BARCODE MAGICIAN® 1.7.1

BARCODE MAGICIAN PLUS

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Table of Contents

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List of Diagrams and Screens

Illustrations and Screen Shots

SECTION 1 - INTRODUCTION

Barcode Magician® Overview

Welcome to Barcode Magician® for MET/TRACK® version 7.x. This manual covers two versions of Barcode Magician. The "Basic" version and the "Plus" version. The "Plus" version adds many new capabilities that improve throughput for the calibration lab, for example adding batch calibration records. This manual will notate those features that are only available in Barcode Magician *Plus*. You can also determine which version of Barcode Magician a particular station is running by looking at the Title Bar of Barcode Magician. The title bar will change for the Run Time and Workstation programs. Barcodes and a barcode reader are NOT required to use this program. This document will guide you through an easy way to track your assets CONSISTENTLY. Barcode Magician® is divided into 6 programs. This section describes the operation of Barcode Magician® and how the programs interact with the database version of MET/CAL.

First, we need to illustrate the relationship of Barcode Magician® and MET/TRACK.
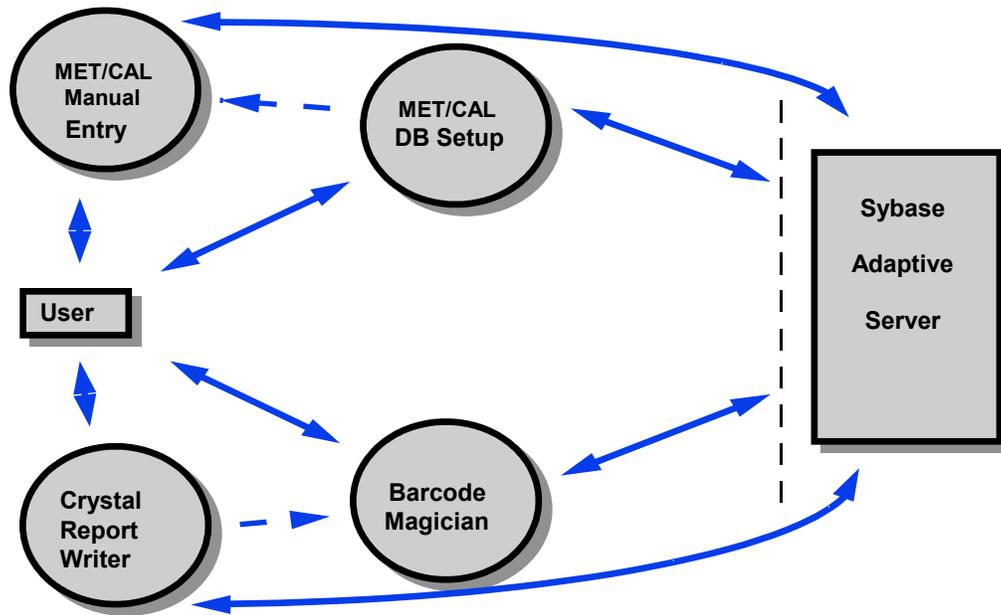
MET/TRACK and Sybase Block Diagram

The Sybase SQL database server manages the MET/TRACK database. This server manages all the transactions into the database thereby minimizing errors. Other databases usually have shared files that can sometimes become corrupted. Sybase provides a very robust system that has good security and very little chance of being corrupted. The MET/TRACK components read and write to the Sybase database via ODBC (**O**pen **D**ata **B**ase **C**onnectivity). The MET/TRACK components, Browse/Manual Entry and DB Setup, all act as the front end for the database and provide the user with an easy way to manipulate the database. Crystal Reports is a separate report writer used to design the reports that are later called from the MET/TRACK Browse Program and Barcode Magician.

It should be noted that the DB Setup and Browse/Manual Entry Program are a single combined program for MET/TRACK version 7. We show them separate in the diagram to differentiate between data entry and administration.

Barcode Magician is a separate group of programs that communicate with the MET/TRACK database via ODBC. During the installation process, additional tables are inserted into the MET/TRACK database that keep track of action codes, users, logs, and system settings.

There are many operations in the management of any metrology database requiring numerous changes to the status of several assets. Many companies have discovered that Barcode Magician is a great tool for use in tool cribs to generate location history. Instead of the user having to repetitively type in information to change existing assets, the user can change the information of several assets at once by executing a macro called an Action Code. Action Codes are very easy to create and are not limited in number. You can further automate the system by utilizing barcode scanners and printers to increase efficiency.

The following is a simple block diagram that illustrates the process Barcode Magician goes through to process an instrument in the database.

Enter User ID The User ID is entered through the keyboard or scanned in with a Barcode Scanner	See if the user exists first. If not, then prompt the user to enter in their information. If passwords are required then enter the password.	**Enter Action Code** Enter the Action Code through the keyboard or scan in with a Barcode Scanner.
Dialog Boxes If Dialog Boxes are used, enter responses through the keyboard or Scan in with a Barcode Scanner.	**Enter Asset Number(s)** Enter the asset number through the keyboard or scan in with a Barcode Scanner.	Criteria checking is performed. If a criteria check fails, the Action Code stops here and refuses the asset.
Warnings are checked. If a warning is displayed, the operator can still use the asset.	Continue entering asset numbers. Each asset will be checked for criteria and warnings	After the assets are entered, click on the "Process Entire List" button or scan a barcode with the value of PROCESS.
Modifications described in the "Pre-Defined" and "Custom Mods" will be made to the asset information	After all the assets are processed, the User ID Prompt is displayed.	If reports are enabled, the user can print up to four reports on the transaction just completed.

Barcode Magician Operational Block Diagram – Basic Version Only

NOTE: For the purposes of Documentation in this manual, the term **Barcode Magician** is sometimes referenced as **BCM17**. This is version 1.7.1.

Please Give us Feedback

We want to hear from you. If you have any product/documentation suggestions, please contact us at support@ontimesupport.com.

Barcode Magician Features (*BCM17 Plus*)

If you are upgrading from an earlier version of Barcode Magician, there are some updated/new features that you may want to utilize. Some of the features are:

(Updated)   Increased the number of Dialog boxes from 5 to 25.
(Updated)   Increased the number of Criteria Checks from 4 to 25.
(Updated)   Increased the number of Warning Checks from 2 to 25.
(Updated)   Added the capability to insert new assets into the inventory table when not found in the database during asset entry using the Desktop Feature.

- Create New Calibration records with options to include Standards Used and Cal Results.
- Create New Maintenance records.
- Create New Location records.
- Create any Comment Field of your choice into any major table

    The above functions are interactively entered per asset to allow processing different categories of instruments in the same transaction. You can do 1 asset at a time or a batch.

(Updated)   The new record forms include all the unsuppressed fields and look and function very similar to MET/TRACK 7.x.
(Updated)   Only the required fields need to be entered. Includes copy forwards, defaults, validation drop down lists, linked validation, pick lists and calculated Due Date.
(Updated)   Added more System Variables for SQL statements and abbreviated all the long system variable names,   e.g. '$DIALOG_BOX25$' can be shortened to '$BOX25$'
(Updated)   More Pick lists on Users profile (*Basic and Plus*).
(Updated)   Ability to add batch calibration records.

- And of course, none of the previous features in version 1.5.1 and higher have been disabled.
- Present 1.4, 1.5x, and 1.6.x action codes are upwards compatible.
- Requires a NEW license upgrade.

Barcode Magician New Features (*BCM17 Plus*)

- Eliminated using the computer registry to store program settings.
- Added the ability to display instrument pictures in the Run Time program.
- Added a new per asset feature that allows data entry as each instrument is processed form the list.
- Added the ability to populate the dialog box with the database value when using per asset.
- Crystal Reports are configured per Action Code instead of per Workstation.
- Added up to 7 Crystal Reports in BCM17 Plus.
- Added a separate users system password.
- Added $INSERTREPRECORD$ to easily create new repair records.
- You can now customize validation lists in Dialog Boxes and make these required entries.
- Abeyance Cal Due Date function is implemented for calibration records.
- New SQL Editor and the ability to test SQL statements for syntax errors in Warnings and Criteria.
- Alternate instrument look-up using another Inventory field, such as serial number.
- Group Field Asset selection.
- New System variables that can be used as temporary data storage.

System Requirements

Barcode Magician requires that you have a successful implementation of MET/TRACK 7.1+x. MET/TRACK Version 7.1+x utilizes Sybase Adaptive Server 8 or Sybase Adaptive Server 11 and Crystal Reports 10 or Crystal Reports 12. A description of the configuration is described in this manual.

The PC should be running Windows 2000 (SP4), Windows XP, Windows Vista, Windows 7 (32 Bit), or Windows 7 (64 Bit). You may want to make sure the PC has at least 1 GB of memory. More memory enhances performance. The system requires at least a SVGA (800x600) Color Monitor but will look much better with higher resolution. Required hard drive space on each client should not be less than 60 Mbytes.

Different Versions of MET/TRACK and MET/CAL version 7+

Fluke has several versions of MET/TRACK version 7. The following lists those configurations and how they are supported by BCM17

- MET/TRACK and MET/CAL 7.1, 7.2, and 7.2 (SP3) utilize Sybase Adaptive Server 8 which runs on computer clients running Windows 2000, Windows XP, Vista (32 Bit) and Windows 7 (32 Bit).
- MET/TRACK and MET/CAL 7.3 is a newer version utilizing Sybase Adaptive Server 11 which runs on computer clients running Windows XP, Vista, and Windows 7 (32 and 64 Bit). Barcode Magician 1.7.1 supports all MET/TRACK versions 7.1 to 7.3.
- It should be noted that MET/CAL and MET/TRACK 7.3 does not support Windows 2000 on a client computer. However, BCM17 version 1.7.1, can be installed on a client computer without MET/TRACK 7.3 being installed. We decided to support Windows 2000, because there are several computers located in areas where computer upgrades will be difficult to implement.
- Barcode Magician 1.7.1 will support either Sybase 8 or 11. It does not matter. If BCM17 is installed on a client computer without MET/TRACK, the installation program will install Sybase 8 drivers. These drivers can be used to communicate with the server running Sybase 11.

Installation Directories and File Locations (Important)

This version of Barcode Magician has a different default installation location. In previous installations of Barcode Magician, the installation directory default has been c:\metcal\mtbcm17. This location was chosen because the MET/CAL software always had a local metcal directory and it was easier to create a sub-directory to keep all the programs in the same location.

With Vista and Windows 7, along with new PC security rules and MET/CAL/TRACK 7.3, we have changed the default location to: **C:\Program Files\On Time Support\Barcode Magician** for 32 bit operating systems.   For 64 Bit operating systems the default location is **C:\Program Files(x86)\On Time Support\Barcode Magician**. You can change the default installation back to the old method for previous installations of MET/CAL and MET/TRACK.

IT Departments like to use Program Files for program installation because they are typically set up as a read only location. The installation of Barcode Magician also includes several Crystal Reports that are very useful and these reports are installed in the default location also. If you want to use these reports, you should move them to another directory on the client computer or the server where they can be modified with proper permissions. There are also locations for the Barcode Magician error log files. Please refer to Appendix A for more information on error handling and reporting.

Bar Code Reader Requirements

(NOT A REQUIREMENT FOR BARCODE MAGICIAN TO OPERATE)

Barcode reader requirements are very simple. Barcode Magician requires that the bar code reader perform as a keyboard emulator. (A wedge type reader inserts between the keyboard and the computer and emulates keyboard inputs.) There are many available models and we can help you select one if you need help. If using a bar code reader through the RS-232 port or USB, then you must have keyboard emulation software. Barcode Magician additionally requires that the reader add a **CARRIAGE RETURN** suffix to the code reading. This allows the user to move through the Run Time fields without pressing any tab keys. Most readers have a programming feature that allows you to easily set up the carriage return suffix.

Many other programs use a carriage return suffix, and this is usually considered a normal implementation of the barcode reader. You may also want to make up a bar code label called PROCESS. This is a key word used in the Run Time module which when scanned, will automatically process the list of instruments. Thus, the operator has a keyboard free system.

ON TIME SUPPORT has several Barcode Readers to choose from which are configured and ready to use. Please contact ON TIME SUPPORT for more information.

Using Crystal Reports with Barcode Magician

BCM17 version 1.7.1 automatically installs the Crystal Reports 10 Run Time Drivers. Starting with 7.3, Fluke has changed to Crystal Reports 12, also called Crystal Reports 2008. When installing the Fluke 7.3 software, you will have to install the Crystal 12 Run Time Drivers as part of their installation process. The BCM17 installation automatically installs the Crystal 10 Run Time drivers. After a thorough testing program, we have not detected any conflict between the two Crystal Runtime programs when they are both installed on the client computer. Our testing has also shown that you should be able to use the new Crystal Reports 12 editor for Barcode Magician reports, even though they would run on the version 10 drivers. There are some compatibility issues, but they only appear on the additional functions of Crystal 12. You can always keep and use your older Crystal 10 editor if that is your preference. If you have any problems running a Crystal Report on BCM17, please contact On Time Support.

Action Code Documentation

Included with this release is a Crystal Report that documents Action Codes created in Barcode Magician 1.7.1. The name of the report is **BCM AC REPORT 1.7.RPT**. This is an extremely useful tool for documenting and keeping track of your action codes. This report is included with the other sample reports.

Upgrading from Barcode Magician 1.7.0

If you are upgrading from Barcode Magician 1.7.0, you do not need to purchase any upgrade licenses. However, you need to register one of your existing 1.7.0 licenses in order to use Barcode Magician 1.7.1. Existing Action Codes will not be affected.

SECTION 2 - Installation

Installing Barcode Magician

NOTE: If installing on several stations, you may want to consider copying the installation program to a network drive. It is easier to support multiple installations from one location. You may want to create a BCM17-INSTALL sub-directory under the shared METCAL directory (or wherever the shared files are) on the server and copy the installation program from the CD. Make sure the client computer can access this directory. CD drives may not be available.

Insert the Barcode Magician CD. From within your system select Run, type "D:\Barcode_Magician_1_7_1_install.exe" and press Enter. 'D:\' will represent the drive letter of the CD Drive in this example. If necessary, use a different letter for your CD Drive. The installation program will prompt you for your information and you can select whether this installation is for all users of the computer or just a single user.

The installation program will prompt you for the directory to install the program files. **NOTE:** It is highly recommended to install the programs on a local computer. This reduces network bandwidth when starting the applications. The installation program will also prompt you for a typical installation. The default program location is "c:\Program Files\On Time Support\Barcode Magician". You can also specify the location.

There are two different installation types, but using **Workstation** is the default. **Workstation** only installs the programs to run the Barcode Magician Action Codes and Configure the Workstation. **Administration** installs all of the Barcode Magician applications and is usually installed on the administrator's computer.

Installation Screens

Click Install and the installation program will finish the installation. You are ready to run the registration program only if this is the first workstation installation.

Configuring the Sybase 8 ODBC – MET/TRACK 7.1+

IMPORTANT: The Sybase 8 ODBC drivers are automatically installed on the client machine during the installation of Barcode Magician from the CD. If your system is configured for MET/TRACK 7.1+, you should not have to configure ODBC.

NOTE: it is only necessary to perform this step if ODBC has not been configured for the client computer.

This step configures the 32-Bit ODBC for use by Barcode Magician. For Windows 2000 or XP select:
Start | **Control Panel** | **Administrative Tools** | **Data Sources (ODBC).** If the 32-Bit ODBC icon is not visible, close the Control Panel and open the DOS command window and enter "odbcad32.exe" for 32 bit operating systems. The following example is shown with Windows XP.

32 Bit ODBC Data Source Listing

Select System DSN and you should have a screen like the one at left. Select Add and then double-click on Adaptive Server Anywhere 8.0.

You should see the screen at right: (may be different for various versions of the operating system).

These instructions assume that the 32 Bit Sybase Adaptive Server Anywhere 8.0 drivers have been installed.

NOTE: If you are installing Barcode Magician on a Windows client that already has MET/TRACK installed, you should use the existing "Calibration Data" DSN.

Selecting the Sybase Drivers

IMPORTANT NOTE: If you are configuring a Windows 7 64 Bit client, the 32 Bit ODBC is not available under administrative tools. The ODBC that is displayed is for 64 Bit ODBC. You can easily display the 32 Bit ODBC Drivers. Go to the Command Window and at the Dos prompt type:
c:\windows\syswow64\odbcad32.exe.

The configuration process is the same as described in this documentation. BCM17 installs a sample BCM data source. You can rename it to "Calibration Data" and modify the parameters if MET/TRACK or MET/CAL are not installed.
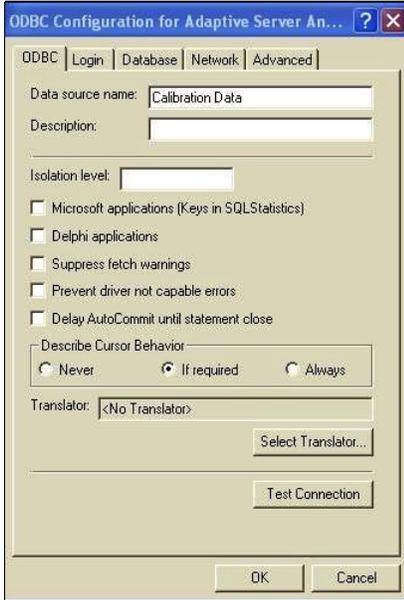
For **D**ata **S**ource **N**ame enter "Calibration Data". NOTE: It is possible to use another data source name, especially when more than one database has been configured. Click on the '*Database*' Tab

For Server Name replace "<default>" with the name of your MET/BASE database engine. In our example it is named **mtrack72**. However, most database installations will have a different alias name assigned to the database.
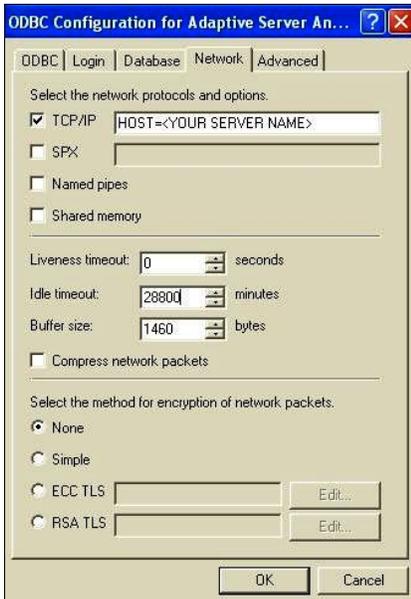
Click on the '*Network*' Tab. A screen similar to the one at left is displayed. This screen is used to configure network options. In our example, we have selected TCP/IP for our network communication. It may be necessary to identify the database server to the Sybase Client. The Sybase Adaptive Server Anywhere does not have a separate network requester like the earlier versions of Sybase. The network requester is actually part of the ODBC driver. You can identify the network server with the following command:

HOST=A*ctual Network Name of Server*
Or
HOST=*Server IP Address*

This configuration will be entered adjacent to the checked TCP/IP option. If the network uses SPX, then enter the server options next to the SPX option. Refer to the Sybase documentation for more information on configuring the ODBC settings.

ODBC Sybase 8 Network Options

Click on the '*ODBC*' Tab. There is a Test Connection button that will allow you to test the network connection to the database. This is a useful tool for troubleshooting connections. In order to test the connection, you will have to supply a User ID and Password on the '**Login**' tab, and then you can test the connection. It is really important to remove the User ID and Password from the ODBC configuration after you have tested the connection.

Select OK and then select OK again to exit the ODBC configuration. You should now have the ODBC portion configured properly.

Accessing More than One Database with Barcode Magician *(New Feature)*

BCM17 has a new capability to access different MET/TRACK databases. For example, you may have a production server and a development server and you want to be able to test new Action Codes in Barcode Magician without constantly re-registering the Workstation Configuration program. In BCM17, we have added the ODBC Data Source on the command line of each Barcode Magician application.
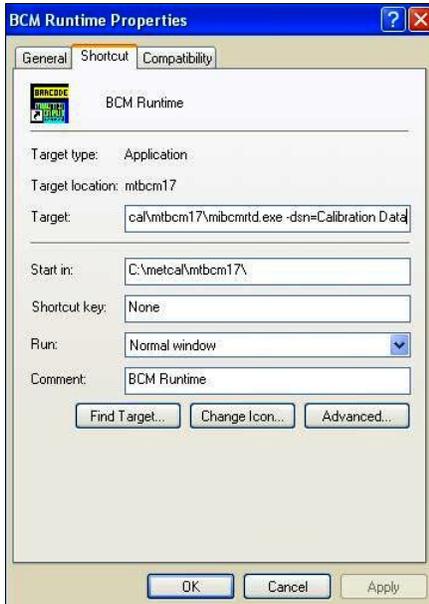
Selecting an ODBC Source from the Program Icon

For example, click on the Start Button, select Barcode Magician 1.7.1 Applications, scroll down to BCM17 Run Time and <u>right click</u> on BCM17 Run Time. Select Properties and you will have a screen similar to the one displayed at left. You will notice on the target line that you have <u>-dsn=Calibration Data</u> which will select the Calibration Data Source.

If you wanted to set up another icon with another data source, you can copy the existing icon, rename it with the new data source, and change the ODBC source after -dsn. If we use our Development Server idea, the ODBC source might read <u>-dsn= Development.</u> Of course, you have to create the actual ODBC source first. Each BCM17 application Icon is configured the same way.

Take a look at our Icons at right. We have added another BCM17 Run Time Icon that accesses the Development Server. You would need to do the same for each BCM17 application (Except for the BCM17 Registration Manager), but you could create different folders for each server that you want to access.
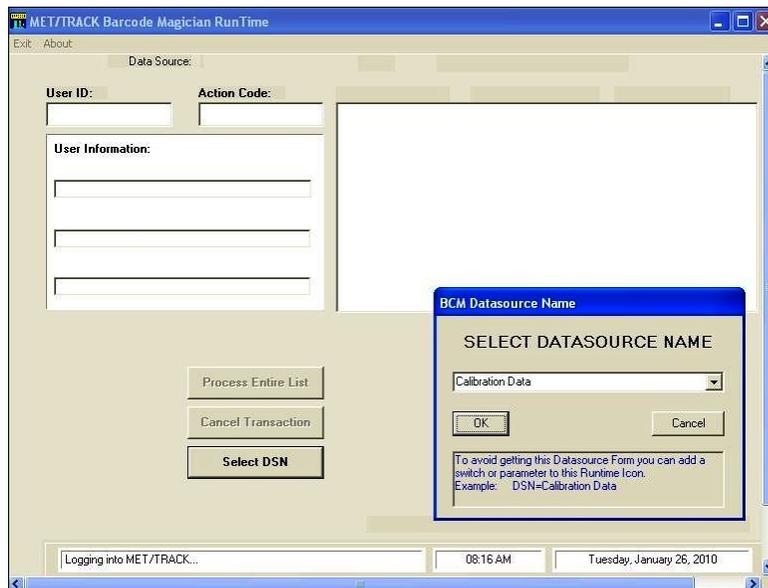
Selecting an ODBC Source from the Program Application

If you want BCM17 to prompt you for the data source each time the application starts, remove the Data Source from the the program icon. The screen at left shows the prompt box with BCM17 Run Time. The same result will occur with all the BCM17 applications except for the BCM17 Registration Manager.

Using the Registration Program

The registration program can be executed at any time by running the OTS Registration Manager from the Barcode Magician 1.7.1 Group. The icon for the registration program looks like a key.

NOTE: The Registration program only needs to be run one time unless later you are adding more licenses.

You will need to enter your METCAL "MT" Password, your 25 digit key code from ON TIME SUPPORT, and select the database (ODBC Source) you are connecting to. Click Register, and the program will add the necessary tables to your MET/TRACK system. If you have problems during the installation process, contact OTS for support.

Barcode Magician Registration System

NOTE: After processing, the registration program will prompt you to enter another license in case you have more licenses to register. You can install all the licenses from the same client computer.

If you do not have a license, please contact ON TIME SUPPORT.

Upgrading an Existing Barcode Magician System? – Please Read First!

Note: Before upgrading your existing Barcode Magician installation, be sure to back up your database first. Read this document carefully and if you have any questions about this procedure, please contact ON TIME SUPPORT.

Upgrading from Barcode Magician 1.5 or 1.6

Barcode Magician version 1.7.1 has many new features that have made it necessary to change the table structure in the database. There are some things that you must know about this process:

- When registering Barcode Magician 1.7.1, several new BCM17 tables are created. The registration process creates a criteria table, a warning table, a dialog box table and a workstation table. These new tables are stuffed from data in the existing action code table and then the action code table is altered to remove these fields that are now in the new tables. Also added is a report table that stores the Crystal report name, properties, and the action code that is calling these reports. You **CANNOT** run version 1.5 or 1.6 licenses on any station after registering version 1.7.1. You must upgrade all of the workstations to version 1.7.1.

- If you have been running reports from earlier versions of Barcode Magician, your existing reports will have to be added to the action code. You no longer need to configure your existing reports in the Workstation Configuration program. Only the path-name to your reports directory will be configured. There are several new functions in the program, and you should review the Work Station Configuration Program in this manual.

- Always backup your database before you upgrade Barcode Magician or any other MET/TRACK or MET/CAL application.

Users of previous Barcode Magician products will appreciate the many new features and the removal of the pc registry access. If you have any questions about this upgrade process, feel free to call ON TIME SUPPORT or E-Mail us for help at inquiries@ontimesupport.com.

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SECTION 3 – Barcode Magician® CONFIGURATION

The Workstation Configuration Program

NOTE: Even if you make no changes to the Barcode Magician Workstation Configuration, you must select Connect, select the ODBC Source and then click Save Changes in this application before any other BCM17 application will run on this workstation. After configuring the Barcode Magician Workstation, you may run the Barcode Magician Run Time Program. These configuration settings have to be configured for each Barcode Magician workstation.

The Work Station Configuration Program for Barcode Magician 1.7.1 has been changed. The local workstation configuration settings are now stored in the MET/TRACK database, not the operating system registry. The Workstation Configuration Program also configures the location for the Crystal Reports. In previous versions (version 1.6) of the program, four print buttons could be configured on the Run Time Program screen. The reports are now configured from the Action Code Editor   Barcode Magician allows each individual workstation to configure the workstation properties.

