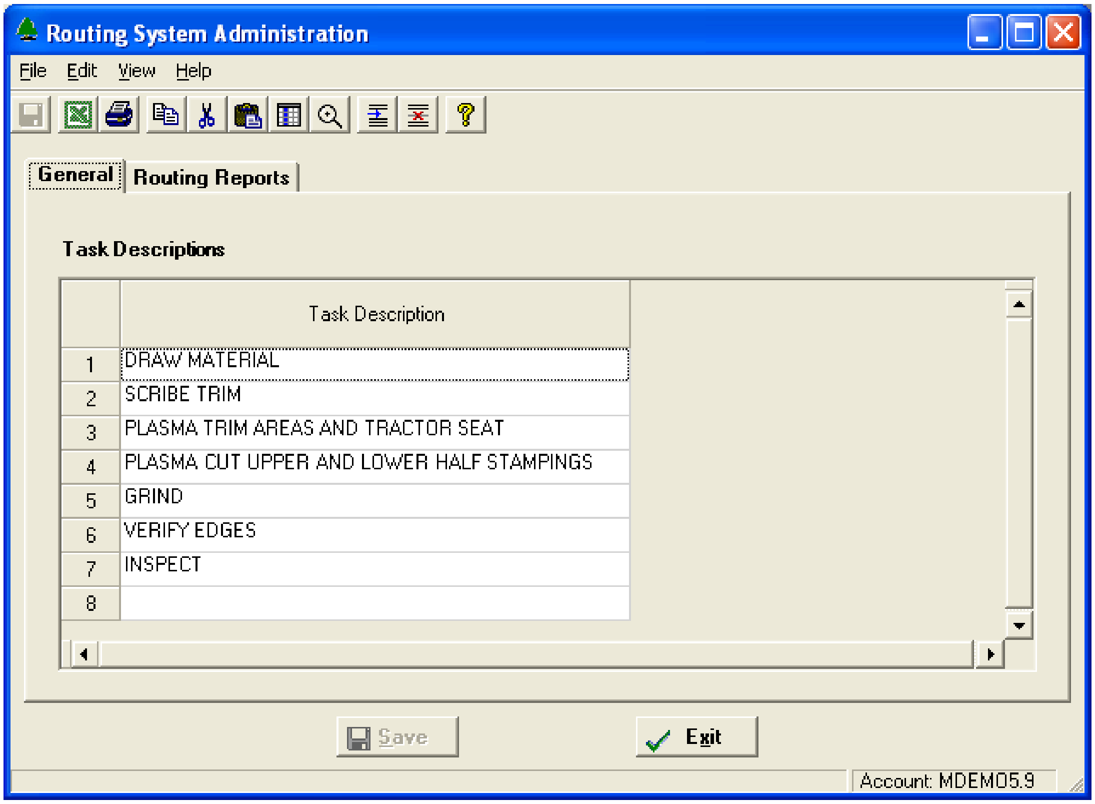
- OK to replace existing line items?
- Copy Effective Date
- Copy Routing Instructions?
- Copy Issue Points?

# System Administration

The System Administration screen is accessed from the Tool menu of the Routing Maintenance application. If the user does not have sufficient security privileges to perform system administration, this option will be disabled.

## Task Descriptions

Use this screen to enter default Task Descriptions for use during Routing Entry.



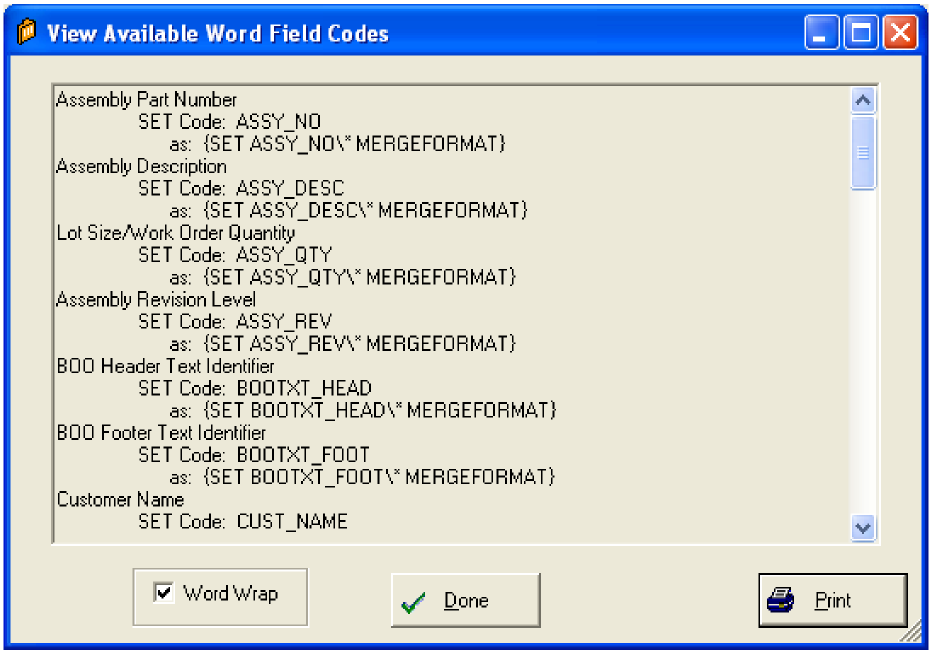

## Routing / Traveler Report Mapping

NorthClark has provided sample Word Templates to produce the Work Order Traveler and Operation Inspection Log reports illustrated in this document. These templates may be modified by the customer, and the customer may create additional templates as desired.

There are two distinct ways in which data is merged into a Microsoft Word Template. The first method uses *Field Codes* to place data at a specific location on the form (this technique is commonly used in mail-merge applications). Field Codes are used for data that does not repeat (Header fields) such as the Assembly Number, Work Order Date, etc.

View Word Field Codes

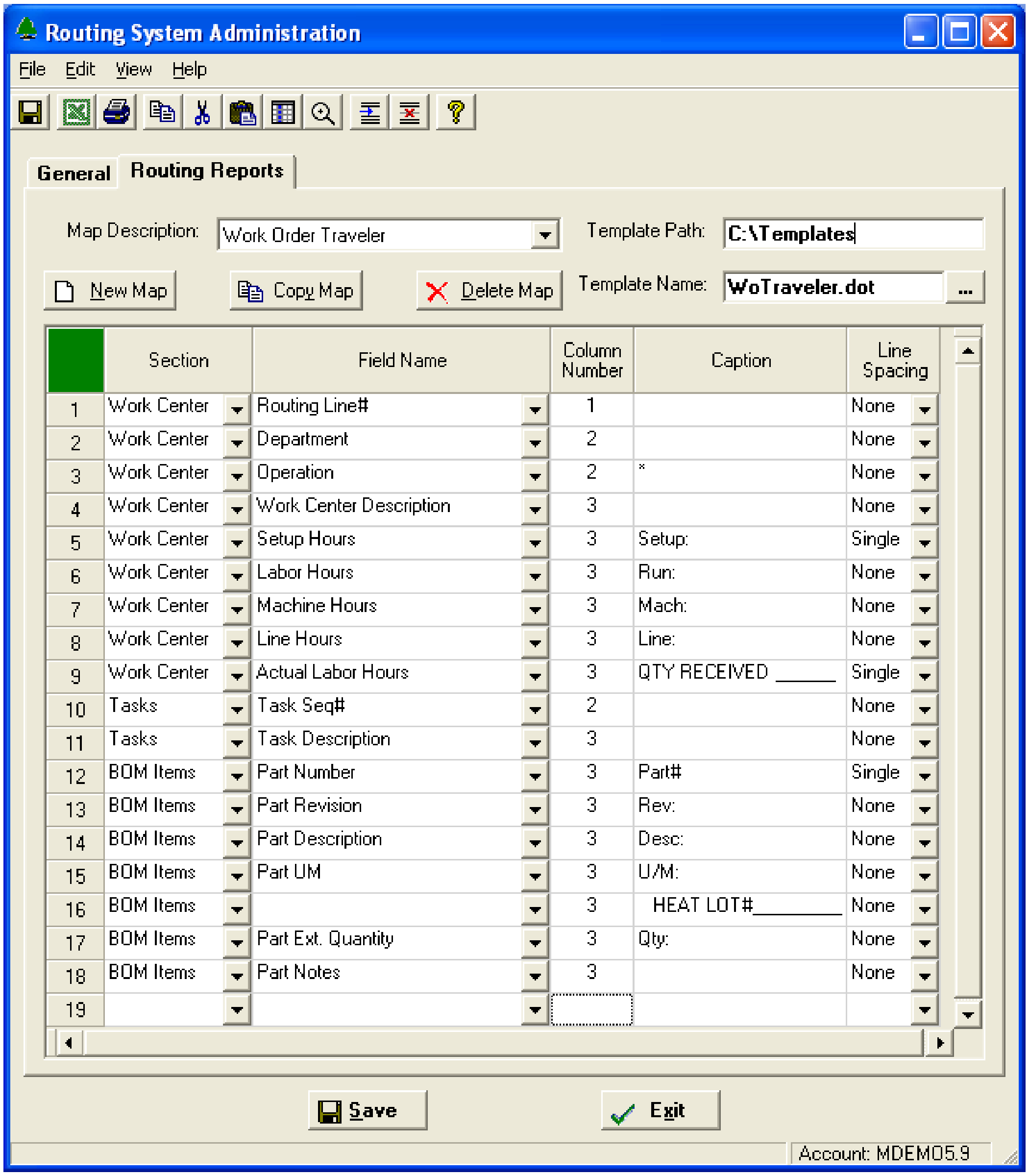
A list of Header fields that are available for export can be viewed from the Help menu of on the System Administration window:




The second method for exporting data to a Microsoft Word Template is to use a *Table*. Tables are used for multiple rows of repeating data, such as Work Center and Task information. The Table is inserted into the Word Template and comprises the body of the document. The Table may have any number of columns, and the text may be formatted as desired.

The user may create a variety of reports by entering “Report Maps”. Each Report Map is associated with a Word Template, and defines the information to be exported to the report. The following example shows the Report Map needed to produce the Work Order Traveler document illustrated in this specification.

## Routing Report Mapping - Example




***Information displayed on this screen includes:***

| Command | Description |
|---|---|
| Map Description | Create one Map for each Routing or Work Order Traveler report you wish to define. To access an existing Map, select it from the drop-down list. |
| New Map | Click this button, and the system prompts you for the name of the New Map you wish to create. |

| Command | Description |
|---|---|
| Copy Map | Click this button to create a new Map using the information from the Map currently displayed. The system prompts you for the name of the New Map you wish to create. |
| Delete Map | Click this button to delete an existing Map. |
| Template Path | Word Templates should be stored on a public area of the network accessible to all users. The pathname entered here will be used as a default, and individual users may change their settings if necessary. |
| Template Name | The name of the Microsoft Word Template designed for use with this report. |

*Mapping Instructions define the data elements to be exported to the body of the document:*

| Option | Description |
|---|---|
| Section | The available fields are grouped into three sections: Work Center, Tasks, and BOM Items.<br><br>The program will always print Work Center data first, followed by the Tasks, followed by the BOM Items. Within each Section however, the data will be printed in the order entered here. |
| Field Name | The drop-down list allows you to choose from a list of fields available for this Section, including a "(Text Only)" option. |
| Column# | The column number where the data is to be placed in the Word Table. |
| Caption | Enter text to be printed in front of the data specified by Field Name. |
| Line Spacing | Single, Double, or None. Use Single or Double to add line breaks to the report. |

## <u>Data Available for Export</u>

*Header Data:*

| Field Code | Applies To | Description |
|---|---|---|
| ASSY_NO | ALL | Assembly Part Number |
| ASSY_DESC | ALL | Assembly Description |
| ASSY_QTY | ALL | Lot Size or Work Order Quantity |

| **Field Code** | **Applies To** | **Description** |
|---|---|---|
| ASSY_REV | ALL | The Assembly Revision Level from field #4 of the WO file, or field #22 of the PARTS file. |
| BOOTXT_HEAD | ALL | Text associated with BOO Header Text Identifier. |
| BOOTXT_FOOT | ALL | Text associated with BOO Footer Text Identifier. |
| CUST_NAME | ALL | For Work Orders, the Customer Name from the Sales Order associated to the WO, otherwise from NCC_BOO Header. |
| CUST_PART | ALL | For Work Orders, the Reference Part# from the Sales Order associated to the WO, otherwise from NCC_BOO Header. |
| TOTAL HOURS | ALL | Total Labor Hours |
| TOTAL COST | ALL | Total Labor Cost |
| UNIT HOURS | ALL | Total Labor Hours / Lot Size |
| UNIT COST | ALL | Total Labor Cost / Lot Size |
| LIFE_PHASE | BOO | Lifecycle Phase |
| OWNER_PLANT | BOO | Owner Plant |
| REV_LEVEL | BOO | Routing Revision Level |
| REV_DATE | BOO | Routing Revision Date |
| LEAD_DAYS | BOO | Lead Time Days |
| LEAD_HOURS | BOO | Lead Time Hours |
| LEAD_DATE | BOO | Date Lead Time calculated |
| YIELD_PCT | BOO | Yield Percent |
| YIELD_DATE | BOO | Date Yield Percent calculated |
| WOID | WO | Work Order Number |
| WO_ENTERED | WO | Work Order Entry Date |
| WO_RELEASE | WO | Work Order Release Date |
| WO_REQUIRED | WO | Work Order Required Date |