Barcode Magician Default Password is MT

If this is the first Barcode Magician installation, the DEFAULT BARCODE MAGICIAN SYSTEM PASSWORD IS MT.

Setting the ODBC Database Connection
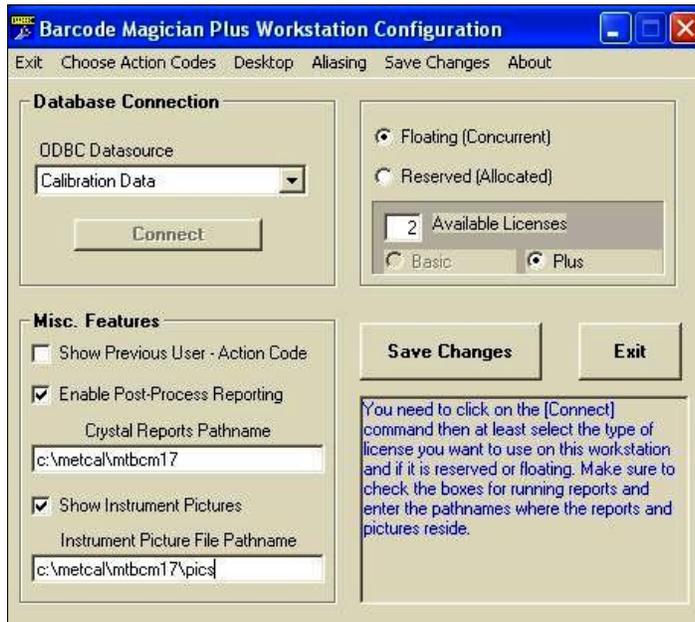
Workstation Configuration Program

From the Barcode Magician Program group, select the Barcode Magician Workstation Configuration Program.

Starting at the top left of the screen, you will see the ODBC Data Source. This Data Source must be configured for each workstation. **The default data source is 'Calibration Data'**. After you select the ODBC Data Source, click Connect to connect to the database. All the fields will be grayed out until the Workstation Program successfully connects to the database. You will be prompted to enter the Barcode Magician administrator password (default is MT).

Configuring the Work Station License

Licenses can be assigned to each workstation as a reserved license or they can be left as a Floating or Concurrent License. Selecting a reserved license will always dedicate a Barcode Magician license to the workstation. Selecting a floating license will allow the workstation to select a license from a 'pool' of licenses, assuming that more than one Barcode Magician license is assigned to a database. If there are 10

installed Barcode Magician stations and only 5 licenses are available, and they are all 'Floating (Concurrent) licenses', then any 5 of these stations can operate at one time. The default is set at 'Floating'. The total number of Barcode Magician licenses is displayed also.   The license count only displays the number of licenses that are available. Demo licenses are not counted and cannot be reserved for a station. If you have a critical Barcode Magician station, then you may want to select 'Reserved' for the workstation license. In our previous example using the 10 workstations, a license would be assigned to the critical workstation and there would be 4 floating licenses left for the other 9 stations. License usage can be monitored from the *BCM17 System Configuration Program*.

Barcode Magician version 1.7.1 has two license versions, the **Basic** version and the **Plus** version. The Plus version incorporates many new features. If you have both types of licenses, you will have to configure the workstation for the type of license you plan on using. It is possible to have one station using the Plus license and the other using the Basic license. In the 'Licensing' window there is a button that displays the current license assigned to the Workstation.   If Basic is displayed, then a basic license is assigned to the Workstation'. If Plus is displayed, then the plus license is assigned to the workstation. Click on the Plus or Basic button to switch the license for the Workstation. The license count will only reflect the number of licenses available for the version of license selected by this button.

Configuring Miscellaneous Features

There are also selections available for showing the **Previous User/Previous Action Code** and Enable Post Process Reporting. Selecting the '**Previous User/Previous Action Code**' box will leave the last User and Action Code displayed on the Run Time screen after the transaction has been processed. If the box is not checked, then the last User and Action code will be erased after each Run Time transaction.

If the Barcode Magician Workstation is going to print reports after the execution of an Action Code, then '**Enable Post-Process Processing**' has to be selected. In the previous version (1.6) there was a feature to select called '**Enable Action Code Selection for Reporting**". This was used to Configure a Crystal Report for a specific Action Code. This feature has been dropped in the Workstation Configuration Program and moved to the Action Code Editor.

Configuring the Crystal Report Location

In the previous version (1.6), the Workstation Configuration program allowed each workstation to execute up to four Crystal Reports. These reports were configured on each workstation. If a report was changed or renamed, each workstation had to be updated to incorporate the change(s). This has been changed in version 1.7.1. The Workstation Configuration program only identifies the location of the reports. We have made these changes in order to conform with recent IT changes and to expand the capability of the application. This gives the system manager more flexibility to determine whether the report(s) should be executed from the computer's local hard drive or through the network. There are also network bandwidth considerations when executing applications or reports. As described earlier, the Crystal Reports are selected for each Action Code in the Action Code Editor. This dramatically expands the number of reports that can be executed on a particular workstation because the reports are no longer dedicated to a workstation. Depending on where the Run Time station is located, you may want to print a receipt, a shipping label, or maybe some kind of Barcode traveler that may go with the equipment. If you want to print reports, you must first create the report for Barcode Magician to call. We will discuss how to create reports utilizing some new tables in a later section of this manual.

After the reports have been created, we need to tell Barcode Magician where these reports are located. The Crystal Reports location can be set for any location per workstation. This method can help improve application bandwidth when using BCM17 over a WAN. In the Workstation Configuration program, you will have to <u>type</u> in the location of the reports. The reports can exist on a network or they can installed on a

local computer. This is dependent on how the system is installed. There is no browse function to select the location for the reports, and you must type in the location. The reason for this is because of IT. Several IT departments do not want to implement file sharing through the use of a drive letter. For that reason, we also support Uniform Naming Convention (UNC). For example, if the reports were installed locally, the location may be c:\metcal\mtbcm17\reports or on a server the directory may be j:\mtbcm17\reports. Using the UNC method, an example would look like \\Computer_name\mtbcm17\reports. Using the UNC method, the directory is still shared on the server, but not mapped. This gives the customer (and their IT department) flexibility in the configuration of Barcode Magician 1.7.1.

Configuring the Instrument Pictures Location (*New*)

A new feature in Barcode Magician (BCM17) is the ability for the Run Time Program to display pictures of instruments as the instruments are scanned in. This feature is selected per workstation and is not a system configuration. You must check the "**Show Instrument Pictures**" box to enable this feature on the workstation.


Entering the Pictures Location

You must type in the directory for the pictures location. There is no browse button. Using pictures in an application also impacts network bandwidth and performance. For example, if the pictures were installed locally, the location may be c:\metcal\mtbcm17\pics or on a server the directory may be j:\mtbcm17\pics. Using the UNC method, an example would look like \\Computer_name\mtbcm17\pics. Using the UNC method, the directory is still shared on the server, but not mapped.

Selecting Action Codes to Operate with the Workstation

A feature of Barcode Magician is the ability to allow the system administrator to select which Action Codes can be executed from a specific workstation. The system administrator can restrict the Action Codes on a per workstation basis.
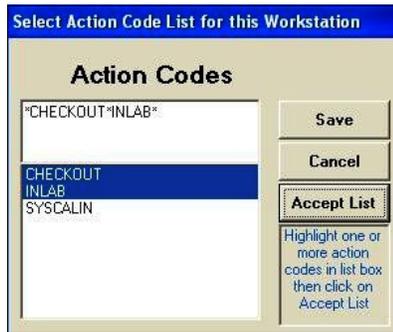
Assigning Action Codes to a Workstation

Click on "**Choose Action Codes**" from the Menu Bar. A form similar to the one at left is displayed. In our example at left, we have two Action Codes, CHECK OUT and INLAB selected. After selecting the Action Codes, click on Accept List. In our example, only CHECK OUT and INLAB will operate on our workstation. The SYSCALIN Action Code will not.

You can also delete the Action Codes you selected by deleting them with the Delete Key. The default condition is to allow the workstation to execute any active Action Code.

Assigning All Action Codes to a Workstation

The example at right has all of the Active Action Codes activated for the workstation. The message "All Active Action Codes Selected" will be displayed if no Action Codes are selected. This restriction of Action Codes feature may seldom be used, but for large systems that have several Barcode Magician stations, there may be a need to restrict Action Code Access for a particular station(s).

Assigning a Desktop to a Workstation (*New*)

A new feature in Barcode Magician (BCM17) is the ability to assign a MET/TRACK Desktop to a workstation for BCM17 to use when entering a new asset. In order to allow a user to add a new asset in BCM17, this feature must be enabled as a system setting in the System Configuration Program and in the specific Action Code that is executed on the workstation.

Click on "**Desktop**" from the menu bar. A window will appear and the system administrator can select which desktop will be used for that workstation.   Click the Save button to assign the desktop. You will have to click the Save Changes button on the screen to make the changes permanent.

Assigning a Desktop to a Barcode Magician Workstation

Assigning a Barcode Alias to a Workstation (*New*)

Within previous versions of Barcode Magician, there has always been the capability to configure a special field in the MET/TRACK Inventory table to be used for Barcode Scanning. "Aliasing" allows the system to use a different field for the Barcode or asset number instead of the I4201 field that is the required MET/TRACK asset # field. Some companies will buy a sheet of Barcode tags and apply them on instruments as they come in for service. The preferred method is to use the i4201 Inventory field. If your company uses long asset numbers, it may be more efficient to assign a Barcode field with fewer characters for your assets. This feature has been quite popular.   This has always been a system configuration.

However, there have been requests to split this feature into a local setting also. With the implementation of large systems that may incorporate different locations and departments, some customers need to use additional identification methods that may not be consistent for other locations/departments.   In Barcode Magician *1.7.1*, we have added the additional capability to configure the alias feature per workstation. Configuring the feature is very easy.

Click on "Aliasing" from the menu bar.   We are going to assume that the system administrator has already configured the corresponding Inventory field to identify barcodes for this workstation. Select the Inventory field number and click the Save button. When you click the Save Changes button in the Workstation Configuration, the changes will be permanently saved.

Selecting an Alias Field for a Local Workstation

The User's Database

Barcode Magician adds a separate Users Database to the MET/TRACK system. The Users Database includes 6 user-defined entries that can be modified to describe the User. The default field descriptions are Division, Building, Department, Shop, Office, and Phone Number.

There are some **NEW** features for the Users Database:

- The number of fields can be expanded from 6 to 12 user fields. Six fields is the default.
- You can set a timeout value (Plus Version Only) that will keep a user logged in on the Run Time Program. This is useful if a user is running several Action Codes and does not want to keep logging in with their user name.
- User fields which are not used can be suppressed in the System Configuration Program.
- There is now a separate administrative password for the users database if needed to permit editing the users database but not allow access to other administrative applications.

User Database Screen in Browse Mode

Default fields can be renamed in the **System Configuration** tool that will be described later. At the very bottom of the screen are the status messages. Each component of the software has a similar status bar. The number of users is displayed at the bottom left hand corner of the screen. At the bottom of the screen is the status mode. The example at the left is in the 'View' mode. **To change to the 'Edit' mode, click in any field and the word 'Edit' appears at the bottom of the screen**. The Time and Date are displayed at the lower right hand corner of the screen.

There is a row of buttons near the bottom of the screen for moving through the users. First moves the user database pointer to the first position in the database. Previous displays the previous user in relation to the current user displayed and lets you move backward through the database one user at a time. Next lets you move forward through the database one user at a time. Last moves to the very last User entry in the Database. Add New allows the entry of a new user. Cancel allows you to Cancel editing a user or adding a new user. Clicking on the Save button will save an entry that is being added or edited. Delete allows you to remove users one at a time. Clicking on the Exit button will exit the program. The users are listed alphabetically in the database by user name.

Normally, the full name is entered in 'User Name'. The 'User ID' could be the actual barcode value on the employee badge for the user. This value might be an employee number. For example this particular user would have a barcode value of 123123 on his/her badge. If the system administrator determines that a password is required, then the password will be entered in the 'Password' field.

An optional field is available for guests called 'Guest Account Expires On:'. It is automatically calculated from the Run Time Module by using the system date and "purge guests after x days", which is configured in the System Configuration Program. You may enter a date if you wish to have the user treated as a guest.

Because people move around and change job functions, the guest function is a great way to keep your User's Database current. You may want to set the guest to expire after 180 days. If this occurs, and the user has to re-enter their information through the Run Time screen, then the database will have all the updated information on that user.   This is a real time saver when performing house-cleaning on the database.

You can also set the session timeout (Plus Version Only) that will allow a user to stay logged in while processing instruments through the Action Codes. The default value is 0. However, a user may want to set a value of 10 minutes.   If this example, the user would stay logged in for approximately 10 minutes.

Beginning in Barcode Magician 1.6, the Pick List feature in the six users fields was added for the 6 user fields.   The pick list will also work for the optional 6 user fields for a total of 12 fields.   Entries are automatically stored in the Pick List. This allows the administrator to keep more consistent database entries. If you want to change what is in the pick list, then you have to change the actual database value for any users using the value you want to change. The system will automatically update the database.

Example User Entry

Let's set up an entry into the User Database....

Step 1: Start the Users Database program from the Barcode Magician group/folder. When prompted for the password, enter the User/Editor administrative password. (The User/Editor password was created at the time of system installation. Refer to the System Configuration section for more information on passwords, and how to change the User/Editor password.)

Step 2: After the program completes loading, click on Add New. All the buttons will be grayed out except for Save and Cancel. Click on the 'User Name' field and enter the User's actual name. Press tab to move to the next field.

Step 3: Next, Enter the 'User ID'. This is the ID the user will log into Barcode Magician with. This may be an employee number or any assigned alphanumeric value. Tab over to the 'Password' field.

Step 4: If the user is required to use a password, enter it in the 'Password' field. You will have to re-enter the password for verification. Press Tab and re-enter the password again for verification. Press tab to move to the 'Expiration Date'.

Step 5: For the user to have a guest (temporary) account, enter an 'Expiration Date (format is mm/dd/yy). To establish a permanent account, leave this field blank. Tab to the Notes field.

Step 6: Enter any miscellaneous data into the 'Notes' field that may be useful. This is basically a large comment field. Tab to the next field.

Step 7: The next six fields are used to enter information about the user. The default field names are 'Division', 'Building', 'Department', 'Shop', 'Office', and 'Phone Number'.   These fields are customizable through the System Configuration program. If these fields are required and have no data, then the system will prompt you when Save is clicked. For more information regarding customizing these fields or making them required entries, refer to the System Configuration section.

Step 8: Click on Save. When the data is correctly entered, the 'Changes Saved' message box will be displayed. Congratulations, the first user is completed!

Using Search

Search is a very powerful tool for quickly locating users in the database. Click on Start Search. All the fields will blank out on the form. Enter the search criteria and click Search.

You can search on a single field, or on a group of fields. If you use more than one field, then the search criteria "AND's" all the fields together. What does AND mean in this case? If you search and use more than one field for your search, then the data returned would be for records that only have the same data in those fields. The example on the following page searches for any user name containing "DOE". The "*" is a wildcard character which searches for any characters where it is placed in the search string. The Search Screen also supports the "?" character which searches for a single character in the string. For example, a search string with "John D?e", will return a string with a single wildcard character. This search example returns "John Doe".
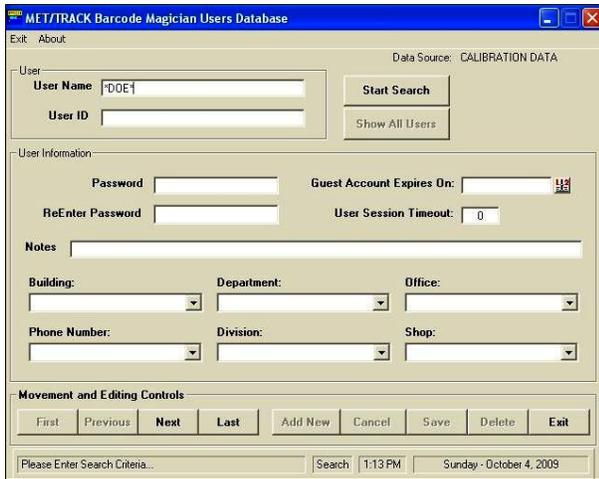

Searching the Users Database

The completed search function will show how many matches were found and display this information in the lower left-hand corner of the screen. The message will display "Current User" and the quantity. If more than one user is returned in the search, you can use the movement buttons to look through the users that were located. Click Show All Users to see all the users.

You can also start the User's Editor in read only mode. The installation program will install an icon for the view only mode, or you can start the program with a – viewonly switch. For example, the command might look like **C:\metcal\mtbcm17\bcmusrdb.exe – viewonly.** You can look and search, but not make any changes. There may be situations where this program may be more appropriate for users.

We have created another example shown at right. We added three additional fields for the Users Database. Notice that the additional users fields are U0007 – U0009. You can rename these fields in the System Configuration program.
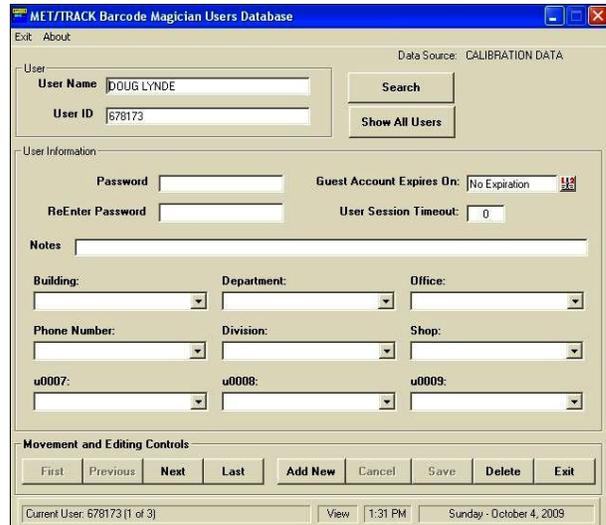
Users Database With Nine Fields Configured

System Configuration

System Configuration allows you to configure your system for special operations. We will go through each tab and describe the operation on the screen. First let's take a look at the screen after logging in. Enter the system password to get started.
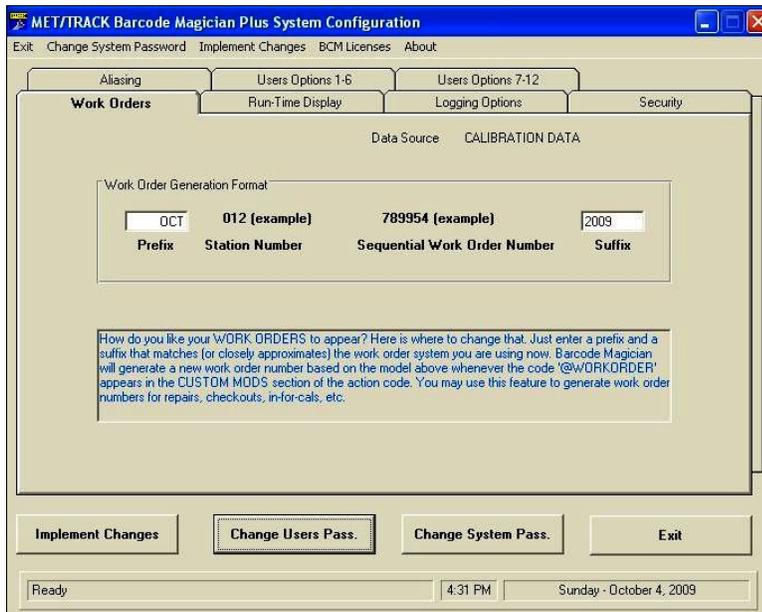
You will notice that there are seven tabs at the top in the screen at left. Click the tab to select it. We will go through these in order from left to right.

System Configuration Screen

Work Orders

Barcode Magician has an automatic work order generation feature built in. In the screen on the previous page, you will notice the 'Work Order' generation format. The user does not have control of the actual value generated by Barcode Magician. The serial number, date, and other criteria within the system calculate this value. It is practically impossible to have any duplicate values generated by the system. You can enter a prefix and suffix of you're choosing to the Work Order value. In our example we have a prefix of "FEB" and a suffix of "2009". In this example, when Barcode Magician generates the work order, the month will be added at the beginning of the work order and the year will be added at the end. This could be used to search for all work orders in a particular month and year. The system administrator will have to change the work order prefix/suffix values at the beginning of each month if this method is used.

There are two different work order functions, one that creates a unique work order for each asset and one that creates a unique work order for the batch of assets that are processed. This will be discussed more in the Action Code section of this manual. Be sure to click on Implement Changes to save the changes.

Run Time Display
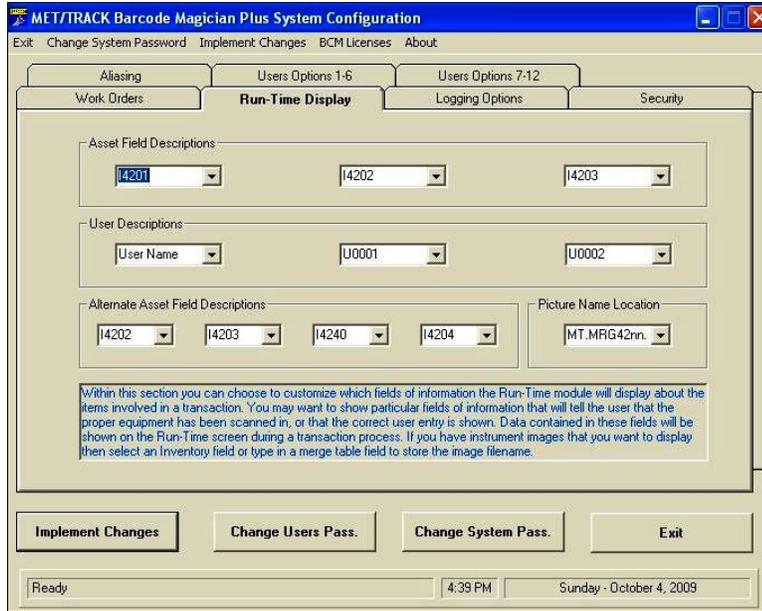
Configuring Run Time Display

In the figure at left, we have three fields for the <u>Asset Description</u> and three fields for the <u>User Description</u> that are displayed in the Run Time module. The down arrows allow the administrator to select whatever fields are desired. The fields in the Asset Description are the actual MET/TRACK fields. You may want to consult the MET/TRACK field definition description to determine which fields you want to use. The default is I4201 (Asset Number), I4202 (Manufacturer), and I4204 (Description).

The User fields are defined in the User's section of the System Configuration (Users Options). The default user selections are User Name, U0001 (Building), and U0002 (Office). The system administrator can determine how to set up these fields.

Alternate Field Descriptions for BCM17 Plus (*New*)

Barcode Magician *1.7.1* (BCM17) incorporates a new feature that allows an alternate look-up with several fields displayed in a pop up screen. For example, let's assume that we are logging instruments into the calibration lab. One of the instruments does not have a label on it and we are not sure if this instrument is in the system. The Action Code can be configured (which will be discussed later) for an alternative look-up. In our example, we find the model (87 in our example) and enter it instead of the asset number. BCM17 performs the alternative look-up if it does not locate the asset number or the alias number that is defined in the system. This feature has to be configured per Action Code. Since there may be multiple matches, the pop up table will show all the matches and the user can select which one is the correct instrument.

Selecting Assets from Alternate Entry in Run Time

It is also possible to select several of the matches at one time by clicking on each entry while holding down the Ctrl key. There are a variety of applications for this feature that appear to be endless. After selecting the instruments to process, click on the Green Check box.   The four alternative fields can be configured from the Inventory fields.

Picture Name Location for BCM17 Plus (*New*)

Another new feature for Barcode Magician Plus is the ability to display a picture of an instrument. If you decide that you want to display pictures in the Run Time Display, the following steps must be implemented.

- Configure the Workstation Configuration Program with the location of the pictures. Consideration should be given to the location of the pictures and whether they are going to be downloaded via a network connection or be locally loaded on the workstation computer.
- Select the field in the inventory database that contains the name of the picture file. Careful consideration should be given to how the pictures will be identified in the database. We will discuss this further in the appendix of this document.

We used database field I4242 for our example. A better approach would be to create a model merge table with a picture file column. Using this method will make maintaining the pictures much easier. This method will be discussed in the appendix of this document.

The instrument is displayed on the Run Time screen. You can even right click on the picture and manipulate the image.
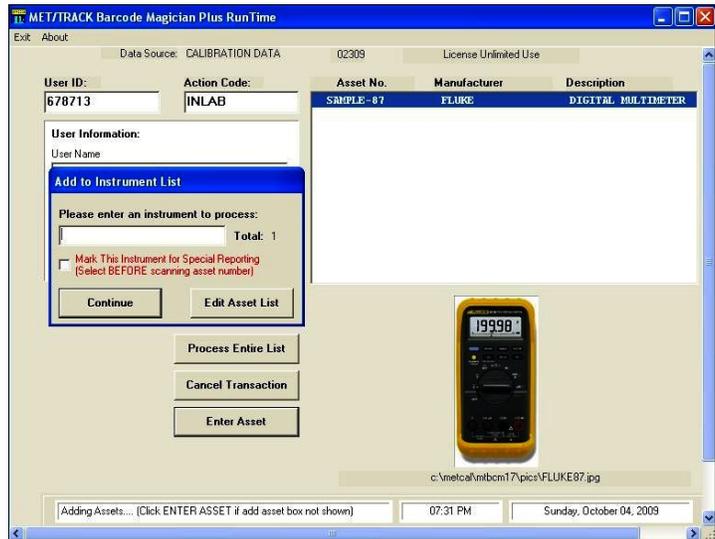
**Run Time Program Display with Instrument Picture**

Logging Options

Barcode Magician has the capability of storing a number of transactions. The administrator defines the number. Keeping a log allows the administrator to go back through the system and check on a transaction via a Crystal Report. If the administrator does not want to record transactions, then enter a value of zero for the number of transactions to record and the information will not be saved. The default value is 0 transactions. <u>If you decide to **not** use the Transaction Record feature, then please turn this feature off by entering "0" in this field</u>. Your system will perform more efficiently without having to store the transaction statements.

Configuring Logging Options

Security

Barcode Magician allows the administrator to determine the security system rules for the application. A system password must be used to access all the programs except for the Installation, User Database View Only, and Run Time Programs.   There is a system password for the Action Code Editor, the Workstation Configuration Program, Users Database Program and the System Configuration Program.   There can be a separate system password for the Users Database.   You cannot disable these passwords.   The System Administrator can require the user to log in with a password before using the Run Time program. Because the Run Time Program in Barcode Magician makes changes to the MET/TRACK database, it may be necessary to require password protection.   There may be several factors in making this decision.
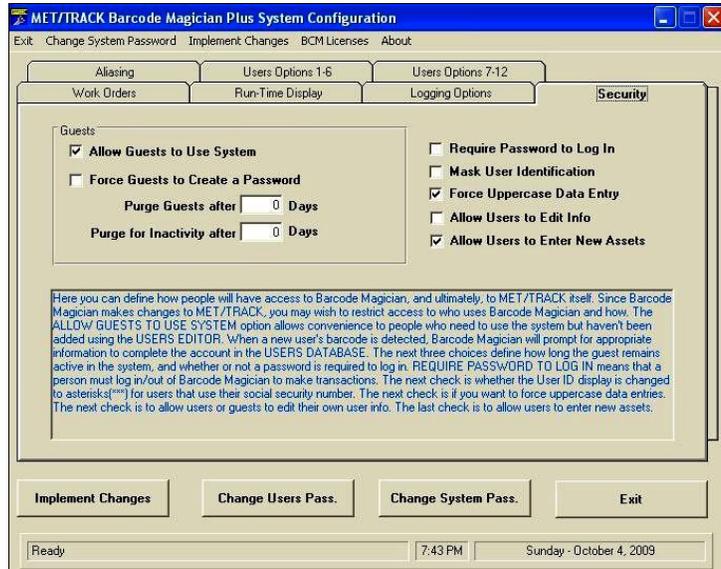
Configuring Security Rules

When processing a transaction, the user is required to log in and the user must be listed in the Users Database. If '**Require Password to Log In**' is checked, then the user will have to use a password to record a transaction. If the User is not in the Database, then they must be added. This can be a time consuming task when someone wants to pick up an instrument and the system administrator has to stop and add the user. A guest is a user that is not currently listed in the User Database.

If the '**Allow Guests to Use System'** box is checked, then a user that is not presently in the user database will be allowed to enter their user information through the Run Time Program. You can also make the password entry line required when a new guest is entering for the first time by checking the '**Force Guests to Create a Password'** box (This box is automatically checked when '**Require Password to Login**' is checked).   They will be prompted to enter a password and re-enter the password for verification.   The administrator can also determine how long a guest will stay resident on the system. The default value is 0 days.   If **0** is entered, then the user will be entered as a permanent entry into the database with no expiration date. Beginning with Barcode Magician 1.5.1, a feature was added allowing the administrator to configure for inactivity. After a period of inactivity, the user will be purged. Setting a value of **0** will not purge any guests for inactivity. In our example, we have set the **Purge Guest** and the **Purge Guest Inactivity** to 30 days.

Some administrators have used the guest feature to help keep their Users Database current. Companies are always moving people and changing departments. It is almost impossible to keep up with all the personnel movements. Some companies use the Guest Feature with an expiration date as a way to keep the User Database up to date. For example, you could set the User Database to purge users after they have been in the system 90 days. If someone is dropped from the database after 90 days, they would be prompted to re-enter their information the next time they use Barcode Magician. This way the database stays up to date for at least 90 days. Whether the time expires for Inactivity or a Guest Timeout, the condition that occurs first will delete the user. Individual administrators can decide how they want to handle this.

Another feature is "**Allow Users to Edit Info"**. If this is selected, the user can update his or her own information and password without having to contact the system administrator. The default has this option deselected.   For systems with a large number of users, this can make it easier to update the user information. This is a global setting and not configurable on a per user basis.

You can select "**Mask User Identification"** to mask the user's ID when processing instruments in the Run Time Program.   This is useful if a company uses Social Security numbers for the user ID, and some individuals may consider this information sensitive. Another other option is "**Force Uppercase Data Entry"** allowing the system administrator to determine on mixed case or upper case storage of data.

After making the changes, click on Implement Changes to save work.

Allow Users to Enter New Assets (*BCM17 Plus Only*)

Configuring Users to Add Assets (BCM17 Plus Only)
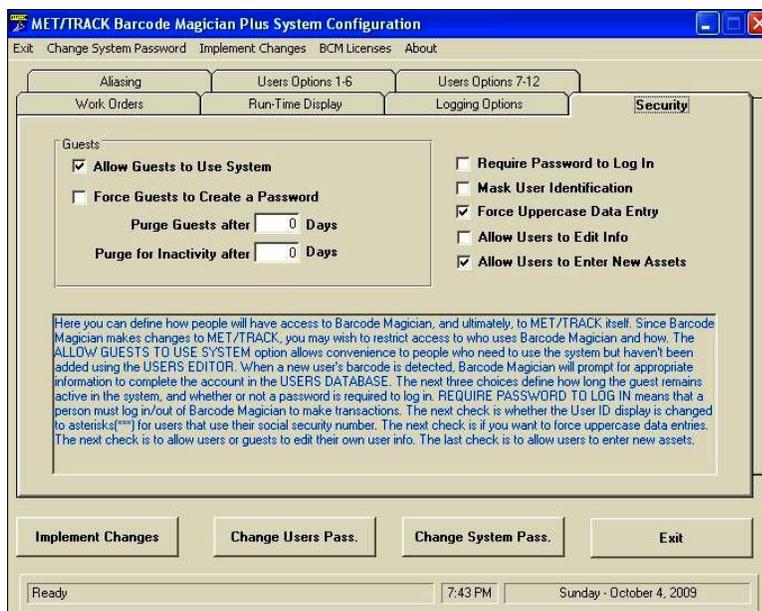
Barcode Magician Plus allows the addition of assets.   If "**Allow Users to Enter New Assets**" is checked, then the user will be allowed to perform this function. This is a global setting that will affect all the Action Codes. Methods for restricting this capability will be discussed later in the Action Code Editor section of this manual.

When adding a new asset, the Inventory Screen from MET/TRACK is displayed and the operator can fill in the fields.   The same field customization rules are enforced as they are in MET/TRACK. The default desktop in MET/TRACK is used unless configured differently in the Workstation Configuration Program.

Users Options

Barcode Magician will allow you to customize which User Database fields are displayed in the Run Time Program. You can rename the Users fields to reflect your company's organization. These fields may also be required entries by clicking the 'Required' box. Required entries help keep your User's Database consistent. For example, the administrator can require the phone number to be entered. If a new user processes an instrument in the Run Time Program, the user will be prompted to enter their information. Required fields will be marked with a red label. After making the changes, click on Implement Changes to save work.

New Features

A new feature in Barcode Magician 1.7.1 is the addition of 6 additional fields. These fields have a field name of U0007 to U0012. Another new feature is the addition of a suppress button for each user field. The administrator can determine how many of these fields are used and whether they are displayed and required.
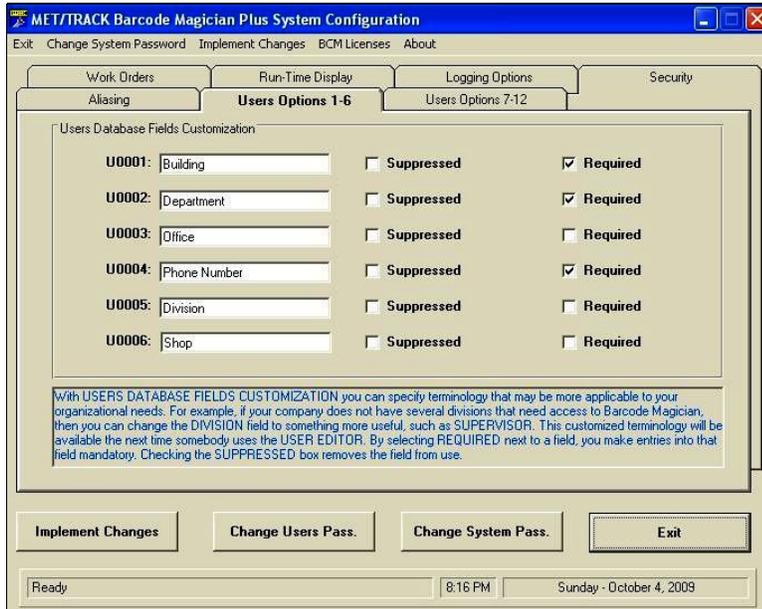
Configuring the User Database Fields

The screen at the left shows the configuration of the Users Database fields. In our example, we have six of the fields displayed, but only three are required.

The user fields are 50 characters long. If you enter data longer than 50 characters, this data will be truncated.

Aliasing
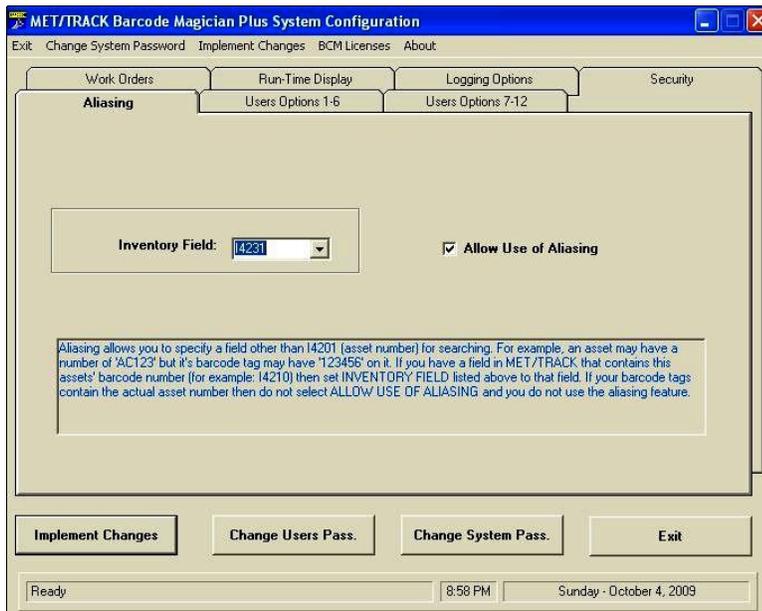
Configure the Aliasing Option

"Aliasing" allows the system to use a different field for the Barcode or asset number instead of the I4201 field that is the required MET/TRACK asset # field. In the example at left, the system has been configured to use MET/TRACK field I4231 as the Barcode tag. Some companies will buy a sheet of Barcode tags and apply them on as instruments come in for service. It is usually more expensive and time consuming to print the actual asset number as a Barcode, but it is the preferred method. If your company uses long asset numbers, it may be more efficient to assign a barcode field with fewer characters for your assets.

Using this feature assumes that all stations will use the alias function. This is not related to the desktop alias function in the Workstation Configuration Program.

Barcode scanners sometimes have problems scanning long asset numbers. A barcode field with five characters will provide over 90,000 unique possibilities.

Aliasing allows flexibility to let the administrator decide how to set up the Barcode tags. If you want to use I4201 as the asset # field for barcodes, do not check 'Allow Use of Aliasing'. After making the changes to the system configuration then click Implement Changes to save the new configuration.

Barcode Magician License Manager

Barcode Magician has a license monitor to verify which licenses are in use and which licenses are available. On the Menu Bar, click on BCM Licenses, and a screen will display the licenses and if they are in use. You can also delete licenses from the system, or you can release licenses that are in use.

Change System Password

If you want to change the system administrator's password, then click Change System Pass. This password protects the Action Code Editor, the System Configuration Program, and the Workstation Configuration Program. The program will prompt you for the new password and will also verify the password change. You may want to periodically change the system password.

Change Users Password

If you want to change the user table administrator's password, then click Change User Pass. This password protects the BCM17 Users Editor. The program will prompt you for the new password and will also verify the password change. You may want to periodically change the user password.

Default System Passwords

NOTE: The default system and user password is set to MT.

Action Code Editor

The Action Code Editor is the heart of Barcode Magician. This program tells the Run Time program where and how to make the changes to the MET/TRACK database. **Warning**: **This program will cause the Run Time Module to insert data into the MET/TRACK database as specified by the Action Code. Be sure to verify the operation and changes to each Action Code**. It is a good idea to have a test asset number in the database to test the Action Codes with first. **You must log into the Action Code Editor with the System Password. The default password is MT.**

What is an Action Code?

An Action Code is like a macro. It is basically a set of instructions for the Run Time program to execute. You may want to create a Barcode tag for each Action Code. You can have as many Action Codes as you want, but always try to keep the system operation simple. An Action Code is able to perform up to 25 levels of criteria testing (BCM17 Basic is 4 levels). **For Example:** Let's assume that the system is going to be used in a tool crib. We want to allow users to check out equipment, but we want to verify that the asset is not overdue for calibration, the instrument must be an active asset, and the instrument has been previously checked in first. Can you imagine trying to do this manually? In our example we will have the system create a new location record with the user name and department, and we will have the system update the inventory arrive date and status fields. Let's start by taking a look at the Action Code Editor.

General Controls Operation

Action Code Editor – General (BCM17 Basic and PLUS)

The Action Code editor operates in the same fashion as the Users Database Editor. At the very bottom of the screen are the status messages. The number of Action Codes is displayed at the bottom left hand corner of the screen. Also, located on the bottom of the screen is the status mode. The example at left is in the **View** mode. To change to the **Edit** mode, click in any field and the word 'Edit' will appear at the bottom of the screen. The Time and Date are displayed at the lower right hand corner of the screen. There are a row of buttons near the bottom of the screen for moving through the Action Codes and saving data.

You can inactivate an Action Code by clicking (toggle on/off) on the "Action Code is Active" check box. Sometimes the lab manager will want to keep an Action Code available for infrequent use, but they do not want it to be available for everyday use.

You can also select whether the Action Code is viewed in the Action Code Drop down list in the Run time Program. Some managers may want to use an Action Code that is not visible to everyone else. If it is available, but not visible, it is still possible to type/scan the Action Code in the Run Time Program. Action Codes are easy to search. Instead of having to use the controls to cycle through each Action Code, you can select from a drop down list, click OK, and go directly to a specific Action Code.

Clone Function

Barcode Magician 1.7.1 has a Clone function. You can copy an existing Action Code and assign a different name. You can then edit the new action code to perform the desired changes.

Editing and Movement Buttons

Let's take a look at the movement and editing buttons:
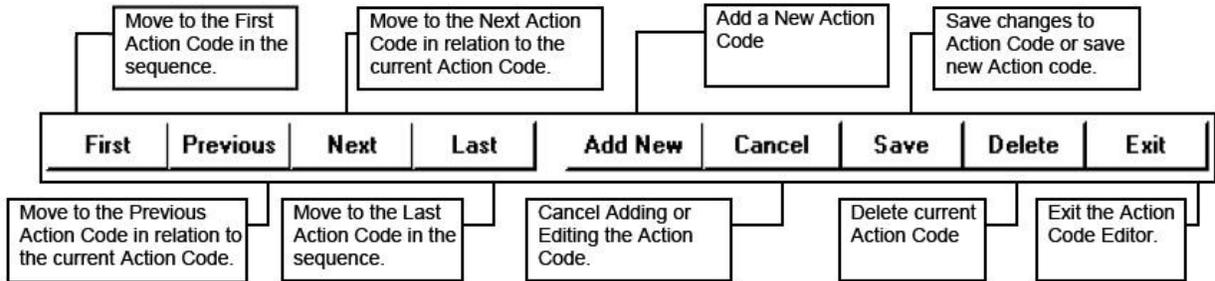
General Tab
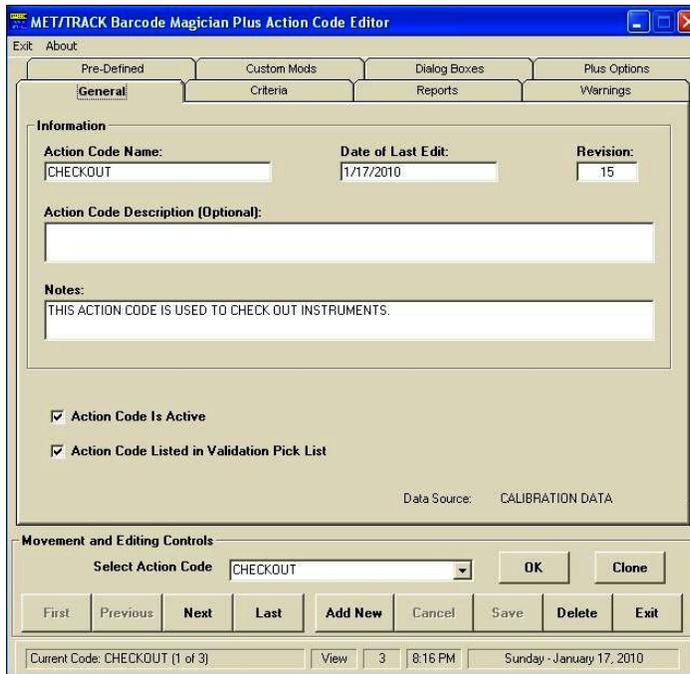
Adding an Action Code

In our example we are going to create a new action code called CHECKOUT. This will be used in our tool crib example. First click Add New to enter the new Action Code. We entered CHECKOUT into the 'Action Code Name' field. The system automatically keeps track of the 'Date of Last Edit' and 'Revision'. In our example we also clicked the 'Action Code is Active' box. You can also make existing Action Codes inactive and save them for a special use. The 'Action Code Listed in Validation Pick List' function allows the name of the Action Code to be listed in the drop list when entering an Action Code in the Run Time program.

You can enter a description of the Action Code and additional notes if desired. These are optional fields and are not required. However, entering a description or note may be useful documentation for future reference.

We have now started the process of entering a new action code. Next, we will add three criteria checks to make sure the instrument meets certain criteria. When creating Action Codes two things should be noted:

- If a criterion fails, the instrument will not be processed. The criteria failure will have to be corrected first
- If a warning fails, the program will display a warning, but will allow the operator to continue processing the instrument.

Criteria

Note: The Criteria Function in BCM17 has new functionality with the ability to add more criteria checks. There is also an SQL editor thereby making the creation of SQL statements easier. The Messages tab has been removed and the messages are now included in the criteria on the same screen.

Criteria Checking – Expression One
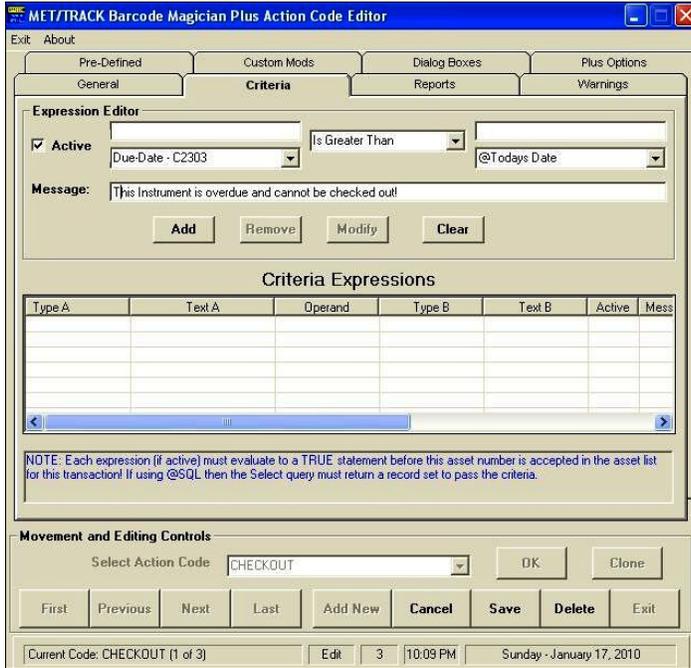
Next we will click on the Criteria Tab and move to the Criteria screen. As stated before we are going to check and make sure the instrument is not overdue. In 'Expression One', we will click on the down arrow and scroll down through the list and find the expression '**Due-Date - C2303**'. Moving to the center column, select the expression '**Is Greater Than**'. In the right-hand column of 'Expression One' select **@Today's Date**. Our expression now reads, Due Date is Greater Than Today's Date. If Today is greater than the due date then the instrument is overdue for calibration and should not be checked out. We added our "Message" in the Message Box which will be displayed to the operator if the criteria fails. Next we will check the 'Active' box and make the expression active.

Click the Add Button and this criteria is added to the list.

Next, we are going to verify the instrument is active. In '**Expression Two**', click on the down arrow in the left-hand column and scroll down through the list to find the Expression **State of Asset - I4299**. The field can only have a value of A, I, or D (Active, Inactive, Delete). This is defined in MET/TRACK. In the center column, select the expression **Is Equal To**. In the right-hand column of **Expression Two** we will select **@Text,** a special field. In the field right above **@Text**, enter text. We will enter an 'A' for Active. The expression should now read, the I4299 State field must equal A for Active. Next check the **Active** box and make the expression active

Click the Add Button and this criteria is added to the list.
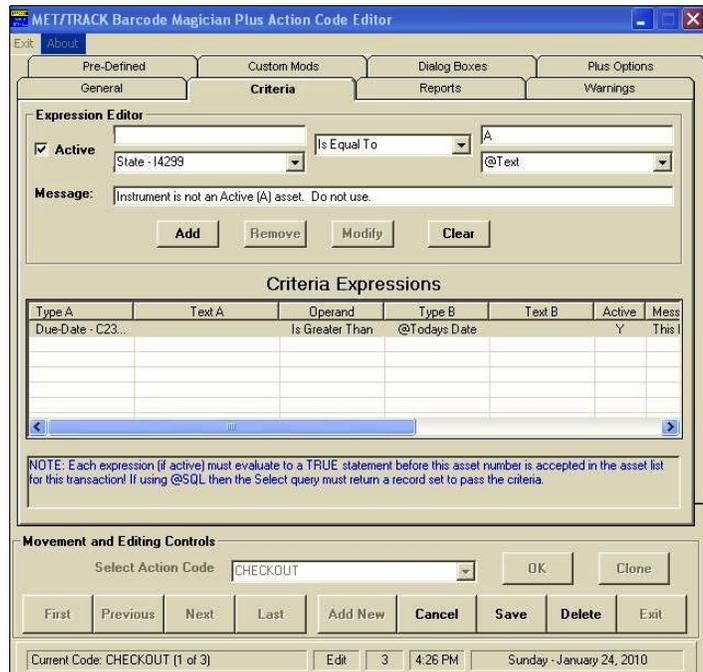
Criteria Checking – Expression Two
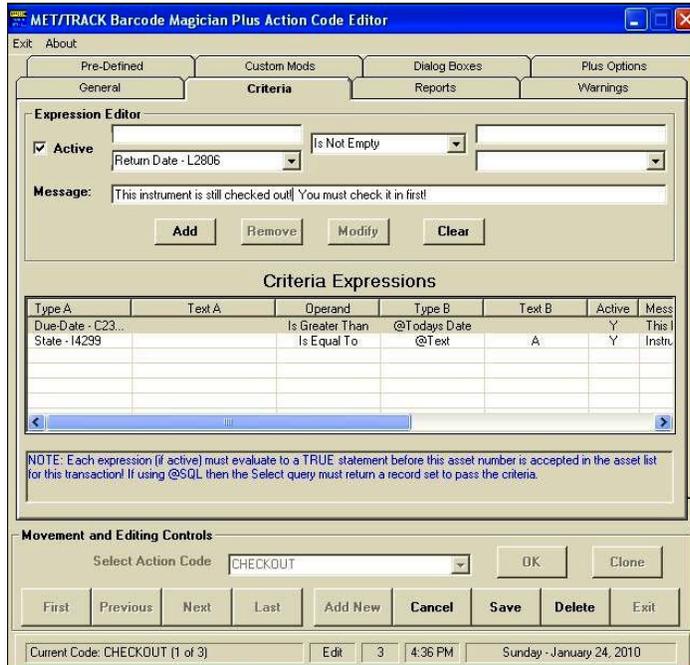
Criteria Checking – Expression Three

Now, we are going to ensure the instrument has been checked in before it is checked out. In **Expression Three**, we will click on the down arrow in the left-hand column and scroll down through the list and find the expression **Return Date - L2806**. This field is part of the location history. We want to make sure it is not blank when an instrument is checked out, which means it has not been properly checked in first. There should be an entry in the field. Moving to the center column, we will select the expression **Is Not Empty**. In the right-hand column we do not need an expression to compare to because we are only interested in an empty field. Next, We will click in the **Active** box and make our expression Active. The expression now reads, the Return Date field is not empty.

Click the Add Button and this criteria is added to the list. Click the Save button to save the Action Code.

In BCM17 the criteria screen has all the conditions and messages on one screen. Whereas BCM16 only allowed 4 criteria checks, BCM17 Plus will allow up to 25 criteria checks. If you click on any line in the summary window, the criteria is displayed in the top section to allow editing.

We now have three active criteria to compare to in our example. This helps to keep the transactions consistent. When the Run Time module processes this action code, every one of these three criteria expressions must pass for each asset entered in order for the transaction to be processed.