| Field Code | Applies To | Description |
|---|---|---|
| WO_NOTES | WO | Work Order Notes |
| WO_PROJECT | WO | Work Order Project Number |
| WO_SO | WO | Sales Order Number associated to Work Order |
| WO_SOLI | WO | Sales Order Line Item Number |
| WO_STATUS | WO | Status of the Work Order: New, Firm Planned, Released, Pulled, Back Ordered, Complete, or Final. |
| WO_ROUTING | WO | Identifier of Routing used on the Work Order (usually the same as the Assembly Number). |
| WO_WIPLOC | WO | Work in Process Location |
| WO_FGLOC | WO | Work Order Finished Goods Location |
| WO_PRIORITY | WO | Work Order Priority |
| WO_COMP_TYPE | WO | Work Order Completion Type |

***Line Item Data:***

| Data | Applies To | Description |
|---|---|---|
| Department | ALL | Work Center Department |
| Operation | ALL | Work Center Operation |
| WKC Description | ALL | Work Center Description |
| Routing Line# | ALL | Line Item Identifier |
| Setup Hours | ALL | Setup Hours |
| Crew/Mach Size | ALL | Crew/Mach Size |
| Line Hours | ALL | Line Hours |
| Machine Hours | ALL | Machine Hours |
| Labor Hours | ALL | Labor Hours |
| Labor Rate | ALL | Labor Rate |
| FOH Percent | ALL | Fixed Overhead Percent |
| VOH Percent | ALL | Variable Overhead Percent |
| Setup Cost | ALL | Setup Cost |

| **Data** | **Applies To** | **Description** |
|---|---|---|
| Machine Cost | ALL | Machine Cost |
| Total Cost | ALL | Total Cost |
| Rework Hours | ALL | Rework Hours |
| Queue Time | ALL | Queue Time |
| Move Time | ALL | Move Time |
| Machine No. | ALL | Machine Number |
| Tool No. | ALL | Tool Number |
| Alt. Machine | ALL | Alternate Machine Number |
| Route Instructions | ALL | Route Instructions |
| Yield Percent | ALL | Yield Percent |
| Issue Point | ALL | Issue Point |
| Text from BOOTEXT | ALL | Standardized text from Manfact's BOOTEXT file. |
| Machine Rate | ALL | Machine Rate |
| Schedule Method | ALL | Schedule Method |
| Task Seq# | ALL | Sequence Number - Multiple Tasks per Routing Line Item |
| Task Description | ALL | Task Description – Free form text |
| Task Instructions | ALL | Task Instructions – Free form text |
| Part Number | ALL | Multiple Part Numbers may be associated to a Task. |
| Part Description | ALL | Part Description |
| Part Ext. Quantity | ALL | Picker quantity |
| Start Date | BOO | Starting Effective Date |
| End Date | BOO | Ending Effective Date |
| ECO Date and ID | BOO | Engineering Change Order Date and Identifier |
| W+WO#+%+LI# | WO | This field is intended for use with Bar Coding applications. |
| Actual Labor Hrs | WO | Total actual labor hours incurred to date. |
| Actual Mach Hrs | WO | Total actual machine hours incurred to date. |
| Current Qty | WO | Quantity currently at the Work Center. |
| Balance Due Qty | WO | Quantity remaining to complete at the Work Center. |

## Security

Access to the NorthClark Routing Maintenance Module is controlled by the Manfact Security system. The following "procedures" may be added to a user profile.

| **Procedure** | **Description** |
|---|---|
| NCC_BOO | Allows the NCC_BOO program to be started in "read-only" mode. |
| NCC_BOOADMIN | Same privileges as NCC_BOO, and also permits access to the System Administration screen. |
| BOO.N | Permits update of Manfact BOO records. |
| ENGBOO.N | Permits update of Manfact ENGBOO records. |
| WO.C | Permits update of Manfact WO records. |

Note, the user must have permission for either NCC_BOO or NCC_BOOADMIN to start the application. Thereafter, the updates the user is allowed to perform are governed by their current Manfact privileges.