IMPORTANT: Let's take a moment here to consider some rules. ***When comparing things in the computer world always compare Dates to Dates, Text to Text, and Numbers to Numbers***. For Example, you will get inconsistent responses when comparing Dates to Numbers. The date format is based on the Windows date preferences, just like MET/TRACK.
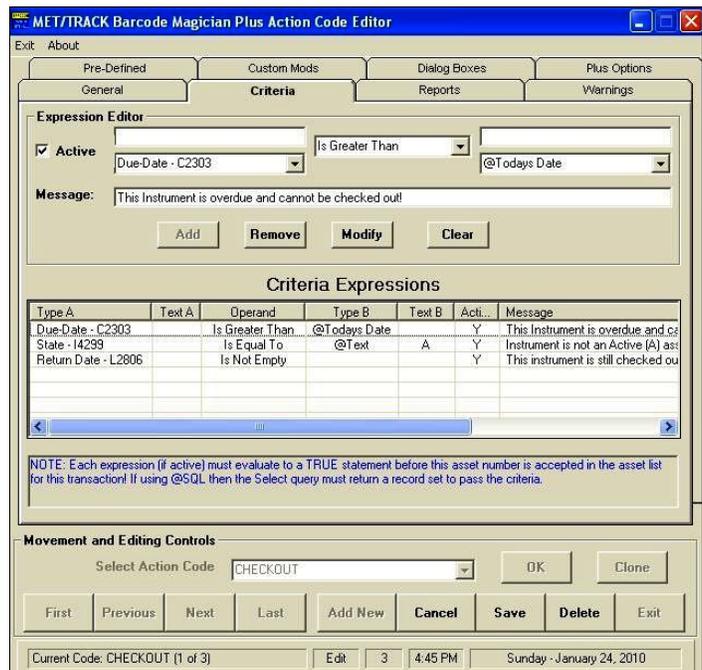
Criteria Checking - Summary

When selecting Criteria in the expression editor, you will notice that the system has adapted to your MET/TRACK customization. This makes it easier for the administrator to make changes. There are special fields with the "@" character in the description. These fields are system variables that can be used for criteria comparisons.

There are also the User Database variables, which will refer to the logged in user who is checking the equipment out. For example, you could make sure that only a certain department has access to special equipment. We left this open for you to use. The following is a short description of each criterion with example "failure messages".

Contains

When using "Contains" in a criteria check, this means that it is looking for characters that may or may not be in another string.

In this example, the field I4225 must at least contain the word 'LOAN' to pass the criteria.

Criteria – Using "Contains"

Does not Contain

In this example, the field I4225 must not contain the word LOAN to pass the criteria.

Criteria – Using "Does Not Contain"

Is Empty

In this example, the field L2822 must be empty to pass the criteria.

Criteria – Using "Is Empty"

Is not Empty

In this example, the field L2822 must NOT be empty to pass the criteria.

Criteria – Using "Is Not Empty"

Is Equal to

In this example, the field I4299 must be equal to an "A" to pass the criteria.

Criteria – Using "Is Equal To"

Is not Equal to

Criteria – Using "Is Not Equal To"

In this example, the field I4299 must not be equal to an "I" to pass the criteria.

Is Greater Than

Criteria – Using "Is Greater Than"

In this example, today's date must be greater than C2303 Due Date to pass the criteria.

Is Greater Than or Equal to

Criteria – Using "Is Greater Than or Equal To"

In this example, today's date must be greater than or equal to C2303 Due Date to pass the criteria.

Is Less Than

Criteria – Using "Is Less Than"

In this example, today's date must be Less Than L2819 Number of Times Checked Out to pass the criteria.

Is Less Than or Equal to

Criteria - Using "Is Less Than or Equal To"

In this example, today's date must be Less Than or Equal to L2819 Number of Times Checked Out to pass the criteria.

Starts With *(New)*

Criteria - Using "Starts With"

In this example, we are checking to make sure the work order number starts with CTS in order to pass the criteria.

SQL Statements (Using the New Expression Editor in Criteria and Warnings)

Using SQL statements in Criteria has been greatly enhanced and expanded for BCM17. First you have to select SQL from the drop down list on the left side of the expression editor. The screen will change and a new button Edit SQL Command will be displayed.
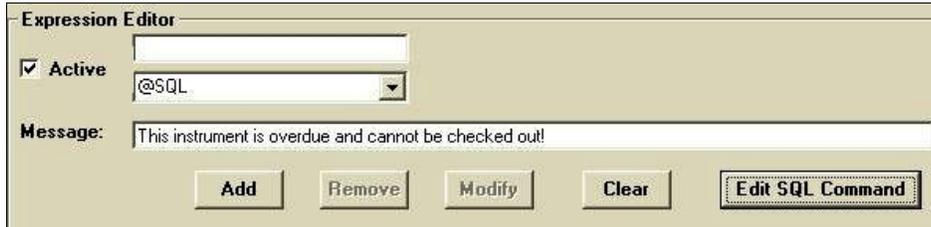
Criteria - Selecting the SQL Command Function

In our example, we are going to create the SQL statement with the new SQL Editor in BCM17.

Click the Edit SQL Command button.
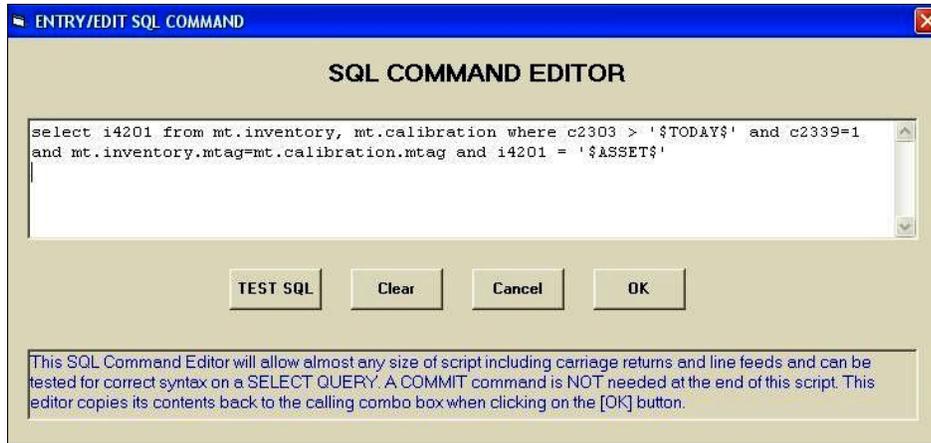
Criteria - Entering the SQL Statement in the SQL Command Editor

We have entered our SQL statement using two BCM17 variables, $TODAY$ and $ASSET$.

Within the SQL Command Editor, the SQL statement can be tested. After entering the SQL statement, click TEST SQL.
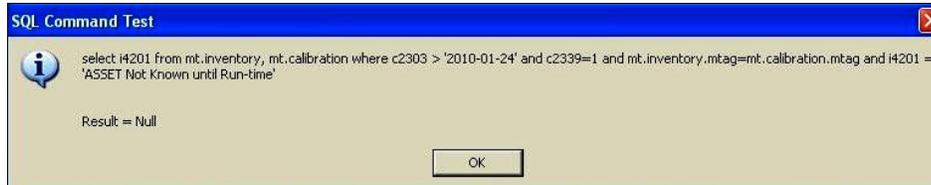
Criteria - Testing the SQL statement

When we test the SQL statement the command editor does not detect an error. However, it displays a message that the variables are not known until Run-time.

Be sure to click OK and acknowledge the test message. Click OK in the Command Editor and then click the Add button in the Expression Editor.

The following is our SQL statement we have entered in the SQL Command Editor:

select i4201 from mt.inventory, mt.calibration where c2303 > '$TODAY$' and c2339=1 and mt.inventory.mtag=mt.calibration.mtag and i4201 = '$ASSET$'

Using the system variables, the same result can be achieved with the following statement:

select i4201 from mt.inventory, mt.calibration where c2303 > '$TODAY$' and ctag='$CTAG$' and i4201='$ASSET$'

Both statements verify that the asset in question is not overdue for calibration. I4201 is the asset number. C2303 is the Due Date. C2339 is the flag for the most recent record. The question is, what happens if there is an asset that does not have a calibration record or a calibration record without a due date. Both previous statements will fail the asset.

The following statement is an example of checking instruments with a valid calibration record with a due date, a calibration record without a due date, and an asset without a calibration record.

SELECT I4201 FROM mt.Inventory Inventory LEFT OUTER JOIN mt.Calibration Calibration ON Inventory.MTAG = Calibration.MTAG WHERE (Calibration.C2339 IS NULL OR Calibration.C2339 = 1) AND (Calibration.C2303 IS NULL OR Calibration.C2303 > '$TODAY$') and I4201 = '$ASSET$'

In order for the criteria to pass an asset, the SQL statement should return the asset number of the asset. In our statements there are two system variables that are used, $TODAY$ and $ASSET$. If you want to use a system variable, you must include "$" characters on each side of the variable and it must be enclosed in single quotes. When using a SQL statement, only SELECT or CALL are valid statements to use.

You can also call stored procedures from the SQL Command Editor. We used a **Call** statement to call a procedure called: **mt.user_bcm_criteria('$asset$')**. We have passed the asset number to the stored procedure. By executing a stored procedure, the program will process our criteria much more quickly. Our stored procedure performs the same function as the previous example using the SELECT statement. This stored procedure has to be created first and given permissions. It is recommended that you adhere to a standard naming convention for any stored procedures that you might create. In our example, we start the name of the procedure with "USER". We added a "BCM" for Barcode Magician and then added "CRITERIA" to describe what the procedure does.

```
create procedure MT.USER_BCM_CRITERIA(in asset char(60))
result(I4201 char(60),C2303 date) /* RESULT ( column-name,... ) */
begin
        select I4201,C2303 from mt.Inventory as Inventory left outer join mt.Calibration as Calibration
        on Inventory.MTAG=Calibration.MTAG where(Calibration.C2339 is null or Calibration.C2339=1)
        and(Calibration.C2303 is null or Calibration.C2303>TODAY(*)) and I4201=ASSET
end
```

ON TIME SUPPORT is available to create custom stored procedures. Contact your sales representative for more information.

The following are list of system variables for use with SQL statements.

Criteria, Warnings, and Custom Mod– System Variables for SQL statements

Beginning with version 1.5, many system variables were added to Barcode Magician. There are some new ones in the list for version 1.7.1. New abbreviated formats were also added to some of the variables. Date formats for date variables are YYYY-MM-DD. Be sure to add the '$' character before and after the variable.

ACTCODE - Present action code.
ASSET – Asset number I4201 of the asset.
MTAG – The unique index for the Inventory table.
CTAG – The unique index for the Calibration table.
RTAG – The unique index for the Maintenance table.
LTAG – The unique index for the Location Table.

KTAG – The unique index for the Customer Table.
NOW – Returns the current time of day (Format: HH:MM:SS).
TODAY – Returns the current date
CALDATE – Returns a calibration date or the current date if null.
LASTDAYTHISMONTH or **LDTM** – Returns the last day of the current month.
CALDUELASTDAYOFMONTH or **CDLDOFM** – Returns last day of month based on C2303
CALCCALDUEDATE or **CCDD –** Updates calibration due date based on C2301, C2302 and abeyance.
CALCPMDUEDATE or CPMDD – Updates R3247 PM due. (See Appendix E)
FIRSTDAYTHISMONTH or **FDTM** – Returns the first day of the current month.
LASTDAYNEXTMONTH or **LDNM** – Returns the last day of the next month.
FIRSTDAYNEXTMONTH or **FDNM** - Returns the first day of the next month.
LASTDAYLASTMONTH or **LDLM** – Returns the last day of the previous month.
FIRSTDAYLASTMONTH or **FDLM** – Returns the first day of the previous month.
LASTDAYTHISWEEK or **LDTW** – Returns the last day of the current week (Saturday).
FIRSTDAYTHISWEEK or **FDTW** – Returns the first day of the current week (Sunday).
LASTDAYNEXTWEEK or **LDNW** – Returns the last day of the next week (Saturday).
FIRSTDAYNEXTWEEK or **FDNW** – Returns the first day of the next week (Sunday).
NSANDLDM – This variable builds a string containing next Sunday's date and the last day of the month based on next Sunday. The format is YYYYMMDDYYYYMMDD
BARCODE_TAG – Returns the Instrument ID entered for the instrument. This value could be different than the asset number if aliasing is used.
USERID or **UID** – Returns the user Id of the user that is logged in.
USERNAME or **UNM** – Returns the User name of the user that is logged in.
PASSWORD or PWD – Returns the Password of the user that is logged in.
WSSERIALNUMBER or **WSSN** – Returns the serial number from the license registration code for this workstation.
WORKORDER or **WO** – Returns the Work Order assigned to an individual asset.
DIALOG_BOX1, **DIALOG_BOX2**, **DIALOG_BOX3**, **DIALOG_BOX4**, **DIALOG_BOX5** – Return the values in the dialog boxes.
BOX1, **BOX2**, **BOX3**, **BOX4**, **BOX5** – Short form variables returning the values in the dialog boxes.

Additional System Variables for SQL statements (*BCM17 Plus Only*)

DIALOG_BOX6,   **DIALOG_BOX7**,   **DIALOG_BOX8**,   **DIALOG_BOX9**,   **DIALOG_BOX10**,
DIALOG_BOX11,   **DIALOG_BOX12**,   **DIALOG_BOX13**,   **DIALOG_BOX14**,   **DIALOG_BOX15**,
DIALOG_BOX16,   **DIALOG_BOX17**,   **DIALOG_BOX18**,   **DIALOG_BOX19**,   **DIALOG_BOX20**,
DIALOG_BOX21,   **DIALOG_BOX22**,   **DIALOG_BOX23**,   **DIALOG_BOX24**,   **DIALOG_BOX25**
Returns the values in the dialog boxes available in Barcode Magician Plus.

BOX6, **BOX7**, **BOX8**, **BOX9**, **BOX10**, **BOX11**, **BOX12**, **BOX13**, **BOX14**, **BOX15**, **BOX16**, **BOX17**, **BOX18**, **BOX19**, **BOX20**, **BOX21**, **BOX22**, **BOX23**, **BOX24**, **BOX25**
Short form variables returning the values in the dialog boxes.

WORKORDER_T or **WO_T** – Returns the Work Order assigned to a group of assets.
COMPUTERNAME or **PCHOST** – Returns the Network Name of the computer.
INSERTCALRECORD – Creates the Cal record and is normally used with @STDSUSED. (See Appendix D)
INSERTREPRECORD – Creates a new Maintenance record with minimal fields only. (See Appendix E)
TVAR1, TVAR2, TVAR3, TVAR4, TVAR5 – Temporary storage variables.
U0001, U0002, U0003, U0004, U0005, U0006, U0007, U0008, U0009, U0010, U0011, U0012
Return the present user properties.

Warnings

The Warnings screen has been changed in BCM17 and is very similar to the Criteria Screen.

We have entered our selection criteria and think we are ready to set up the database modifications. For example, let's assume someone is checking out an instrument requiring calibration in two days. The person checking out the instrument is taking a field trip to some remote location. So what are you going to do, go to his location and pick up the equipment? How about using the feature called **Warnings**. Clicking the 'Warnings' tab accesses this feature. There are two warnings expressions per Action Code in BCM17 Basic, ten in BCM17 Plus. This feature has many possible uses. We can use it to alert the user that an instrument only has a certain number of days until the calibration is due.
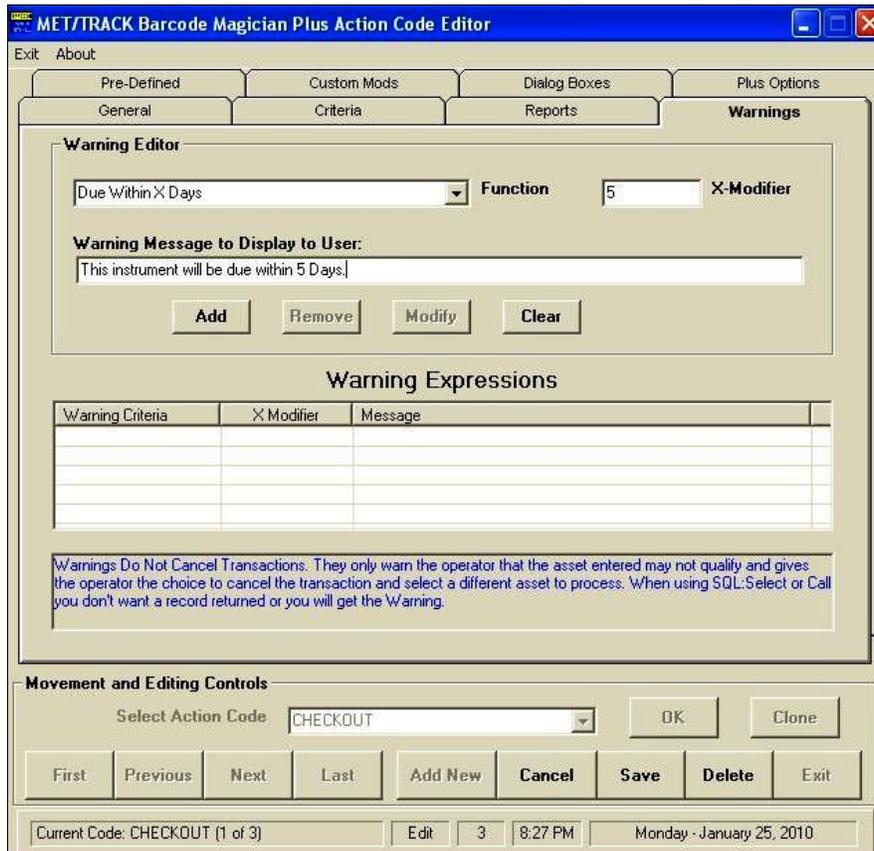
Warnings - Adding a Warning.

In our scenario, we are going to use 5 Days. If an instrument is being checked out and is due for calibration within 5 days, then we will display a Warning with a custom message. The user has the choice of checking out a different instrument that will be due at a later time. The format for criteria in warnings is a fixed criterion with a modifier. Take a look at the figure on the left. You will see the selection **Due Within X Days** with the X modifier set at 5 days. Other fixed selections include Due Within X Months, Calibrated Within X Days, Calibrated Within X Months, Instrument Not Returned, Instrument Active, Instrument Inactive, Instrument Not Active, Instrument Deleted, Use Greater Than or Equal To X, Use Less Than or Equal To X, and SQL:.   These messages should be self-explanatory.

Click the Add button to add the warning and click the Save button to save the Action Code.

We realize there are many other possible warnings that users may want, and the fixed messages may not be detailed enough. We have included a feature to create an SQL statement by selecting SQL: in the functions list. The following is an example SQL statement that might be used to perform the same criteria check as our example. **Select I4201 from mt.inventory,mt.calibration where mt.inventory.mtag = mt.calibration.mtag and C2339=1 and (C2303-TODAY(*)) <= 5 and (C2303-TODAY(*)) >= 0 and i4201= '$asset$'.** This statement would be typed in the SQL Command Editor and it must return data from I4201, which is the asset number, in order to display a message. Let's take a look at the SQL statement.

The first part, **Select I4201 from mt.inventory,mt.calibration,** is going to only return I4201 values. The next part of the statement, **where mt.inventory.mtag=mt.calibration.mtag**, links the tables together. Since we are looking at the Calibration table we must link the Calibration table to the Inventory table using MTAG. This is called an equal join.

The next part of the statement, **and C2339=1**, selects only calibration records with an archive flag = 1. This flag identifies the most recent calibration record for an asset that may have several calibration records. The next part of the statement, **and (C2303-TODAY(*)) <= 5**, subtracts today's date from the calibration due date and verifies the value is less than or equal to 5. Next, **and (C2303-TODAY(*)) >= 0** checks to make sure the instrument is not overdue. In our example we only want the warning to be displayed if the instrument is not overdue but will be due for calibration within five days.

Next, **and i4201= '$asset$'** uses the $asset$ system variable and is compared to I4201 so that only one result is returned. This Warning will not return an overdue instrument. Be careful, an SQL statement can return several items back.

Barcode Magician will test for a returned record. A returned record will cause the custom Warning message to be displayed. You cannot update the database with this command. It will only accept the Select and Call command.   If you want to use commands like Create, Drop, Delete, Update, and other dangerous commands, you will have to use the ISQL editor. We suggest using the ISQL Editor to debug your SQL query prior to entering it as Warning criteria.

Pre-Defined (*BCM17 Basic and Plus*)

Now that our criteria/warnings section is complete, click on the **Pre-Defined** tab to move to the next screen. There are many new functions added for this function. The Pre-defined Actions are listed as follows for Barcode Magician Basic and Plus.

Check Out - This Action creates a new Location history record for an instrument in MET/TRACK. For our example, if an instrument is going to be checked out, and we want a new location history, then we will use the **Check Out** Action. **Check Out is the only action that will create a new location history record with the Basic license.**

Check In - This Action automatically enters the return date in one of the location date fields in the latest location history record. You can select the date field to be updated and can also perform this action from Custom Mods, which is covered later. Use the **Check In** function for checking in instruments.

In For Calibration - This Action automatically inserts the Date in the Arrive Field (I4224) in MET/TRACK.

Inactivate - This Action changes the State Field (I4299) to an "I" for Inactive.

Reactivate - This Action Changes the State Field (I4299) to an "A" for Active.

In our example we are going to check out an instrument, thereby creating a new Location history record. We are going to choose the **Check Out** Pre-Defined action, which will create the Location history record.

NOTE: Starting with BCM Version 1.5. You can select the <u>Check In</u> and <u>Check Out</u> functions and use a single action code to check instruments in and out. Barcode Magician will update the current history record first with the check in date before creating the new location record.
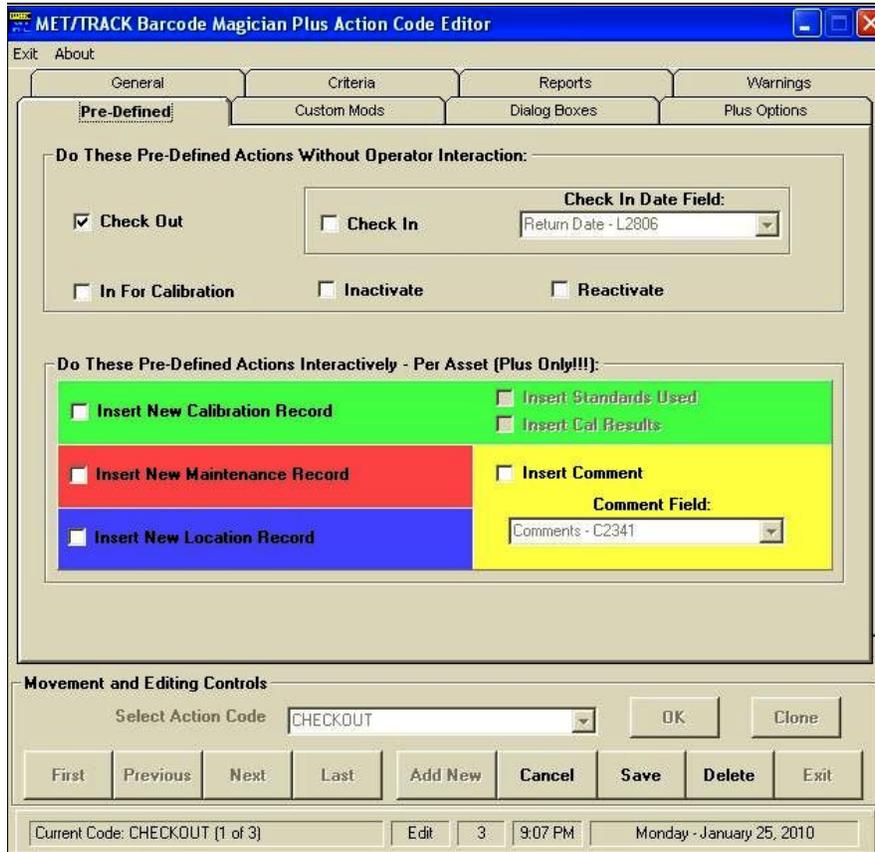
In our example at left, we have selected the Check Out function which will tell Barcode Magician to create a new Location Record.

Some functions are reserved for BCM17 Plus only and are displayed in the lower part of the screen.

Pre-Defined Functions BCM17 Basic and Plus

Pre-Defined (*BCM17 Plus Only*)

Barcode Magician *Plus* has many features that affect the Pre Defined functions. If the Action Code Editor detects a Plus license then the Plus Options will be displayed. The second half of the screen displays new functions for Creating Calibration Records with Standards and Full Results, Creating new Maintenance Records, Creating new Location Records, and Insert a Comment Field into any records that have a comment field enabled.

For Example, if you select "Insert New Calibration Record" the actual calibration screen will be displayed after you process the asset list in the Run Time Program. The calibration screen that is displayed is very similar to the MET/TRACK Calibration Screen.

The order of execution in Barcode Magician is Pre-Defined functions first and then Custom Mods. This means that you can have Custom Mods complete an update to the record(s) that was created in the Pre-Defined function.

Important Note: If you decide to use the Insert New location Record function, then make sure you leave "Check Out" and "Check In" not checked.

Many Customers have requested the ability to add calibration and maintenance records through Barcode Magician. There are alternative ways to do this through the use of SQL commands which are discussed in the appendix section of this manual. More discussion of using the new Pre-Defined Plus options will be discussed in the Run Time section of this manual.

Custom Mods

Custom Mods allows the system to insert data into most of the database fields in MET/TRACK. There are some core fields, which have been blocked from being changed. For example, we do not want someone changing the calibration date for an Asset. Use MET/TRACK Manual Entry for these changes. Each Custom Mod section has a **MET/TRACK Field** and a **What to Insert** field. The **What to Insert** field allows the user to select from a list box or type in the value. In our example, we still have four items to insert in the MET/TRACK database, the user in L2801, the department in L2803, the current date in I4224, and the word "LOANED" in I4225.

First, we will insert the User Name in L2801. Make sure you are in the Edit Mode. Click on the **MET/TRACK Field** and scroll down and select **User Name - L2801**. Next, click on the **What to Insert** field and select **@User Name**. Click Add and the modification will be added to the list. This will automatically insert the User Name for who is logged into Barcode Magician into the location history

Next, we will insert the user's department into the L2803 Field. Click on the **MET/TRACK Field** and scroll down and select **Dept - L2803**. Next, click on the **What to Insert** field and select **@Department - U0002**. Click Add and the modification will be added to the list.
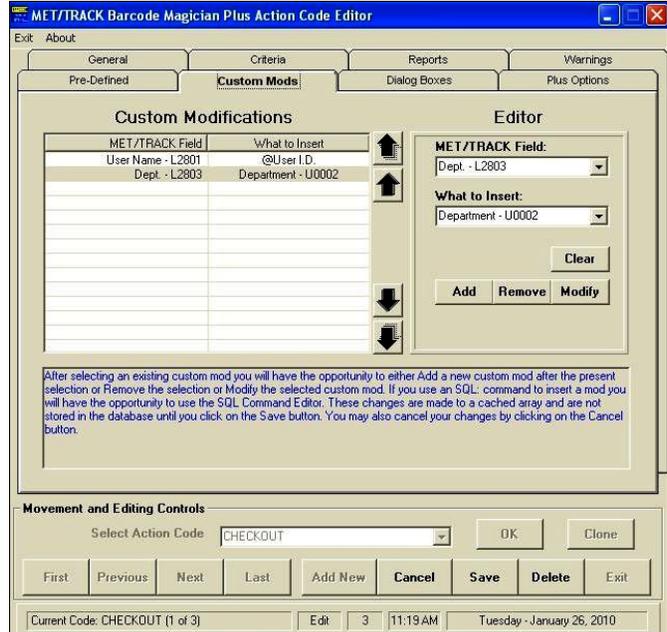
Updating Custom Mods – Step 1
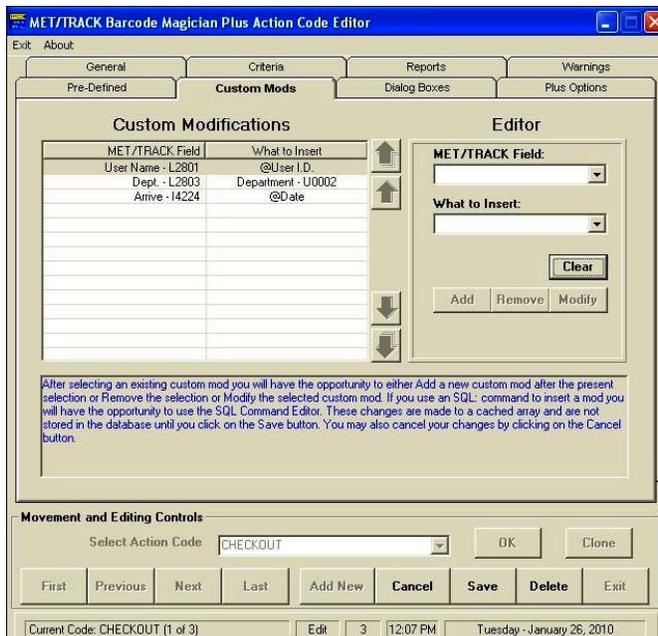
Updating Custom Mods – Step 2

Next, we will insert Today's Date in I4224, which is the Arrive Date field in our MET/TRACK example. By inserting the date into the Inventory field in MET/TRACK, we can make a quick check to see when the instrument was loaned from Inventory, instead of going to the Location form in MET/TRACK.

Click on the **MET/TRACK Field,** scroll down and select Arrive **- I4224**. Next, click on the **What to Insert** field and add **@Date**. Click Add and the modification will be added to the list.

Take a look at the screen at left to see how this looks.
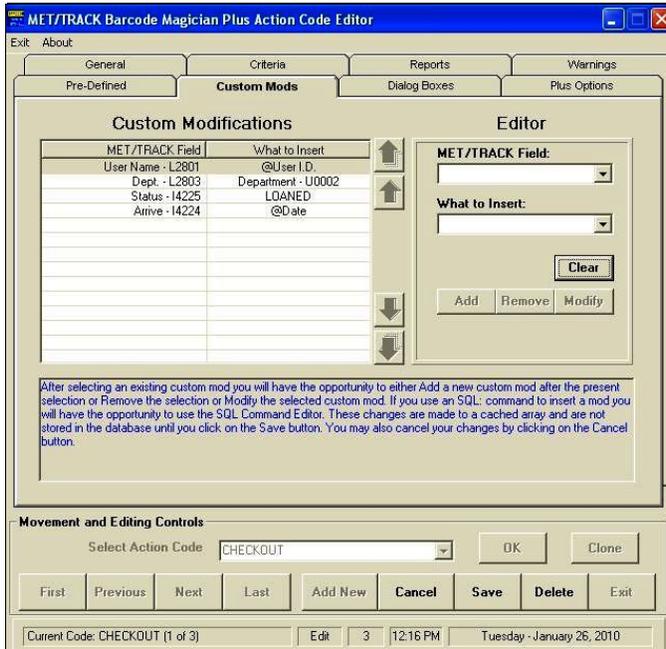
Updating Custom Mods – Step 3

Next, insert the word "LOANED" in I4225, which is the Status field in MET/TRACK. Click on the **MET/TRACK Field,** scroll down and select **Status - I4225**. Then, click on the **What to Insert** field and type the word **LOANED** at the cursor. This will automatically insert the word **LOANED** into I4225. You will notice that you typed in the word instead of selecting it. As long as this is a legal transaction, you can add practically any information. Also make sure you do not exceed the field width. Take a look at the screen at left to see how this looks. You can also use the Remove and Modify buttons to remove or change the Custom Modification. If you need to clear the data entry boxes, use the Clear button. The large arrow buttons will allow you to move the entries into a different order.

Be sure to refer to the MET/TRACK database map that lists each field, the type, and the length. We have successfully entered our Custom Mods for the example. Please remember, **When comparing things in the computer world, always compare Dates to Dates, Text to Text, and Numbers to Numbers**. For Example, you will get inconsistent responses when inserting a number into a Date field. The date format is mm/dd/yy. We have completed our example. Click on Save to save the action code. You can continue to add more custom mods. Barcode Magician 1.7.1 does not have a limitation on the number of modifications. Modifications to the database occur in the order listed, top to bottom.

How to Copy Forward

Please be sure to verify the operation of the Custom Mods. There are some areas within the MET/TRACK Manual Entry program that may have the values copied forward from one field to another or from the same field in a previous history record. Very often, users will set up certain fields that may copy from the Location History to the Inventory Screen in MET/TRACK. If you want to update a field that is being copied to in MET/TRACK, you should have Barcode Magician Update the history field and the field being copied to in order to maintain consistency within your system. Our example copies the previous Dept field in the Location table to the new record created by Barcode Magician.
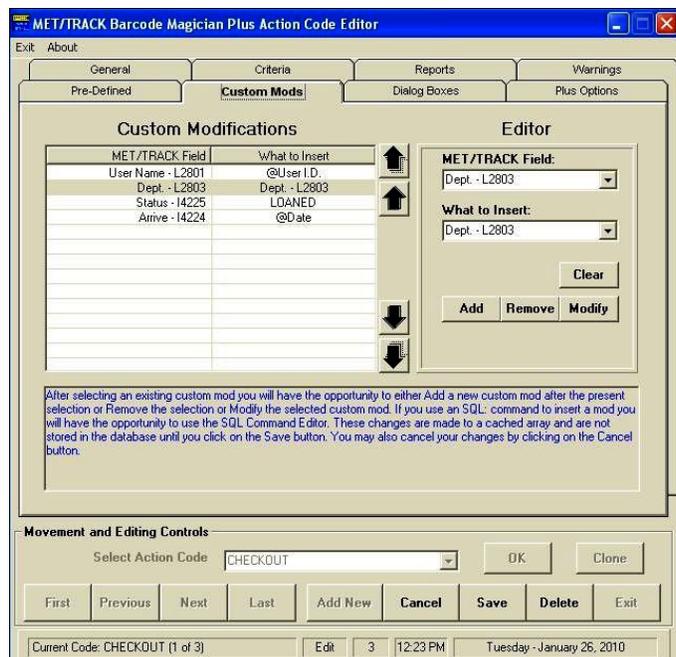
Using the Copy Forward Feature

A feature in Barcode Magician is the ability to copy forward in History. There are times when it is desirable to copy certain information from one history record to another history record. This means that Barcode Magician has to look at the existing history record before it can create a new record and copy to it. For location history, you must have the **Check Out** enabled under the **Pre Define** tab. This will create a new location history.

Next you will need to set up the copy forward. In our example in the Custom Mod field we will select L2803 - Dept from the MET/TRACK field to modify and we will select the same field in the What to Insert field. It will copy forward the last history into the next history. Remember, the **Check Out** option must be turned on under the Pre Defined tab.

If you are using the work order number feature described earlier, remember to set up a custom mod to store the work order number in a field in the MET/TRACK database.

Dialog Boxes (Barcode Magician Basic and Plus)

BCM17 has many new features when using the Dialog Box features, especially when using validation and the new Per Asset feature. These features will be explained more in depth in this section.
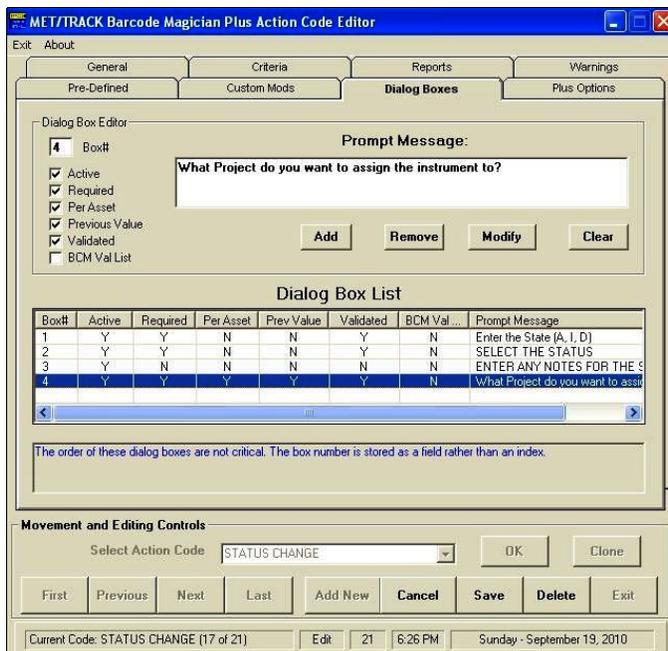
Our previous example was very simple. Adding a Dialog Box creates additional flexibility. We will take a look at Dialog Boxes by clicking on the tab **Dialog Boxes.** Dialog Boxes allow additional information to be input from the Run Time program. For example, you may want to prompt for a charge number or enter in other pertinent information that will be stored into the database. Usually, Dialog Boxes are used when there is not a standard method of entering data. You can create up to five Dialog Boxes with the Basic License and up to 25 Dialog Boxes with the Plus License. They are inserted into the action code through the **Custom Mods** section of the Action Code Editor. You can make a Dialog box "Active" and/or "Required" by checking the boxes for the Dialog Box you are editing.

Creating Custom Dialog Inputs

In the Custom Mods section, select the **MET/TRACK Field** first and scroll through the choices. Next, click on the **What to Insert** field and scroll down to the **@Dialog Box 1.** Information entered through the Dialog Box will be inserted into the MET/TRACK field you selected

For example, we have set up a special prompt for entering data that will be saved into the Location field – L2802. It might be a good idea to put the maximum character length in the message displayed to the operator. Barcode Magician has no way of limiting the length of the data entered by the operator at the time of entry. If the data entered into the Dialog Box exceeds the field length, then the program will display an error message and allow the operator to re-enter the data after selecting OK.
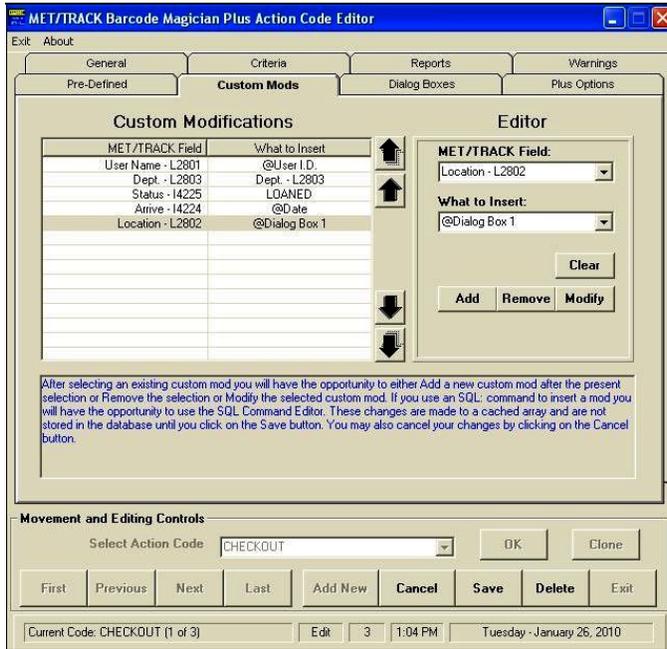
Updating Custom Mods from a Dialog Box

In the Custom Mod Tab we entered the contents of Dialog Box 1 into the L2802 Field. You could also use the Dialog Box to enter information on an item requiring Repair. The information entered in the Dialog Box could be displayed in a user defined field in the MET/TRACK Inventory screen. There is a lot of flexibility here, but be careful, and make sure you verify what data is entered into what field.

There are six important items to consider here when using Dialog Boxes:

- Do not exceed the field length.
- Make sure this is a legal transaction. For example, do not try to insert text into a numeric field.
- Make sure you have made the Dialog Box active by checking the **Active** field.
- You can require that data be entered into the Dialog Box instead of skipping it by checking the **required** field.
- With MET/TRACK version 7.x, if the field being modified by the Dialog Box is validated, the validation will be available to the operator. However, Barcode Magician by default does not enforce the validated entry and the operator can type or scan another value. You can force the operator to select from only a validated entry by checking the **Validated** box.
- MET/TRACK version 7.x has a memo field. The Dialog Box function works a little differently and allows you to build a list of items for these special fields. When data is entered into one of these special memo fields, the operator will be able to continue scanning or entering text into the memo field until a blank line or the word "PROCESS" is entered. Using "PROCESS" allows the user to utilize the same Process Barcode that is also used to complete a transaction. There is one memo field available for each of the primary MET/TRACK tables. The memo fields are:

Inventory	I4260
Calibration	C2384
Location	L2836
Repair/Maint	R3253

Restricted Database Fields

The following fields are removed from the list of MET/TRACK fields in the "Custom Mods" section of the Action Code Editor:

Inventory – I4201, Calibration - C2301, C2339

It is possible to modify these fields using an SQL statement calling a stored procedure, but this should be handled very carefully.

Custom Mods Special function Variables (*BCM17 Basic and Plus*)

The following is a description of the variable functions that are used with the Custom Mods "MET/TRACK" field.

NONE	Used when the "What to Insert" field is "SQL:" and doesn't require updating.
SQLOUT:	Outputs data to a CSV file. (See Appendix B)
SQLOUTA:	Appends data to an existing CSV file. (See Appendix B)
SQLIN:	Inputs data from an existing CSV file. (See Appendix B)

The following is a description of the variable functions that start with @ as used with the Custom Mods "What to Insert" field.

@Asset Number	Returns the asset number of the instrument.
@Barcode Tag	Returns the Barcode Tag that was scanned or entered.
@Date	Returns the Current Date.
@Time	Returns the Current Time.
@User I.D.	Returns the User ID that executed the Action Code.
@User Name	Returns the User Name that executed the Action Code.
@Dialog Box 1	Returns the entry in Dialog Box 1
@Dialog Box 2	Returns the entry in Dialog Box 2
@Dialog Box 3	Returns the entry in Dialog Box 3
@Dialog Box 4	Returns the entry in Dialog Box 4
@Dialog Box 5	Returns the entry in Dialog Box 5
@Workorder	Returns a unique work order number for a single asset
@Blank	Blanks a database file
SQL:	Used to execute a Select, Update or Call SQL statement

Custom Mods Special function Variables (*BCM17 Plus Only*)

The following is a description of the additional variable functions for BCM17 Plus that are used with the Custom Mods "MET/TRACK" field.

TVAR1	Store "What to Insert" data into TVAR1 temporary variable.
TVAR2	Store "What to Insert" data into TVAR2 temporary variable.
TVAR3	Store "What to Insert" data into TVAR3 temporary variable.
TVAR4	Store "What to Insert" data into TVAR4 temporary variable.
TVAR5	Store "What to Insert" data into TVAR5 temporary variable.

The following is a description of the additional variable functions for BCM17 Plus starting with @ as used with the Custom Mods "What to Insert".

@Dialog Box 6	Returns the entry in Dialog Box 6
@Dialog Box 7	Returns the entry in Dialog Box 7
@Dialog Box 8	Returns the entry in Dialog Box 8
@Dialog Box 9	Returns the entry in Dialog Box 9
@Dialog Box 10	Returns the entry in Dialog Box 10
@Dialog Box 11	Returns the entry in Dialog Box 11
@Dialog Box 12	Returns the entry in Dialog Box 12
@Dialog Box 13	Returns the entry in Dialog Box 13

....

@Dialog Box 25	Returns the entry in Dialog Box 25

@Computername	Returns the network PC Name
@Workorder_T	Returns a unique work order number for a group of instruments.
@STDSUSED	Prompts the user for the standards used. This function will allow the user to enter Multiple standards. A Valid Asset and Due Date check will also be performed. Trace codes are not checked because the standards are entered before the Instruments and there is no way to perform the check.
@TVAR1	Returns data that was previously stored in TVAR1. Even from previous transactions.
@TVAR2	Returns data that was previously stored in TVAR2. Even from previous transactions.
@TVAR3	Returns data that was previously stored in TVAR3. Even from previous transactions.
@TVAR4	Returns data that was previously stored in TVAR4. Even from previous transactions.
@TVAR5	Returns data that was previously stored in TVAR5. Even from previous transactions.

Using the Extended Dialog Box Feature *(NEW)*

BCM17 Plus has some new features when using the Dialog Box feature.
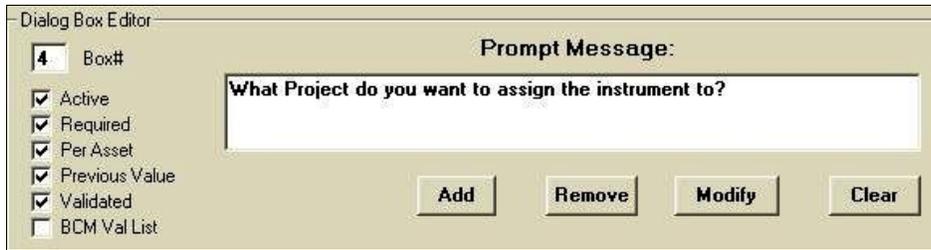
Custom Mods Dialog Box Features

There are several changes in the functionality of the dialog box features. You can now have up to 25 Dialog Boxes in BCM17 Plus. When adding a Dialog Box, you must add the Dialog Box number for each Box. Be careful not to use the same number! You will also notice that there are 5 check boxes:

Active	The Dialog Box is Active. If Active is not checked the BCM17 Run-Time program will ignore the entry.
Required	The Dialog Box is required and the entry cannot be blank.
Per Asset	The Per Asset feature is a new feature and allows for a dialog prompt box after the instruments have been entered for processing. For example, if someone is checking out screwdrivers and other tools from a bin, BCM17 could ask how many screwdrivers are being checked out. The Dialog Box displays the asset number of the tool that is about to be processed. The feature can also be validated.
Previous	Used with the Per Asset feature, Previous will display the existing value in the database field as a default.
Validated	This forces the required validation if the corresponding MET/TRACK field is validated. If this box is not checked, and the corresponding MET/TRACK field is validated, then BCM17 will treat the validation as a pick list, meaning that you can select from the list or type something else in.
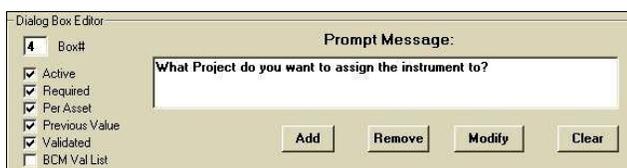
Custom Mods Dialog Box Validation Features

After selecting the Validated box, notice that there is a "BCM Val" check box. After selecting this check box, you will see the BCM Val List button. When you click this button, you can enter a special BCM validation. It is not checked in our example.
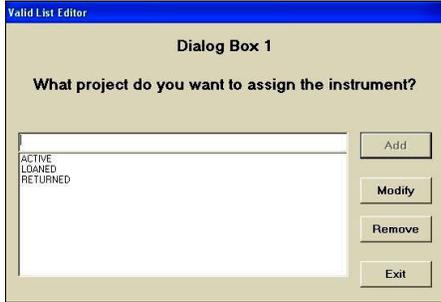
Entering a Custom BCM17 Validation

Having a special validation is an advanced feature of BCM17 Plus. For example, if the operator needs to select a status from a list, and you do not want to display the complete status list from MET/TRACK, you can enforce more control of the status that is selected. In our example we have entered three status selections. You can use the buttons on the right of the form to Modify and Remove the selections. Click the Exit button after you have completed editing the list.

NOTE: Be sure to click the Modify button in the Dialog Box Editor and click Save to save the Action Code.

Using the Plus Options *(NEW)*
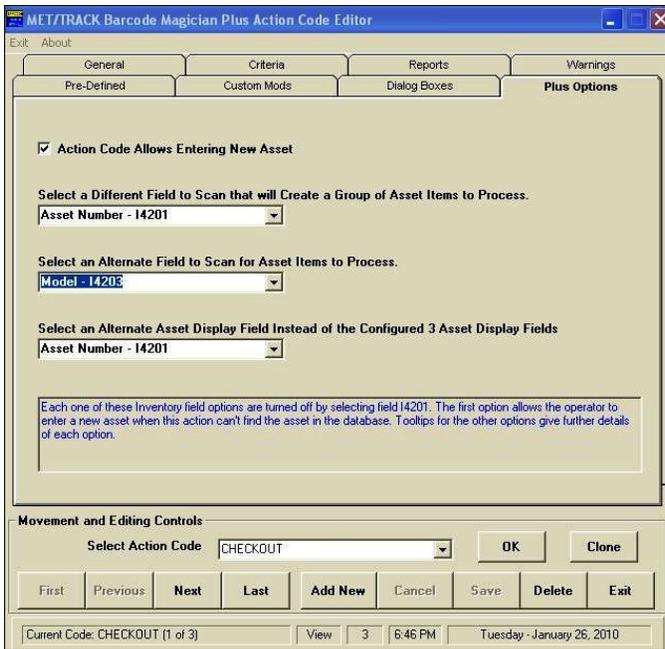
Selecting the Barcode Magician Plus Options

BCM17 Plus has its own tab called Plus Options. There are 4 selections available in this screen. A BCM17 Basic system will not have this tab available.

Action Code Allows Entering a New Asset – if this feature is selected, BCM17 Run Time will allow a new instrument to be added if it does not exist, as long as this feature has been enabled in the System Configuration program. While entering assets in the Run Time program, if an asset does not exist, a pop up box will ask the operator if they want to enter a new asset. If the answer is Yes, then BCM17 will display the Entry screen similar to how MET/TRACK would display the screen. After the operator enters the asset data, BCM17 adds the instrument to the list to be processed if the criteria passes.

Select a Different Field to Scan that will Create a Group of Asset Items to Process – This feature will allow the operator to scan an asset that has assets attached to it. For example, MET/TRACK has a special field called Parent Asset (i4217). This field will only allow a valid asset number that already exists. You could search for instruments that belong to this field (i4217). You could also select a different field to use for this function for use in BCM17. For example, we will assume there is a toolbox with tools that someone wants to check out. The toolbox has an asset number and the tools inside the box are assigned to the toolbox. In the Action Code, we would select i4217 for the tool box. This will be our Group Asset number. When you use the Run Time Program and enter the Group Asset number of the toolbox, the list to process is populated with the tools that are in the tool box. Each tool still has to pass the criteria established for the Action Code. There are three things to remember when using this feature:

- If you want to use this feature, the group asset number must be the first number to enter in the instruments to be processed.
- You can only use this feature one time for each group of instruments to be processed.
- Entering instrument I4201 as the Group Asset, which is the default, will disable the feature.

Select an Alternate Field to Scan for Asset Items to Process – This feature is really easy to use. Sometimes it is useful to have BCM17 look at the asset number and possibly the serial number. For example, an instrument may have the instrument tag removed, however the serial number may identify the instrument. We could configure the Action Code to look at the Serial Number if the Asset Number is not found. If more than one number is found, then a list is populated in a pop up box and can be selected and added to the list to be processed. You can select a variety of different fields for this feature. Selecting I4201 disables this feature.

Select an Alternate Asset Display Field instead of the Configured 3 Asset Display Fields – There may be situations where it is necessary to display a different Inventory field in the Run Time display. If you select a field, the asset number and the new field will be displayed. This is especially useful for a long display field. This feature is assigned per Action Code. Selecting i4201 will disable the feature.

Reports

BCM17 reporting has always been one of the most popular features in previous versions. A constant request has been to expand the functionality of the Crystal Reports. The other issue with previous versions is that each workstation had to be configured with the reports. For large systems, this can be more difficult to manage and only four reports could be assigned to each workstation for all the Action codes. We made some significant changes to centralize the reporting and more reports have been added for the BCM17 Plus.
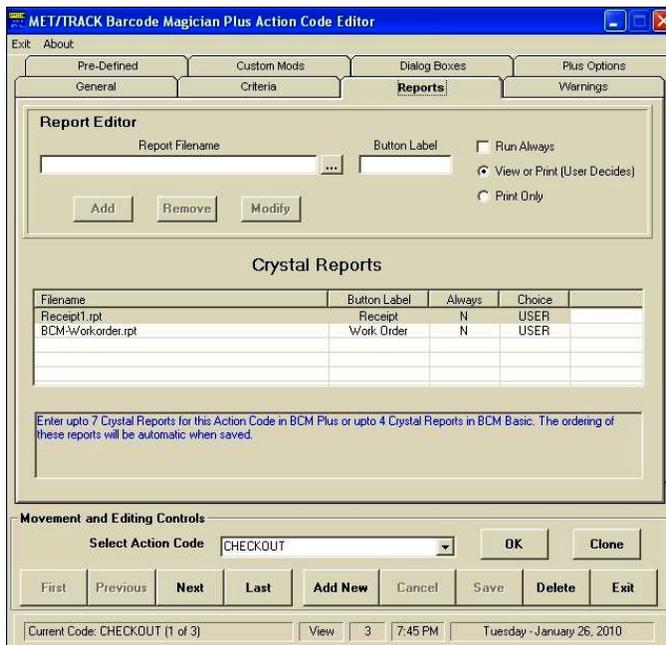
Configuring Reports

The screen to the left shows reports configured for the CHECKOUT action code. You select the Crystal Report, assign a button label, and determine how the report is to be printed. For example, some customers want a report printed each time a group of instruments are processed. A technician that checks out instruments may want a receipt. You can select Run Always, View or Print, or Print Only. After adding the report, click Add to add to the report list and click Save to save the Action Code.