## Manfact Engineering Change Control

<u>Mass Changes Using ECO02</u>

The Manfact Engineering Change Order (ECO) module includes a mass change feature (ECO02) that may be used to update BOO records. When changes are made, an "End Date" is posted to the existing line item, and a new line item is inserted with an "Effective Date" one day after the End Date of the original line item. This practice is also recommended when making manual changes, as it provides a clear audit trail (as opposed to just modifying the existing line item).

The ECO02 process may be modified so that Task details will be copied to newly created line items. These updates are available from NorthClark Computing, Inc. upon request.

<u>Moving Routings from Engineering to Production Files (ECO04)</u>

The ECO04 process may be modified to copy records from the NCC_ENGBOO and NCC_ENGBOOLI files. These updates are available from NorthClark Computing, Inc. upon request.

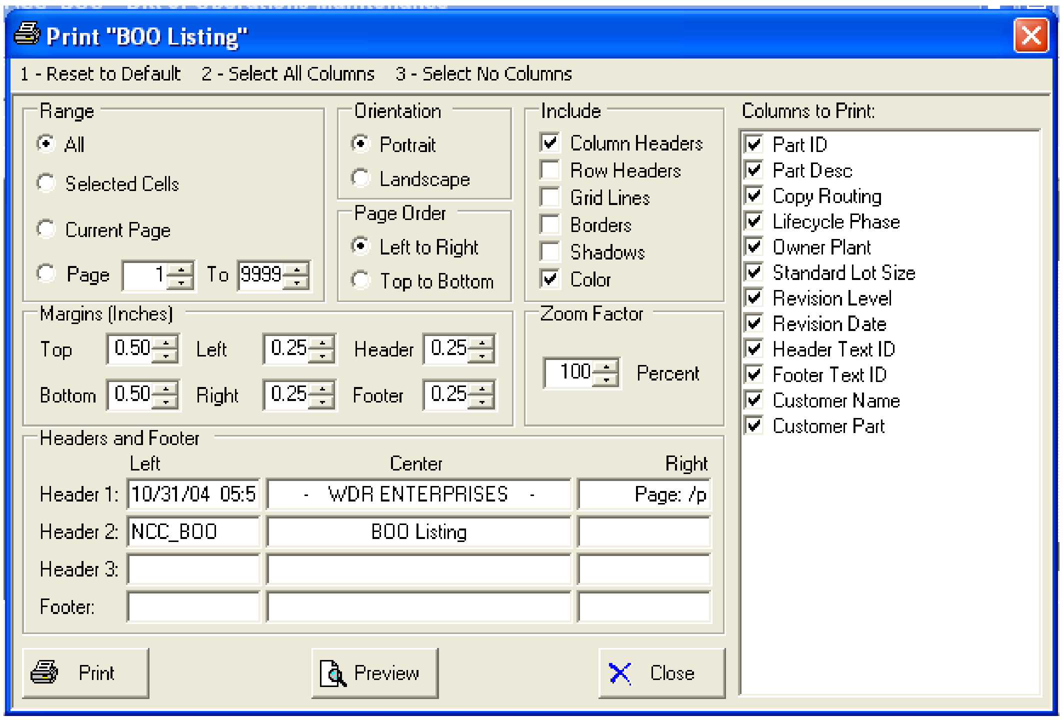
<u>BOO.N and ENGBOO.N are Obsolete</u>

The BOO.N and ENGBOO.N procedures will not support entry of Task details. While these procedures will still function, they should be considered obsolete. *Using BOO.N or ENGBOO.N to increment the Revision Level, or to change the Department, Operation, or Start Date on any line item, may result in a loss of Task information*

# 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.

### *Zoom Factor*

What percentage is required to fit the report on one printed page?

### *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?*

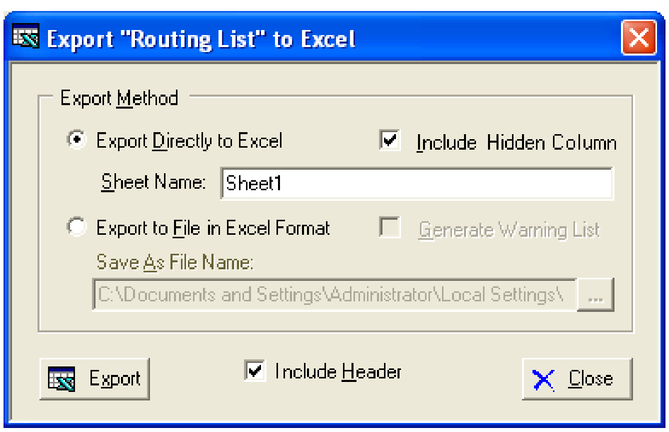
The columns that are available for printing are listed. Select the columns you wish to include on your report.