BCM17 does not look at the path where the reports are located in the Action Code Editor. It only looks at the file name for the report. The Workstation Configuration Program defines the path for the location of the reports. This is very useful, especially in large systems and systems where storing reports on different servers may be required.

BCM17 Plus will allow up to seven reports to be added for one Action Code. With this new feature, the reports can be dramatically expanded per Action Code instead of per station. Creating Crystal Reports for Barcode Magician is documented in another section of this manual.

The Run Time Program (*BCM17 Basic and Plus*)

The Run Time Program is what the user will see when he/she wants to execute Action Codes on an instrument. Three entries are required in the Run Time program, the User ID, the Action Code, and the Asset. All of these items can be entered through the use of a bar code or they can be typed on the keyboard, or both. Example: Check out an instrument. The asset numbers are **100**, **1002,** and **1003**, the Action Code is **CHECKOUT**, and the User ID is **121212**. We will enter these items into the Run Time screen.
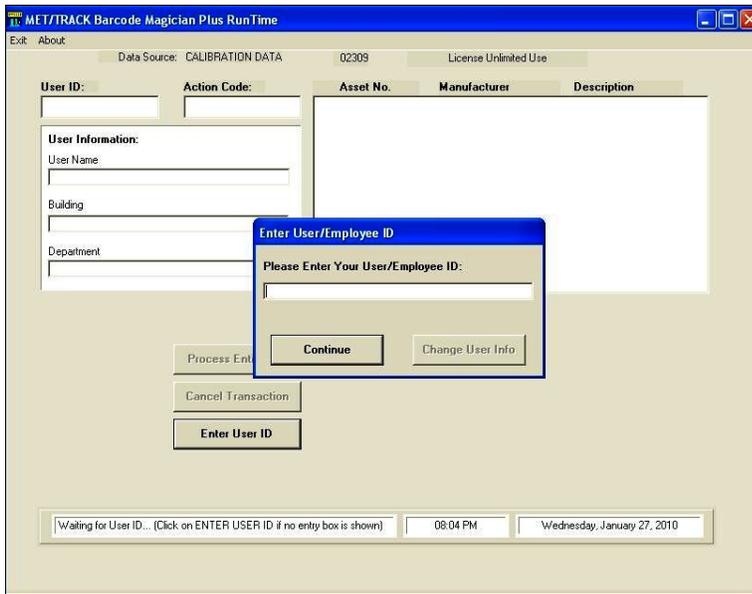
Run Time Program Entry Screen

Take a look at the screen. There is a Prompt box that appears to move around inside the screen. Like any Windows application, it is possible to 'lose focus' on a screen or Dialog Box. If this happens when the Run Time screen is active, you can click on a button to bring back the Dialog Box. In the screen at left, the system is asking the user to enter their User ID. You will notice there is an Enter User ID Button on the main screen. This will 'bring back' the dialog box if it 'gets lost'. When entering an Action Code, or a list of instruments, the Button on the Main Screen will change accordingly.

In the example, we will enter our User ID, 121212, in the Enter User/Employee ID prompt box. You can press the Enter key or Tab after making an entry. If you are using a barcode reader, it should add a Tab or Carriage Return to the barcode that has been scanned. You will notice that the user's ID is now displayed on the main screen along with the three fields of user information that were configured through the User's Editor and System Configuration programs. If you make a mistake at any time and wish to start over, click Cancel Transaction.
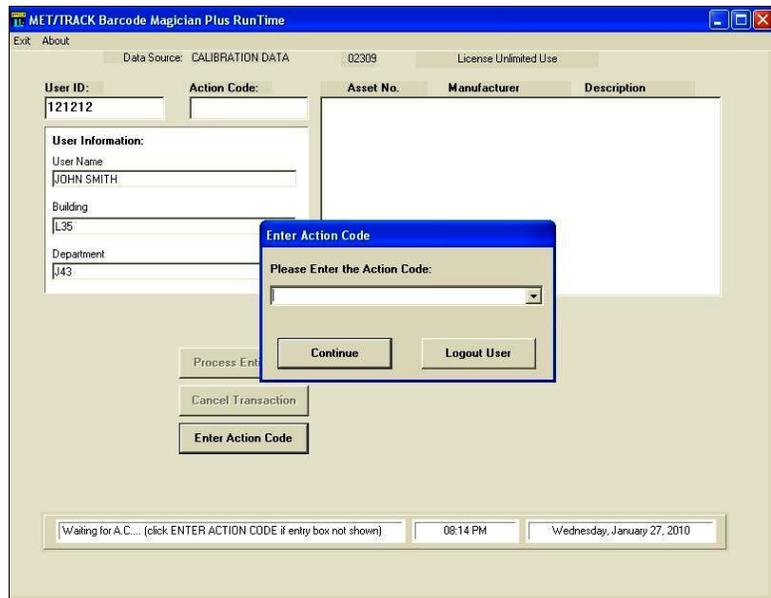
Run Time Program After Entering User ID
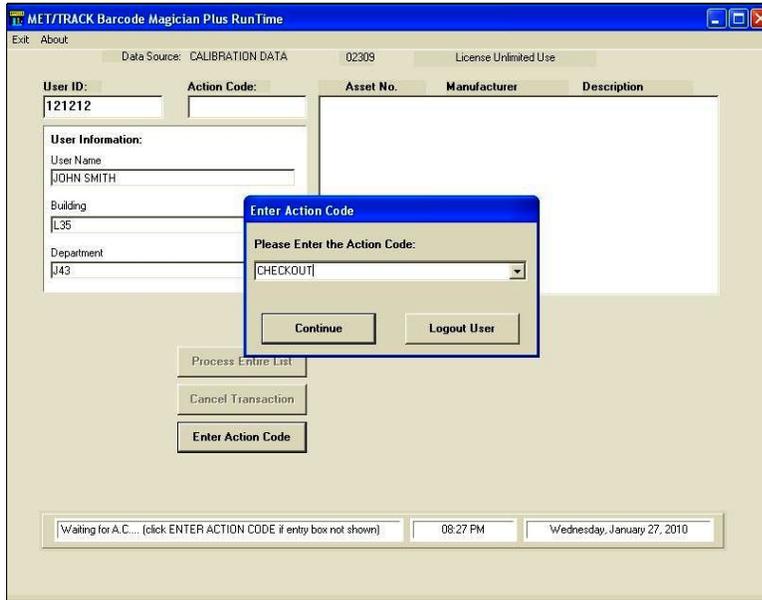
Entering an Action Code

Previous versions of Barcode Magician allowed the operator to enter the action code using a Barcode Scanner or the Computer Keyboard. Since version 1.6 there is the option for entering the Action Code by selecting from a drop down list if the desired Action Code is configured to be in the list. It is possible to configure the Action Code so that it is not listed in the drop down box. This function has been described in the Action Code editor. We are going to use an action code called CHECKOUT for our example. We have decided to select the Action Code from the drop down list.

After the Action Code is entered, you will be prompted to enter data for Dialog Boxes (if a Dialog Box is used), then a new prompt box will be displayed for the entry of the assets that are processed with this action code. First we are going to enter 1002 and 1003. You will notice the system performing a criteria check after each Instrument ID is entered to verify that this instrument passes the criteria checks and warnings. Nothing in the database has been changed at this point. Notice the instrument list box on the right with the instruments that passed the criteria as shown in the screen at right. We are now entering asset 100.

Note: You will also notice that asset 1003 has a picture of the instrument displayed. This is a new feature of BCM17.

Entering the instruments to be processed

Note: You will notice a check box labeled **Mark This Instrument for Special Reporting (Select BEFORE scanning asset number).** For instance, you may have a report that creates barcode labels for instruments in this transaction because the existing barcode label or calibration label is damaged. This report can be configured to create the label(s) if the instruments have been marked.

You will also notice two buttons in our example below for printing reports. We configured one button for printing a Checkout Receipt and the other button for a Work Order. Both buttons will initiate a Crystal report that was configured through the Workstation Configuration program.

Removing Assets from the List
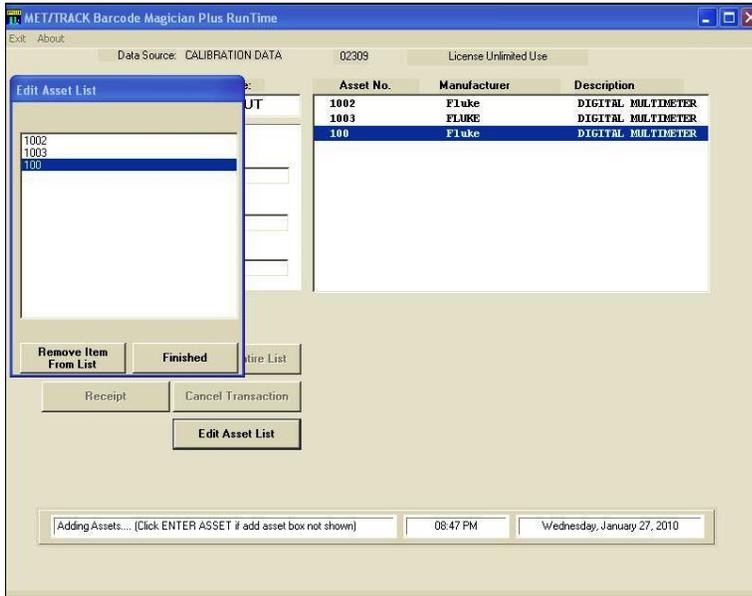
Oops, we made a mistake in our example! We were talking to somebody and accidentally scanned in asset 100 that should be entered with a different Action Code. We will remove it in the next screen. We clicked on Edit Asset List and brought up the Edit Asset List box. We have highlighted 100 by clicking on it. Click on Remove From List and click on Finished. The List box on the right side of the screen will be updated and you can continue entering more assets. At this point you have completed entering the assets.

At this point we will either click on Process Entire List or we will scan a barcode with the value of PROCESS. The Run Time Program will now update the database with the changes.

We have successfully completed a transaction of instruments.
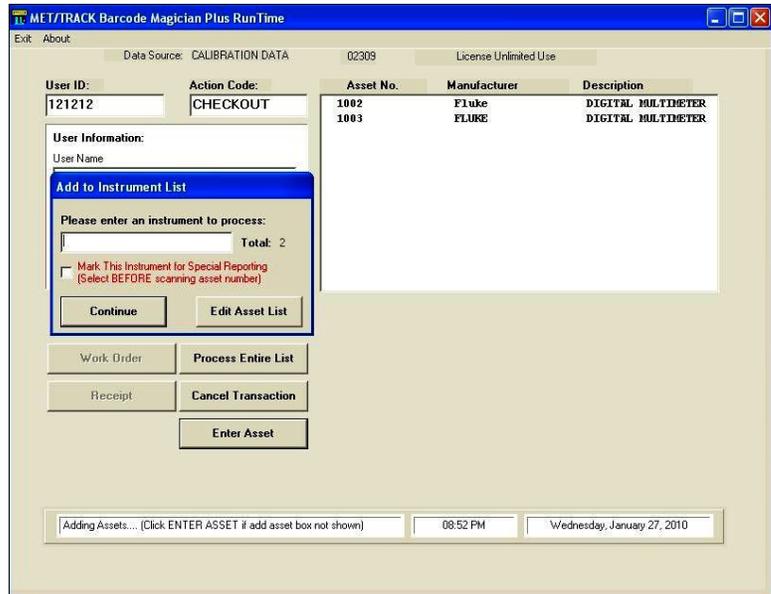
Processing the Instruments in the List

After the instruments are processed, the Enter User ID prompt will reappear. It should be noted that we are using the default descriptions for the buttons and list boxes in this manual. If the system administrator modifies the 'bcmphrases.txt' file, the actual descriptions will be different.

Printing Reports

In our example, after processing the assets, and the User ID prompt reappears, the Work Order and Receipt boxes will be available to print reports. This is dependent on the settings in the Action Code Editor. You can also have the reports print automatically based on the settings in the Action Code editor. If the report is viewed before it is printed, a separate screen will display with the report. Creating reports will be discussed further in this manual.

Guest Option

As described in earlier sections of this manual, you can configure Barcode Magician to prompt a new user for information from the Run Time Program. The screen at left illustrates how the screen will appear when prompting for user information, if this option is enabled in the System Configuration program. You must enter information in a field with the word 'Required' next to it. In this example, the User Password function is not enabled from the System Configuration program. After completing entry of the information, the system will continue the transaction. A new feature is the uses of pick fields for updating the user information.

Entering a New User in the Run Time Program without passwords

The example at right illustrates how the screen will appear if the Guest Option is enabled and a user password is required.

Updating User Info from Run Time
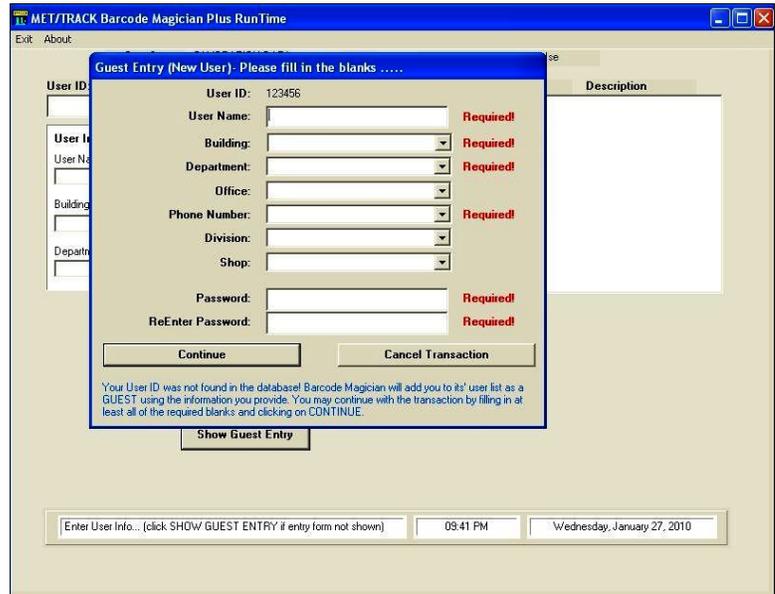
Entering a New User in the Run Time Program with passwords

Changing User Info From Run Time

Barcode Magician 1.7.1 has a feature that allows the system administrator to give user table access to the individual users. From the Run Time Program, the user enters their user ID. Instead of clicking on Continue, the user clicks on Change User Info. The guest screen similar to the screen above is displayed. If user passwords are enabled, the user can also change their password. If this feature is not enabled from the System Configuration program Change User Info will be grayed out.

Criteria Check Failure

If an instrument fails a transaction, the error message will be displayed to the operator. The instrument will not be processed. The screen at right shows an example of a failure with the custom error message displayed. If a warning occurs, a similar message will be displayed.
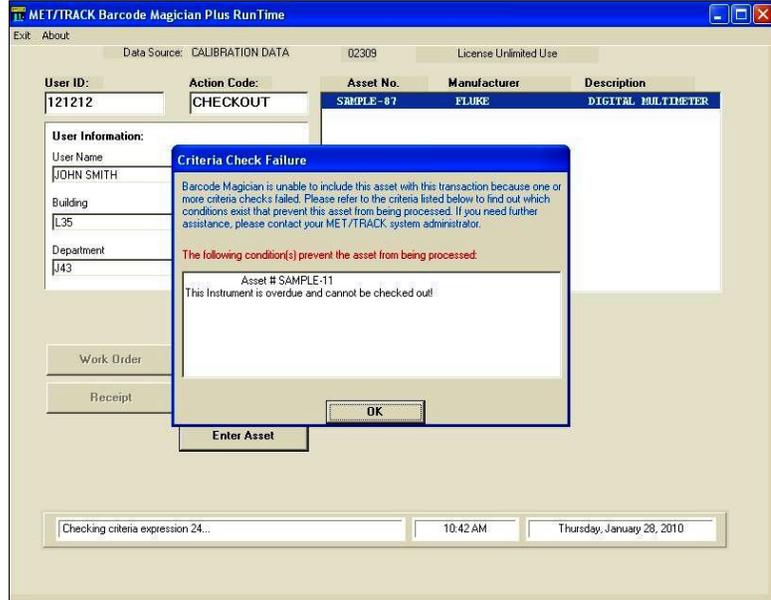
Criteria Check Failure

Dialog Box Entry
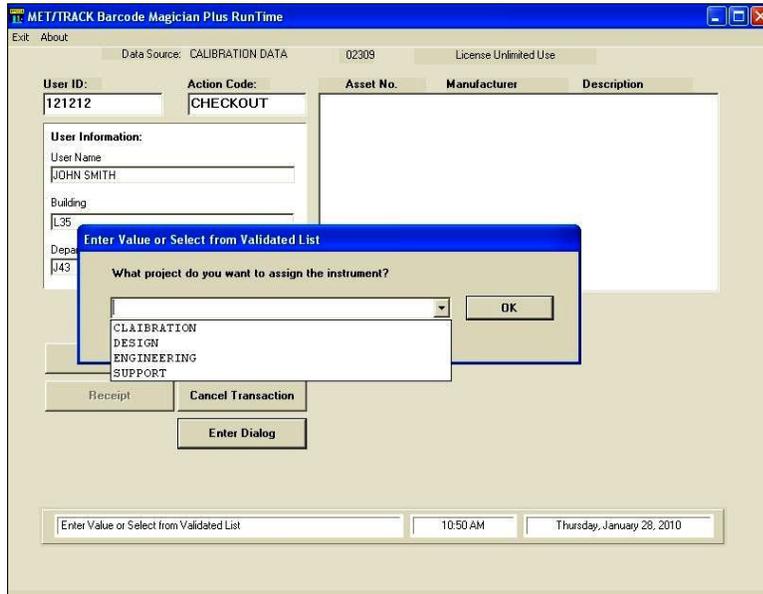
Entering Data in a Dialog Box

Another option is the use of validation for Dialog Boxes. If the database field to be modified is validated in MET/TRACK, then a drop down list box will be available for selecting from the list. **NOTE: Barcode Magician may or may not force the operator to use the validation drop down list. Please read the Dialog Box section described under the Action Code Editor.**

If this is a required entry in the Dialog box and operator does not enter a value, then Barcode Magician will generate an error message and ask for a data entry.

If the drop down list is validated the user must select from the displayed list.

The Run Time Program (*BCM17 Plus Only*)
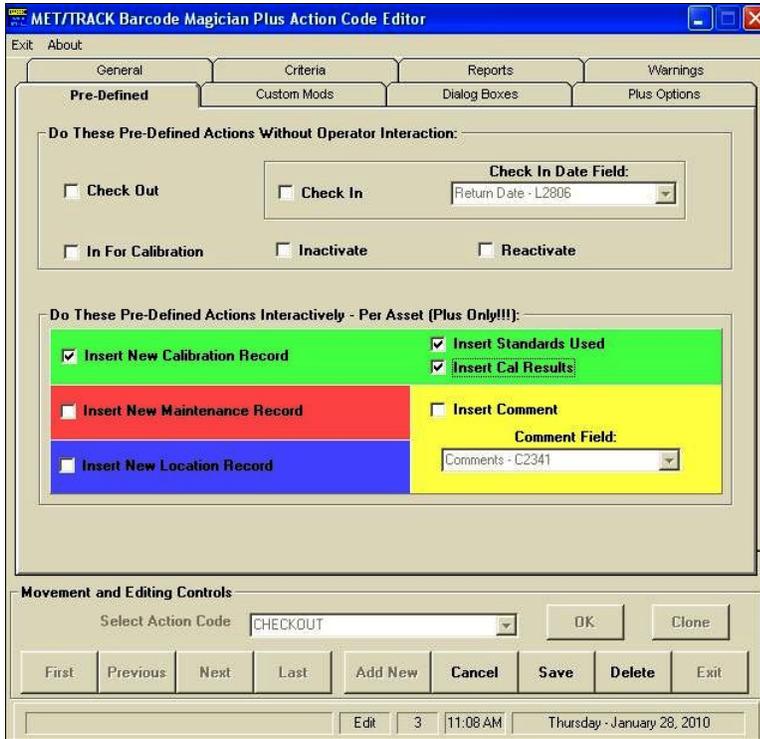
Action Code Editor Pre-Defined Functions for adding a Calibration Record

We are going to show another example of using the Run Time Program. The screen at the left shows the Pre-Defined function of the Action Code Editor. We have selected the "Insert New Calibration Record", "Insert Standards Used", and "Insert Cal Results". We have not selected any other functions in the Custom Mods for our example, although that is permissible. The order of functions, is the Pre-Defined functions first, and then the Custom Mods. If BCM17 creates a cal record by displaying the form, then any Custom Mods that are applied would be to the new calibration record.

Enter Assets to Process for Calibration

We have executed our Test Action Code and entered the Asset, SAMPLE-87, to the asset list. For our example, we are only going to process one instrument. We will click on Process Entire List.

Adding an instrument to Process (BCM17 Plus)

Entering Calibration Data on the Calibration Form
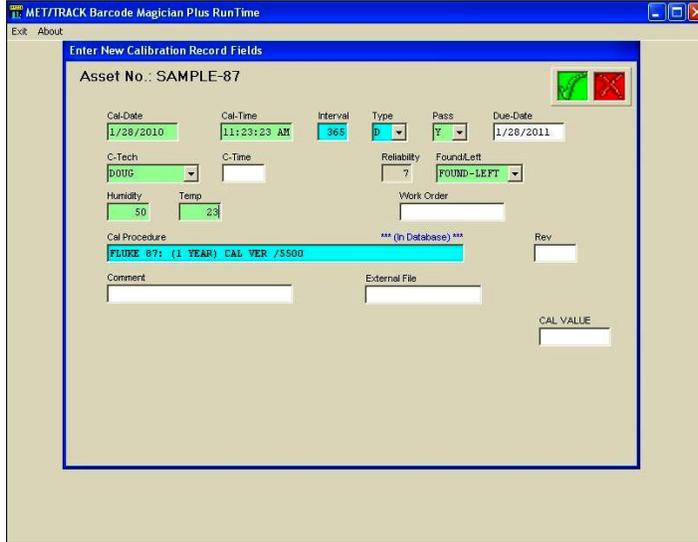
Entering a Calibration Record (BCM17 Plus Only)

The calibration form at right is now displayed. This form is the same as the Default Desktop Calibration form in MET/TRACK. You can use the desktop feature in Barcode Magician Plus. The Desktop feature is configured using the Workstation Configuration program for each workstation. Your configuration will appear different from our example.

In our example, the current date is displayed in the Cal-date field. The current time is also displayed in the Cal Time field. The Due Date has automatically been calculated. The Due Date calculation takes into account the Pass/Fail field and Non Work days and if abeyance is turned on

Date formats are selected from the Regional Options on the PC. If you do not want to type in the date, click in the date field and a drop down calendar is available. This way you can see days of the week.

If you change the Cal Date and want Barcode Magician to calculate a new Due Date, click on the Pass (C2323) field and select Y, N, or I. Selecting Y will recalculate the new Due Date. Selecting N or I will make the Due Date the same as the Cal Date.

You can also change the Interval and Interval Type if they are displayed on the form, but you should click the 'Y' in the Pass field in order for the Due date to be updated. Changing the Interval Type to 'M', 'W', or 'D' will also recalculate the Due Date.
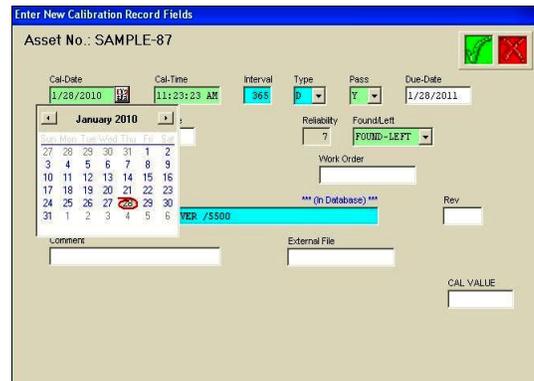
Selecting Cal Date (BCM17 Plus Only)

Changing the Interval Type to 'N' or 'U' will cause the Due Date to be blanked. This will <u>not change</u> the Master Interval and Interval type values in inventory. The operator can also overwrite a Due Date if desired.

Make sure the form is carefully filled out. If a required field is not filled in when you save the form, the program will display a message that all required fields must be filled in. The forms are not a perfect re-creation of the MET/TRACK forms. You cannot print reports from within the form and the memo field will not operate properly in Barcode Magician Plus. However, you can print reports after all the instruments have been processed, or you can "Mark" certain assets as you enter them in the asset list and print reports on the marked assets. Merge data is also not implemented on the forms. If you need to enter Merge data, then this must be done in MET/TRACK or you can do this through Dialog Boxes in Custom Mods. If you make a mistake on the form and you save the form, the user must use MET/TRACK or Metrology Xplorer 2 to edit the data.

When the form is complete, click on the Green Check-mark at the top right to save the record. If you click the X at the top right, then the Calibration Record, Calibration Standards, and Results are skipped for that asset and MET/TRACK will go to the next form.

Entering Calibration Standards (*BCM17 Plus Only*)
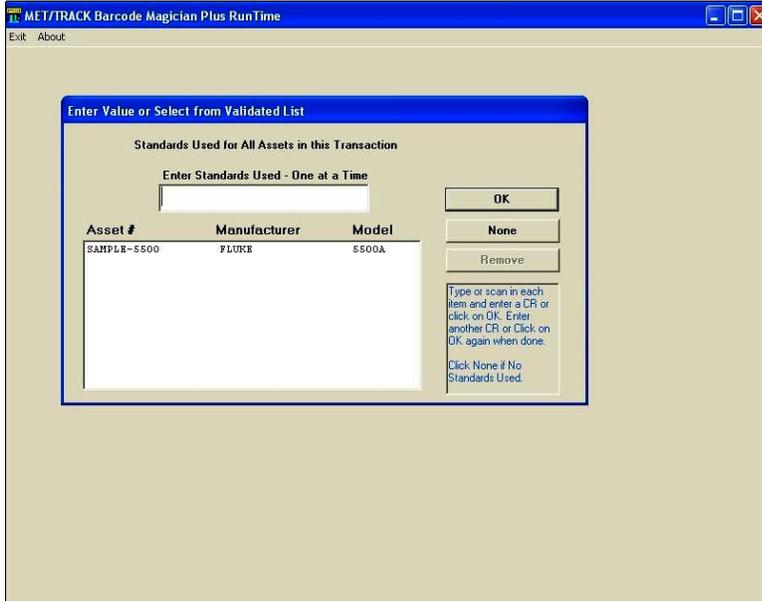
Entering Standards into Barcode Magician Plus

Now that the Calibration record has been created, we need to enter the Standards that were used for the calibration.

A form similar to the one at left is displayed. You can scan or type in the standard assets and they will be added to the list. Barcode Magician Plus, verifies that the Standard exists in the database, the standard must be in calibration, and a warning will be displayed if the standard has a lesser trace code.

If a Standard has a lesser Trace Code and displays a Warning, the operator will still be able to use that Standard. If the Standard was entered by mistake, it is easily removed by highlighting the Standard in the list and clicking on Remove.

You must click OK as you enter each standard in the list. If you click OK and enter a blank line, then Barcode Magician Plus will assume that you have completed entering in the Standards. If you are creating a Calibration Record without Standards, then click None and Barcode Magician will display the next form.

Entering Results into Barcode Magician Plus

We are now ready to enter results into the Barcode Magician Plus Results Form. This form will only save data into the Full Results Table. The fields in green are required Fields. Fields in yellow are calculated fields. You enter one set of readings at a time and then click Add New. As you enter results, you can go back and Edit results that you have entered. The buttons on the bottom left of the form allow the operator to scan through the results that have been entered. If you click Clone the program will copy the results you just entered on a new form. You can use Delete to remove a row of results. When you are finished entering results click Save.
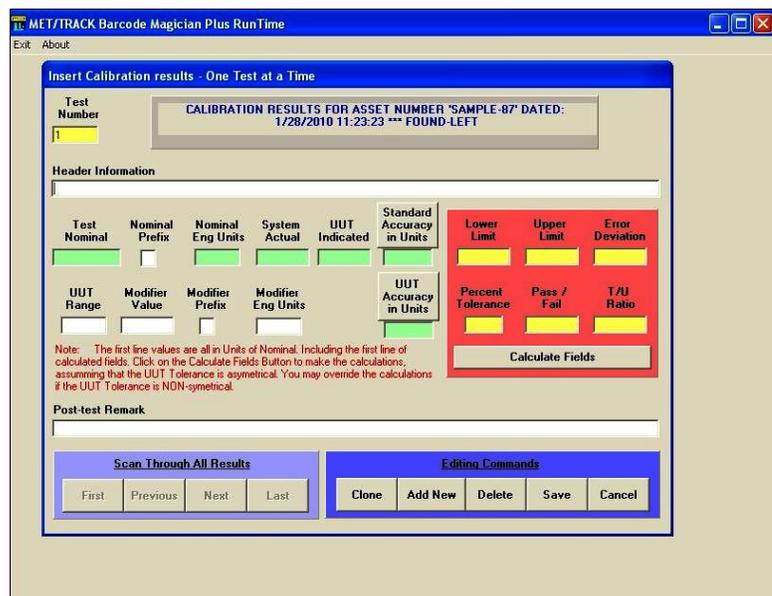
Calibration Results Form (BCM17 Plus Only)

Entering Calibration Results Data (BCM17 Plus Only)

In our example at left, we have entered DC VOLTS into the Header. Our Test Nominal is 10 and the Engineering Units is "V" for Volts. Our System Actual is 10.000. Our Standard Accuracy is 0.0005. The UUT Accuracy is 0.05. By Clicking Calculate Fields the Upper and Lower limits are calculated along with the Percent Tolerance and Test Uncertainty Ratio.

Barcode Magician Plus only calculates symmetrical errors. The operator can override the values in the Yellow Fields. The errors for the Standard and UUT may also be calculated as percent of reading. This form has limited error calculation capabilities and is meant only as an easy way to enter data.

You can click the "Standard Accuracy in Units" Button and the Button will toggle to "Standard Accuracy in Percent". This works the same way for the UUT accuracy. After clicking Add New the test number will increment to the next test.

As stated earlier, the results entry is meant to be a simple way to enter results data into MET/TRACK. It does not perform complex calculations nor does it perform Measurement Uncertainty.

Clicking on Save will record the results into the Full Results table. If you do not want to enter results data, click Cancel and Barcode Magician will skip entering results data.

Special Notes regarding Database Fields and Screens (*BCM17 Plus Only*)

As mentioned earlier Barcode Magician does not replace the need for a MET/TRACK license. Here are some important notes:

- You cannot edit merge tables with the Barcode Magician generated database screens.
- Fields I4241 and C2320 are used by MET/TRACK to store the procedures used. Because these fields cannot be validated, Barcode Magician formats these two fields as "Pick Fields". There are three ways to enter data in this field. Click on the label above the field to toggle through "No Picklist", "Manual Procedures", and MET/CAL Procedures. If you select "No Picklist" you can type in the procedure name manually. If you select Manual Procedures, Barcode Magician looks through the database for entries that have been used in the past. If you select MET/CAL Procedures, Barcode Magician will attempt to locate the MET/CAL procedure directory and display the list of procedures. If MET/CAL or MET/TRACK are not installed on the same station as Barcode Magician, the MET/CAL procedure look-up probably will not work because the METCAL.INI file will not be available to point Barcode Magician where to search the MET/CAL Procedure directory.
- Barcode Magician Plus uses three colors to denote field status. These colors cannot be configured.
  - **Light Green** – This is a required field.
  - **Aqua** – This is a field that is copied from another location and not required.
  - **Yellow** – This is a field with a default value and is not required.

Custom Labels and Phrases

Barcode Magician has features that will allow the system administrator to customize all of the program labels. For example instead of having the Run Time Program prompt for "Enter User ID", it might say "Enter Your Employee Number". If there is a need to operate Barcode Magician in a different language, then the phrases can be customized for that language.

Barcode Magician utilizes a file called "bcmphrases.txt". It is a simple text file. A default file is provided for Barcode Magician. The simple file format is as follows:

1   Barcode Magician
2   Run Time
3   MET/TRACK
4   Barcode Magician is NOT compatible with this version of MET/BASE
5   The following internal error has occurred:

The example above is a small section of the "bcmphrases.txt" file. There are a lot of entries (over 400). The format is the line number, a tab character, and then the phrase with no carriage returns or line breaks. Edit the phrase file using the Notepad Editor that comes with MS Windows.

Barcode Magician does not write to the phrase file. You can save this file as read only if there is a concern about it being accidentally edited or deleted. The phrase file must exist in the same directory as the Barcode Magician executable programs. If the phrase file is not available, Barcode Magician will not start properly and it will display a message stating this:

Error Message - BCMPhrases.txt is not available to Barcode Magician

Blank Page

# CRYSTAL REPORTS® and Barcode Magician®

Using Crystal Reports® with Barcode Magician®

As discussed earlier, reports can be created for use with Barcode Magician. Barcode Magician uses a unique table structure for running reports. Since Crystal Reports can take a long time to run a report, a newer method was necessary for creating and running reports. If someone checks out a group of instruments and requires a receipt, they will want the receipt quickly and not have to wait on it. This section outlines how to create a Crystal Report from the beginning. A report called RECEIPT1.RPT is included. This example is created with Crystal Reports version 10. The example shown here assumes that the report writer has some familiarity with Crystal Reports. We will attempt to clearly explain the example report using Crystal Reports 10 as it is created. Crystal 12 is very simliar.

Getting Started

We are going to create a report that prints a receipt. The report uses a temporary table that is created when Barcode Magician is registered. This example will show every step on creating the report.

The first step is to open Crystal Reports. Do not have any reports open. We are going to start from the beginning. Click on <u>File</u> and then click on <u>New</u>. The form at right is now displayed in the middle of your screen. Next, click on Standard and click OK.
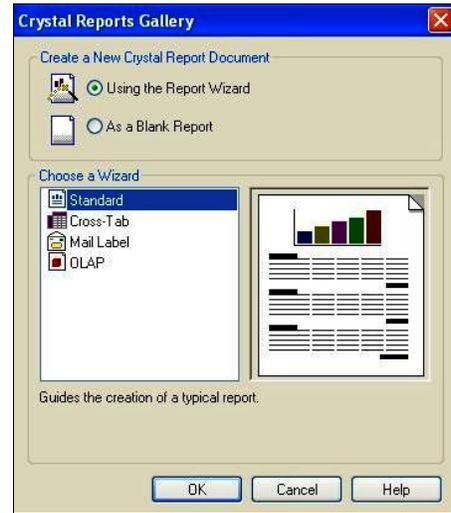
Crystal Report – Select Data Type

After you have opened the Data Sources, you will see four choices as shown at left. Click + and open Create New Connection.

Select ODBC (RDO) and click + and the next screen with ODBC Sources will open.

If you have previously logged in, this screen will not appear.

Standard Report Expert – SQL/ODBC

You will see a screen similar to the one at right. In our example we are using the <u>Calibration Data</u> Source. Click the Next> button.
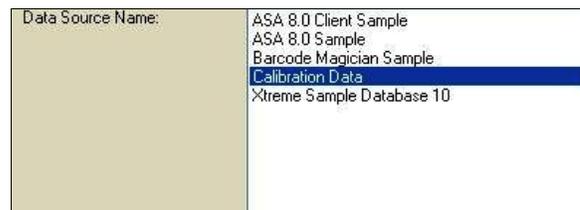
The next step will be to enter a user id and password. When creating a new report we usually use the MT password. Click the Finish button.
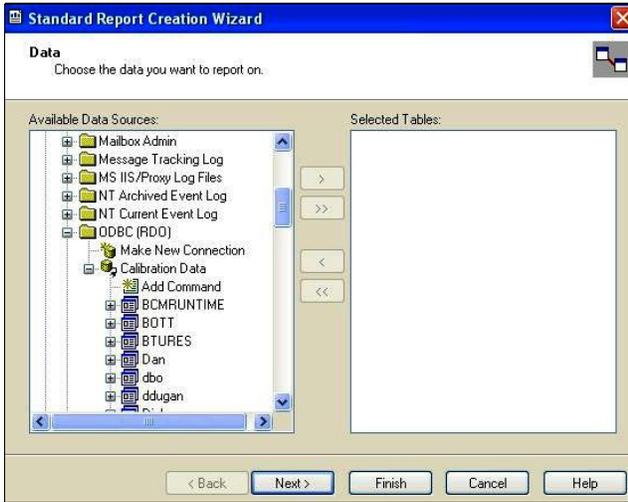
Open ODBC and Select MT Tables
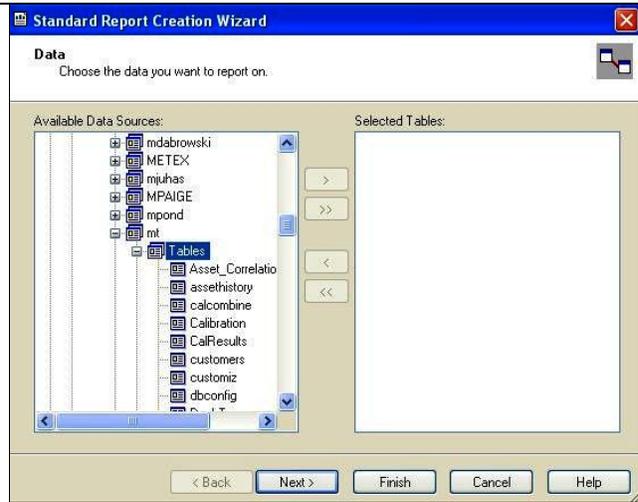
After logging in you will see a screen similar to the on at the upper left. Scroll down until you see MT and click on tables to open the table list as shown in the upper right. We are now ready to select the first table. Scroll through the SQL Tables list and select **mt.ots_bcm_transactions** and click Add. This table is updated every time Barcode Magician processes an instrument with the current CTAG, LTAG, and RTAG indexes.
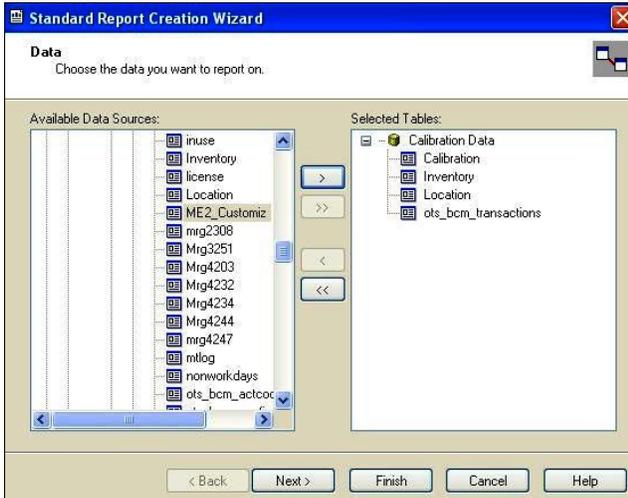
Selecting the Tables for the Report

We will have to add the other tables in order to generate a receipt. With the current indexes listed in **mt.ots_bcm_transactions**, the report does not have to perform any searches. Because the report points to a specific index, this makes the report extremely fast.

Next, select the mt.inventory, mt.calibration, and mt.location tables. You will have to click > after selecting each table.

You will notice that the screen now shows the 4 tables we have added. As stated earlier, the table mt.ots_bcm_transactions is the key. The other tables will need to be linked to the indexes in mt.ots_bcm_transactions. Click the Next> button.

After we finish adding our tables, we now have a display of the Crystal Report Linking Expert.

In this example, the linking is wrong. This happens quite frequently with Crystal Reports when the "Smart Linking" is enabled. You will notice that the Inventory, Calibration, and Location tables are serially linked through the MTAG index. This is wrong and should be changed. The default property for each link is called "Equal Joins". In this case, the system will not report location and calibration data for the report to display because they are linked to the wrong table.

Visual Linking Expert – Default Setup

We will change the linking manually. First, we will delete all the links. Click on each link that you want to delete, highlighting the link, and press delete or click on Delete.

In our example at right, we have linked all the tables to the indexes shown in the mt.ots_bcm_transactions table. We also moved the tables around on the form to make it easier to see the links.
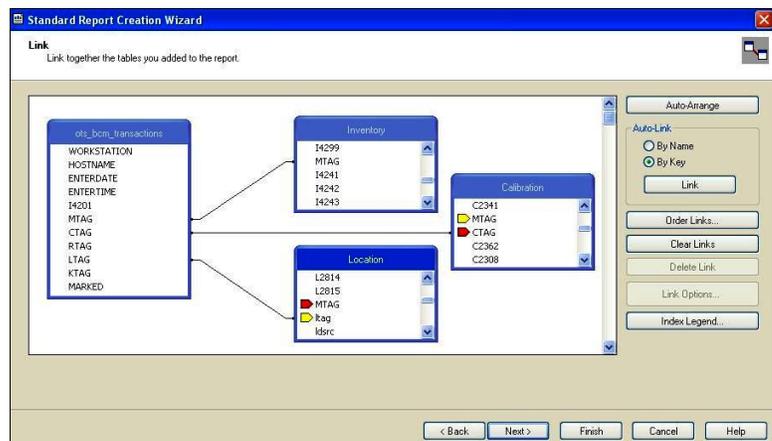
Visual Linking Expert – Updating Table Links

We still have an issue with the links to each table because they are "Equal Joins". This means we must have calibration and location data for data to be displayed for a specific tool.

This can be a real problem when checking instruments without location or calibration data. Barcode Magician is also used to check out tools that do not require calibration and do not have history. Under the configuration in this example, we would not show those tools on the report. We are going to change the properties of the links to a "Left Outer Join". This type of link will allow the report to display the asset even if it does not have calibration or location history.

Since we are checking out calibrated and non-calibrated tools in our example, we will always be creating a location record. However, there is a possibility that the tool does not have a calibration record. The calibration link needs to be changed to a left outer join. In this configuration, if a tool does not have a calibration record, the report will still display the inventory and location information on the tool.

Changing Table Link Properties
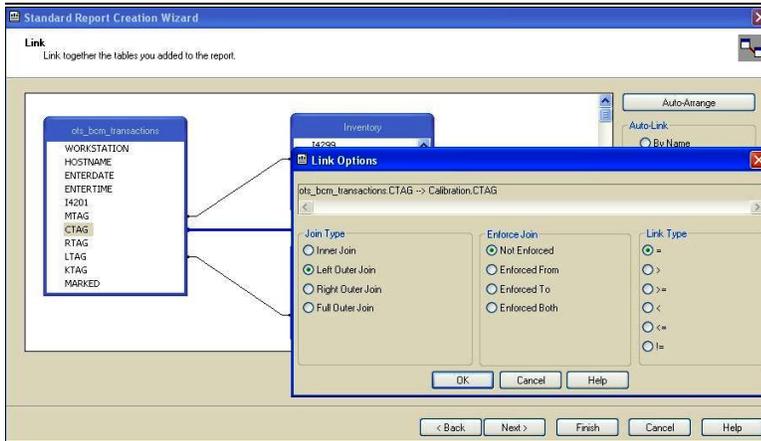
In our example at left, we are modifying the properties of the CTAG link. To change the properties of the link, "right click" on the CTAG link to highlight it. Next, click on Link Options in the pop up screen and then the Link Options will be displayed as shown at the left. Under SQL Join Type, click on "Left Outer" and then click on OK. This will allow an instrument to be processed if there is no calibration or location history.

Click the Next> Button.

Now that we have the tables linked, we need to select the fields. Click the Fields tab at the top of the report expert. You will see the tables to choose fields from on the left and the fields selected on the right.

The form on the right shows the fields we want to display. Each table has a list of fields under the table name. There is either a "+" or "-" symbol next to the table name. Click "+" displays all of the fields for the table. Click "-" to not display the field names. We want to select the following fields:

Adding Fields to the Report

Field	Description
I4201	I4201 – Instrument Number
I4202	I4202 - Mfg
I4203	I4203 - Model
I4204	I4204 - Description
C2303	C2303 – Due Date
L2801	L2801 – User Name

Let's add the first field. Under the Inventory table displayed on the left side of the screen, select I4201 by clicking on it one time. Next click on the > button.

Inventory.I4201 will now be shown on the right side of the screen under Fields to Display. That's it. We have now entered the first field for the report. Continue entering the rest of the fields as listed in the table above. When you have completed adding the fields, click the Finish button.

The Crystal Report expert will automatically create the report with the best spacing possible for the fields and will insert the Field Titles in the report header. It will still be necessary to adjust these fields when you actually view the report for the first time, but at least the report has been started for you. The report will automatically preview the report. You may see a blank screen or there may be some data. This does not matter. The report is in the Preview mode. Click on the Design tab and then click on **File** | **Save As** on the menu bar and save the report to your shared METCAL directory on your server. **NOTE: Make sure Save Data with Report is not checked. It may be checked by default.**

The report is now displayed in Preview mode.
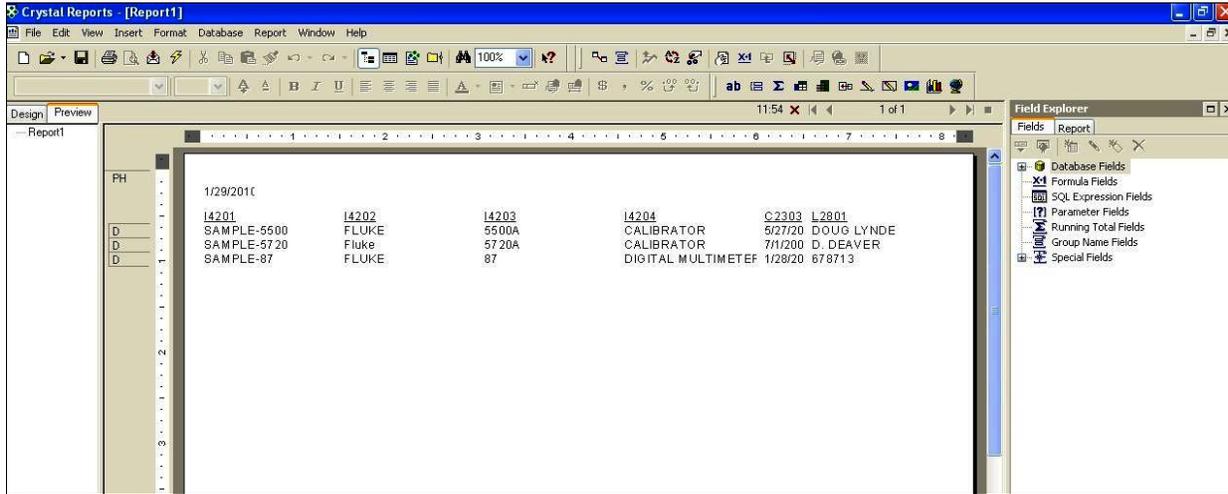
Preview Mode of Crystal Report

Click on the Design Tab and now you will display the report in the Design mode.
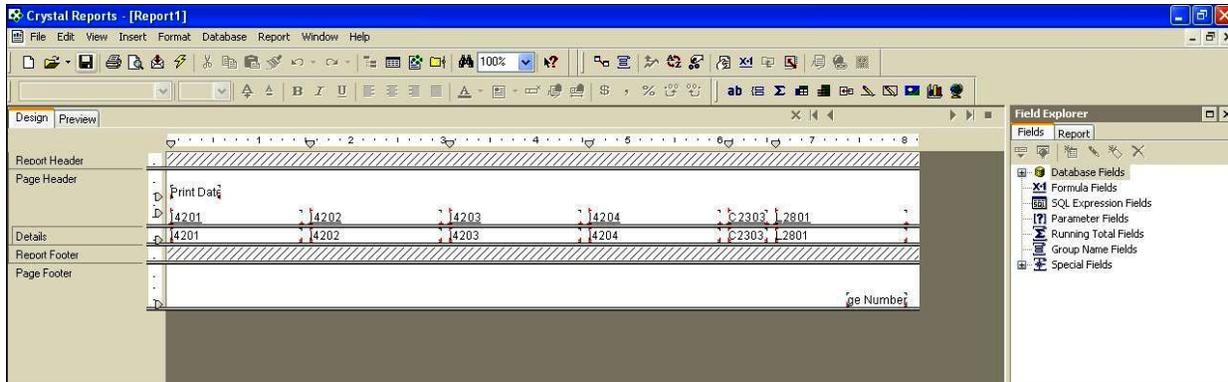
Design More of Crystal Report

We are about to complete our report example, but we need to make some modifications. If you look at the report above, you will see that the labels, in the Page Header, are the same description as the field number. The reports needs to have better field descriptions. In our example, we moved the fields to make them line up better.   An easy way to change the field labels is to "right click" on the field label in the Page Header section and scroll down to Edit Text in the pop up box. You can now edit the label. The screen shot below shows our changes.
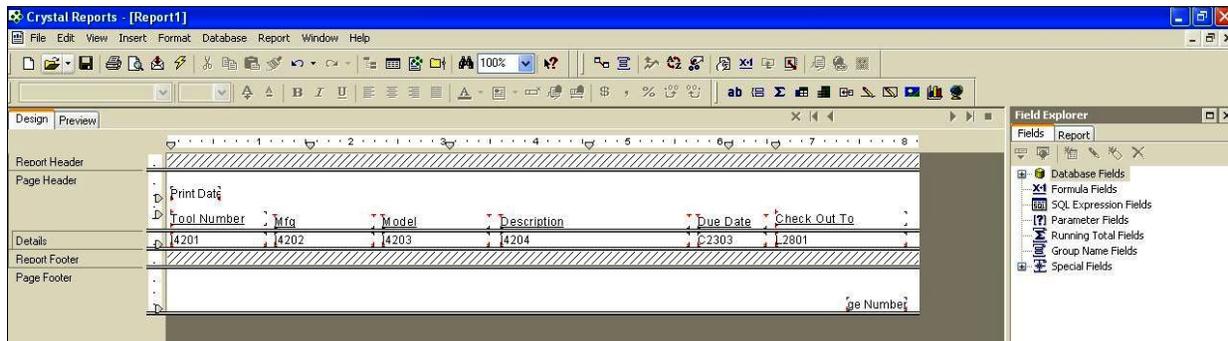
Design Mode - Modified Field Labels

We need to create one blank formula for Barcode Magician to use. Any report that is used with Barcode Magician must have this formula if the report is associated with instruments actually scanned at the workstation. A brief explanation is that Barcode Magician communicates with the Crystal Report libraries and data is inserted into these libraries. For example, a MET/TRACK database can incorporate several Barcode Magician stations. If a user checks out several instruments and wants to print a report, then the report has to only display information checked out for that station. Each Barcode Magician station has a unique system ID. Creating this formula is really easy.
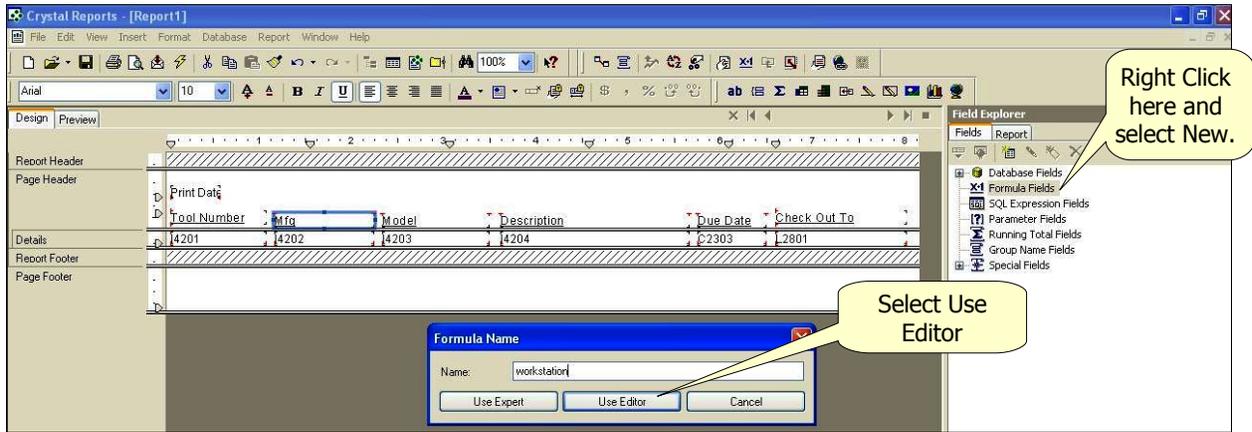
Creating the Workstation Formula

While in Design mode, "right click" on Formula Field. A pop up box will be displayed and select New. Another pop up box will be displayed as show above. We need to create the formula name. Type in "Workstation" and then click on Use Editor.
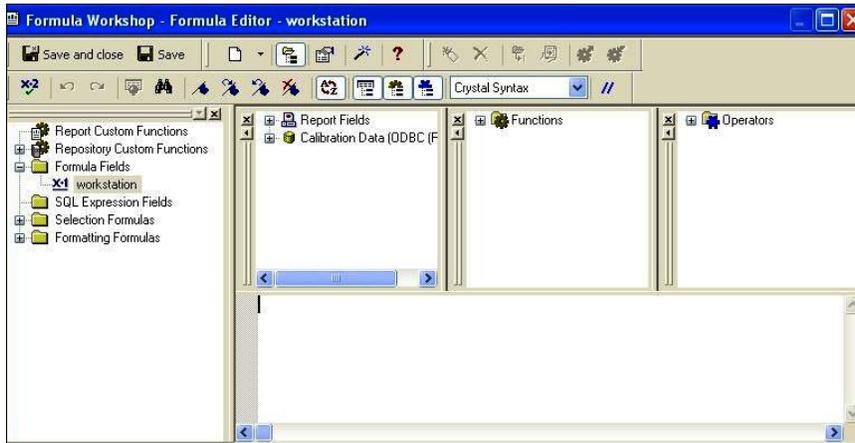

Saving the Workstation Formula

Click on the Save and Close button in the formula editor as shown in the above figure. This is the first button from the upper left of the Formula Editor screen. You have now added the required formula. Remember, do not add anything in the Formula Editor. Leave it blank. This formula serves as a place holder for BCM17. When BCM17 accesses the Crystal DLL's, the station name is saved in the formula automatically.