### *[Preview] Button*

Click on this button to see a preview of the spreadsheet you are about to print.

## 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.




### *Export to File in Excel Format (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.

***Export Directly to Excel***

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

***Generate Warning List?***

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.

***Include Header?***

If checked the spreadsheet will include column headings.

***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 or selecting Zoom from the right click menu.

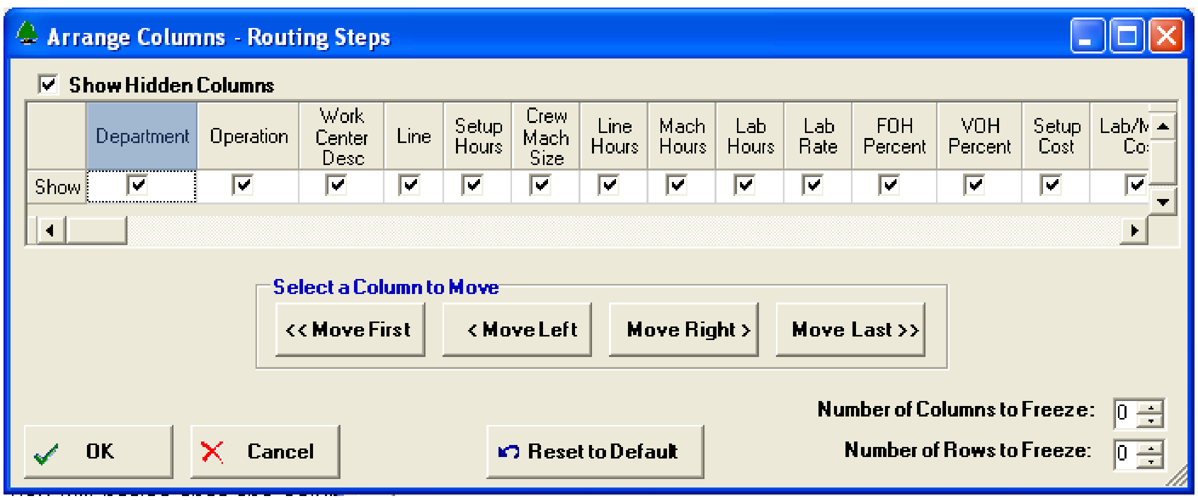
- If the field is available for updating, click **[OK]** when finished, or **[Cancel]** to revert to the original data.

- 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 & Hiding Columns

Each user may adjust the column order, and hide unwanted columns, to suit their preferences. First, click on the spreadsheet you want to modify, then choose ***Arrange / Hide Columns*** from the ***View*** menu.




### *Hiding Columns*

To hide a column, remove the checkmark that appears under the column heading. Click the **[OK]** button and when you return to the screen you will notice that the column no longer appears.
To restore the hidden column either re-enter the checkmark under the column heading, or select the ***Show Hidden Columns*** option from the ***View*** Menu.

### *Changing the Column Sequence*

To move a column, begin by clicking on the column header to select it. This will change the column color to blue, as shown in the example above. Next, select the appropriate button to move the column to the desired location:

| | | |
|---|---|---|
| Move First | -- | Move the column to the first position on the screen. |
| Move Left | -- | Move the column one column to the left. |
| Move Right | -- | Move the column one column to the right. |
| Move Last | -- | Move the column to the last position on the screen. |

***Reset to Default***

To return the screen to the original design, click **[Reset to Default]** to return columns to their original position.

***Freezing Columns and Rows***

You may freeze columns and/or rows so they are always visible. To do this select the number of columns and/or rows you wish to freeze.

***Saving the changes***

Click **[OK]** to save your changes.

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…<br>or XTR* | Returns part numbers that begin with "XTR" |
| Description | …VALVE…<br>or *VALVE* | Returns parts with the word "VALVE" anywhere in the description. |
| Category | …A<br>or *A | Returns parts with a category ending with the letter "A". |