At the menu bar click on **Report** | **Edit Selection Formula** | **Record**. We need to limit the data displayed to this station using the "workstation" formula. This is not necessary if this is the only Barcode Magician station. However, it is a good idea to do this now in case you decide to add more Barcode Magician stations later.

With the Editor open you will notice three columns. The column to the left has all the available tables and fields for your report. Scroll through the list of tables and look for the table ots_bcm_transactions. Under ots_bcm_transactions select the field WORKSTATION by double clicking on it. Next type in the Equal sign

(=). Next select the workstation formula we created earlier. This formula will be displayed with a leading @ symbol. Double click on @workstation and this will be inserted into the edit selection formula. The formula should be **{ots_bcm_transactions.WORKSTATION} = {@workstation}**.
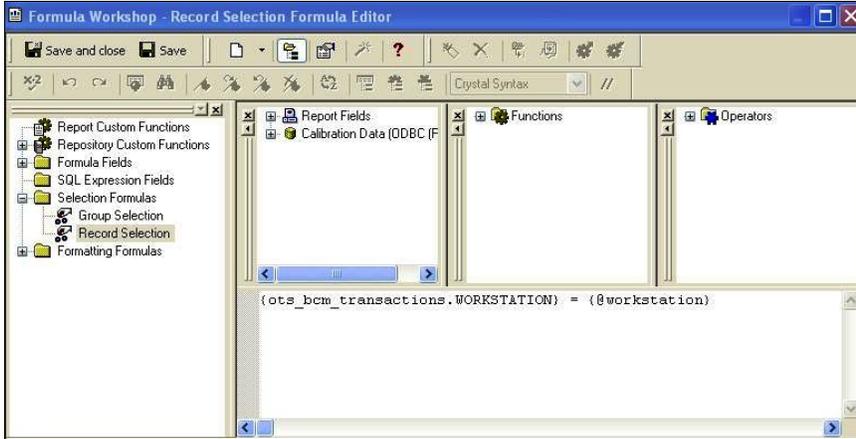
Entering the Record Selection Formula

This formula will only allow data that has been processed by the same station that processed the instruments. Click Save and Close to save the Edit Selection Formula. Our report is complete. You should save the report. This completes our Crystal Report example. You can adjust the report to format it to your liking.

NOTE: Make sure "Save Data with Report" is not checked. It may be checked by default.

Appendix A – Error Handling and Troubleshooting

Error Handling with SQL Statements

When developing SQL statements to be used with Barcode Magician, some attention needs to be devoted to the error screens that Barcode Magician will develop. Earlier, we discussed creating SQL statements in the Action Code Editor section of this manual.

We have an example where we are using the SQL statement in the criteria to verify that the instrument is not overdue for calibration. We are checking out instrument SAMPLE-87. Let's take a look.
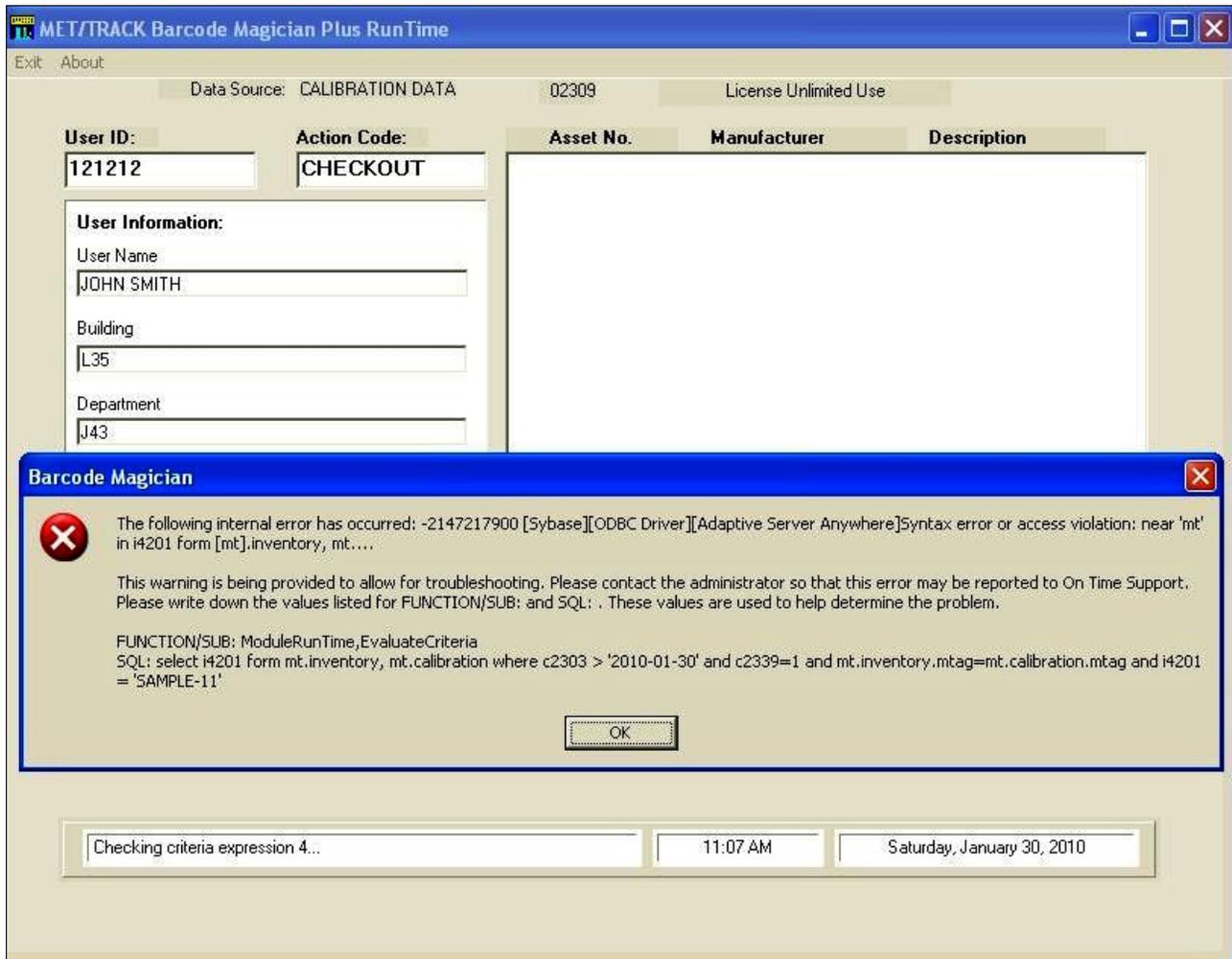
SQL Error message in Run Time

The first line in the first paragraph of the error message says: "access violation near 'mt' in I4201 FORM [mt].Inventory". You can also see the complete SQL statement in the third paragraph of the error message. The problem with the SQL statement is that it should start with "SELECT I4201 FROM" not "SELECT I4201 FORM". The word FORM is not part of an SQL command. This is an easy mistake to make. When you see this screen, take a look at the statement and analyze it carefully. Also, try executing the statement in the ISQL Editor. This is a good place to troubleshoot SQL statements.

The error we just described could also be caught when creating the SQL statement in the Criteria SQL Editor because there is a test button. The same error screen will be displayed in the action code editor.

Barcode Magician also has a continuously updated log file called errors.log. Our example error was also trapped in the error log file. The location for this file is described at the end of this section.

```
[2010-01-30 11:16:07]  **** Barcode Magician ****
[2010-01-30 11:16:07] -2147217900 [Sybase][ODBC Driver][Adaptive Server Anywhere]Syntax error or
access violation: near 'mt' in i4201 form [mt].inventory, mt....
[2010-01-30 11:16:07] CmdSQLTest,FormACSQLEditor
[2010-01-30 11:16:07] select i4201 form mt.inventory, mt.calibration where c2303 > '2010-01-30' and
c2339=1 and mt.inventory.mtag=mt.calibration.mtag and i4201 = 'ASSET Not Known until Run-time'
```

Viewing Error in Errors.Log file

Using the SQLLOG Switch

The Barcode Magician Run Time program has another feature, it can be placed in SQL troubleshooting mode. Make a copy of the Run Time Icon and edit the properties of the startup. We renamed our icon "Run Time SQL Mode". This will be a special Run Time Icon. We also have changed the startup properties of the icon to the following:

C:\metcal\mtbcm17\mibcmrtd.exe sqllog; dsn=Calibration Data

We added the sqllog switch to the program properties. When we run Barcode Magician in SQLLOG Mode, we have activated a logging program called **SQLcommand.log**. The following is an example out using our SQL statement in criteria.

```
[2010-01-30 11:31:15]  **** Barcode Magician ****
[2010-01-30 11:31:15] Evaluate Criteria: 1: SAMPLE-87
[2010-01-30 11:31:15] select i4201 from mt.inventory, mt.calibration where c2303 > '2010-01-30' and
c2339=1 and mt.inventory.mtag=mt.calibration.mtag and i4201 = 'SAMPLE-87'
```

Example SQL Log Format for Troubleshooting

Notice that our example in the SQL log shows that criteria was used with the SAMPLE-87 asset. The program generated a date and time stamp and a description of the Evaluation. In this case it was a criteria check. After criteria is a 0 or 1. The 0 means that the criteria failed and a 1 means that it passed. The SQL statement is also displayed. This is a great tool to see how the SQL statement affected the asset in question. It is not recommended to leave the "sqllog" switch on all the time. This will affect the performance of the Run Time program because the file will be appended.

These tools are great for troubleshooting. When there is a problem, take your time and carefully evaluate the statement. If you continue to have problems, please contact On Time Support for help.

Error Log File Location

Depending on the operating system used, the error log file is saved in the following locations:

Windows 7 and Vista – errors.log is stored in C:\Program Data\On Time Support\Barcode Magician. The Program Data directory is a hidden directory and it may have to be accessed with help from IT.
Windows XP and Windows 2000 – errors.log is stored is C:\Documents and Settings\All Users\Application Data\On Time Support\Barcode Magician.

Appendix B – Advanced SQL Input/Output Statements and Batch Input

Barcode Magician 1.7.1 has some additional capabilities that allows for SQL statements to output data into files and input data from files. We will create some examples and demonstrate this new capability. Our example will start with the Action Code Editor.

VERY IMPORTANT NOTE: OTS does not assume any resposibility regarding the use of SQL commands with Barcode Magician. While SQL is a very powerful database language, a user that is not properly trained in using SQL can cause damage to their database. OTS can provide assistance with SQL statements over the internet for a nominal fee.

Output of Data Using SQL Statements.
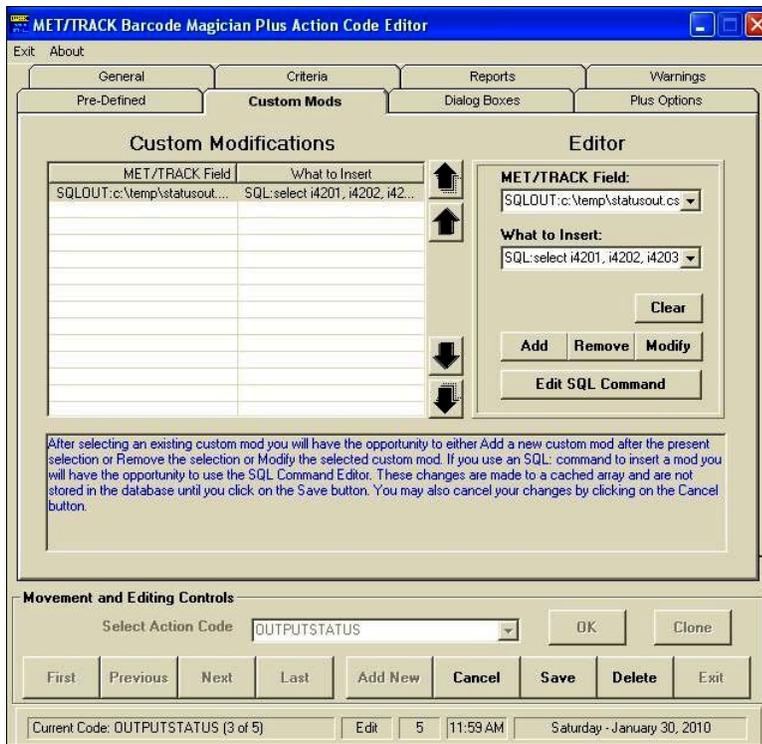
Creating an Action code to Output Data Files

In our example, we are going to output to a file the instruments with a status that is ACTIVE. This is a very simple statement. First, we have to create the Action Code. In our example we created an Action Code called "OUTPUTSTATUS".

Second, we have selected the "Custom Mods" tab. Click in the MET/TRACK Field box and select SQLOUT:. We entered a filename in this box called "C:\temp\statusout.csv". This is our destination file. You will notice that it automatically inserted SQL:SELECT in the What to insert box.

We entered the following SQL statement: "select i4201, i4202, i4203, i4204, i4206, i4224, i4225 from mt.inventory where i4225 <> 'ACTIVE'". This is a very simple statement that outputs the asset number, manufacturer, model number, description, serial number, status date, and status. If the status is blank, the record will not be added to the file.

Note: The destination file can come from a system variable such as a dialog box e.g. SQLOUT:$BOX3$

The following picture is an example of the file output after it was imported into a spreadsheet program. We could have selected a much more elaborate SQL statement that included history records.

|	A	B	C	D	E	F	G
1	M672134	FEL-PRO	8860	DMM	2343243	01/02/2007	IN USE
2	PH0367	DANA XPC	LV/B466-04		642303	10/23/2006	IN USE
3	VM0140	FLUKE	76	DVM	66190658	01/03/2010	CHECKOUT
4	M637472	Fluke	8060A	TRUE RMS MULTIMETER	3840332		Close
5	M637918	FLUKE	87	MULITMETER	53730315		CLOSE
6	M651259	Fluke	97	OSCILLOSCOPE/MULTIMETER	DM547273		Close
7	M652759	Fluke	87III	MULTIMETER	84800330	04/28/2004	Close
8	M653079	Fluke	95	OSCILLOSCOPE/MULTIMETER	DM6060159	06/08/2004	Close

Example File Output

VERY IMPORTANT NOTE:
The SQLOUT: command overwrites the data files if they already exist.

- **The SQLOUTA: command only appends data to the files. It does not overwrite files.**
- **When data is written out, quotations are not added to the data.**
- **The data is comma delimited. Be careful of data that has existing commas in the data fields.**

When executing an Action Code using the SQLOUT: command, you will need to use an instrument as a dummy instrument. When using SQLOUTA:, be careful because if you use more than one instrument in the list, then the SQL statement will be executed for each instrument. The output file is appended, so you will have multiple sets of data.

Input of Data Using SQL Statements

Using the SQLIN: command allows for adding records to your database. We will create an example that creates new Inventory Instrument Records.
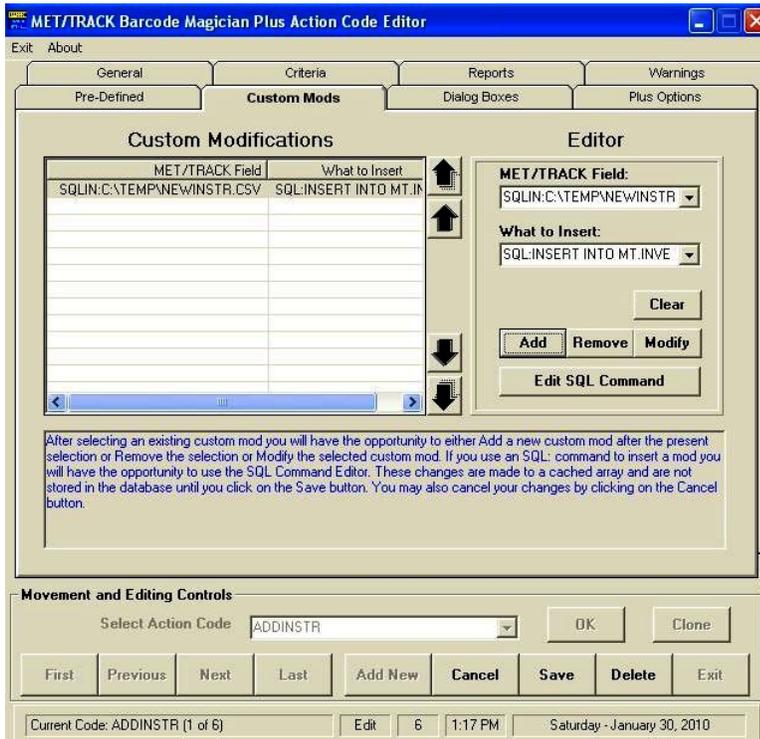
Creating an Action Code to Input Data Files

In our example, we are going to insert a file with 4 new instruments Sometimes it will save time if you import instruments from a file instead of typing in each field in MET/TRACK.

First, we have to create the Action Code. In our example we created an Action Code called "ADDINSTR".

Second, we have selected the "Custom Mods" tab. Click in the MET/TRACK Field box and select SQLIN:. We entered a filename in this box called "C:\TEMP\NEWINSTR.CSV". This is our input file. You will notice that it automatically inserted SQL:INSERT in the What to insert box. **Try to keep the file name in upper case format.**

Note: path\filename can come from a system variable such as a dialog box.
e.g. SQLIN:$BOX3$

The following is our SQL Statement:

SQL:INSERT INTO MT.INVENTORY (i4201,i4202,i4203,i4204,i4206,i4209, i4229,i4228,i4240) VALUES

The following is the data in our input file "NEWINSTR.CSV". We added a description to the first row in the table below so that you can see how the data corresponds to the SQL statement.

Asset #	Mfg	Model	Serial	Description	Trace	Int	Int Type	DB Subset
SAMPLE-01	FLUKE	87	1234	DMM	9	12	M	MT
SAMPLE-02	FLUKE	97	2345	SCOPE	9	12	M	MT
SAMPLE-03	FLUKE	77	3456	DMM	9	12	M	MT
SAMPLE-04	AGILENT	33401	4567	DMM	9	12	M	MT

Executing SQL Statements without Using Files

It is also possible to execute SQL files in Barcode Magician without using files for input or output. In the Custom Mods section under "MET/TRACK Field" select NONE. This is at the bottom of the list. In the What to insert Field, you can insert a general SQL statement. Becareful because you can also delete records with this statement.

Entering Assets though a file into Barcode Magician Run Time (BCM PLUS ONLY)

Barcode Magician has a batch file entry mode. For example, you may have a docking scanner that was used to scan and store instrument ID's in a tool room. You can bring the scanner back and upload the file to the computer. In order to utilize this feature, you have to create the upload file in a text type format. Each asset is on a row in the file. So if we wanted to upload three assets the file might look like the following:

SAMPLE-87
SAMPLE-11
SAMPLE-10

Do not use quotes or commas in the file.

The BCM17 icon will require a change as follows:

C:\metcal\mtbcm17\mibcmrtd.exe assetfilename=c:\temp\inputasset.txt; dsn=Calibration Data

In our example you will notice the parameter "**assetfilename=c:\temp\inputasset.txt**"

When Barcode Magician starts, you will still have to enter the User ID, Action Code, and any dialog box prompts. After the last prompt, the instrument list will automatically populate.

After the last instrument is inserted into the asset list you will be prompted if you want to delete the assetfilename. It is recommended that you delete this file so that the list is not available when restarting BCM17 Runtime.

You can edit the inserted list and you can continue to add more instruments to process. All criterias and warnings will still apply when the file is read.

You can also make more than one BCM17 icon, one for normal usage and one for the file upload.

Appendix C – Adding Calibration Records using SQL statements

Important Note: Be sure to back up your database first before attempting a procedure like this.

The following example illustrates how to add a calibration record for a group of assets without the actual results data. Some users calibrate a group of instruments at a time using the same standards for all of the instruments. This example assumes that up to two standards were used. Inventory field 4250 was used to store the Due Date copied from the calibration record. This simplifies the SQL statement; otherwise we will require a more complex statement that links the calibration table when creating reports. This example also assumes that the database trace code is a numeric value, which is the MET/TRACK default. If the Trace Code is a Text Value like P, then a different statement will be necessary.

Criteria

Critical Expression 1
@SQL   SELECT I4201 FROM MT.INVENTORY WHERE '$DIALOG_BOX4$' = I4201 AND I4250>'$TODAY$'

Message Expression 1
STANDARD ONE IS OUT OF CALIBRATION OR DOES NOT EXIST IN DATABASE!!!!!!!!

Critical Expression 2
@SQL   SELECT I4201 FROM MT.INVENTORY WHERE '$DIALOG_BOX5$' = I4201 AND I4250>'$TODAY$'
OR TRIM('$DIALOG_BOX5$')="

Message Expression 2
STANDARD TWO IS OUT OF CALIBRATION OR DOES NOT EXIST IN DATABASE!!!!!!!!

Warning 1 Function
SQL:SELECT I4201 FROM MT.INVENTORY WHERE I4201='$ASSET$' AND I4209<(SELECT I4209 FROM MT.INVENTORY WHERE I4201='$DIALOG_BOX4$')

Warning 1 Message
STANDARD 1 IS OF LESSER ACCURACY THAN THIS INSTRUMENT

Warnings

Warning 2 Function
SQL:SELECT I4201 FROM MT.INVENTORY WHERE I4201='$ASSET$' AND I4209<(SELECT I4209 FROM MT.INVENTORY WHERE I4201='$DIALOG_BOX5$')

Warning 2 Message
STANDARD 2 IS OF LESSER ACCURACY THAN THIS INSTRUMENT

Dialog Boxes

Dialog	Active	Required	Dialog Box Text
Box 1	Y	Y	Did the Instrument Pass?
Box 2	Y	Y	Enter FOUND/LEFT Status
Box 3	Y	N	Enter Calibration Notes
Box 4	Y	Y	Enter First Standard Used
Box 5	Y	N	Enter Second Standard Used (Tap the Enter Key if None)

Custom Modifications

	MET/TRACK FIELD	**What to Enter**
1	NONE	SQL:INSERT INTO MT.CALIBRATION (C2301,C2303,C2323,C2308,C2333,MTAG,CDSRC) VALUES('$TODAY$',DATEADD(MONTH,(SELECT I4229 FROM MT.INVENTORY WHERE I4201='$ASSET$'),'$TODAY$'), '$DIALOG_BOX1$','$DIALOG_BOX2$','NOW', '$MTAG$','BCM')
2	Pass – C2323	@Dialog Box 1
3	Found/Left – C2308	@Dialog Box 2
4	Cal Due Date – I4250	Due-Date - C2303
5	Cal Interval – C2302	Cal Interval - I4229
6	Calibration Notes – C2341	@Dialog Box 3
7	Cal-Tech 1 – C2307	@User I.D.
8	Check-in Date – C2316	Check-In Date - I4224
9	NONE	SQL:INSERT INTO MT.STANDARDS (C2430,MTAG,CTAG) VALUES((select mtag from mt.inventory where i4201='$DIALOG_BOX4$'),'$MTAG$','$CTAG$')
10	NONE	SQL:INSERT INTO MT.STANDARDS (C2430,MTAG,CTAG) VALUES((select mtag from mt.inventory where i4201='$DIALOG_BOX5$'),'$MTAG$','$CTAG$')
11	NONE	SQL:DELETE FROM MT.STANDARDS WHERE C2430 IS NULL AND CTAG='$CTAG$'

This is only an example. Your database will probably have a different field configuration. On time Support is available to create custom SQL statements for an additional cost.

Appendix D – Adding Calibration Records using $INSERTCALRECORD$ Variable

Important Note: Be sure to back up your database first before attempting a procedure like this.

This is the preferred method to add calibration records for a group of assets without the actual results data. Some labs will calibrate a group of instruments at a time using the same standards for all of the instruments. This example utilizes the @STDSUSED function and the $INSERTCALRECORD$ system variable that is only available in Barcode Magician *Plus*. Using the $INSERTCALRECORD$ variable will automatically create the SQL statement necessary for the calibration record. You will notice that there is no SQL code required when using the @STDSUSED Function.

Creating an Action Code with $INSERTCALRECORD$
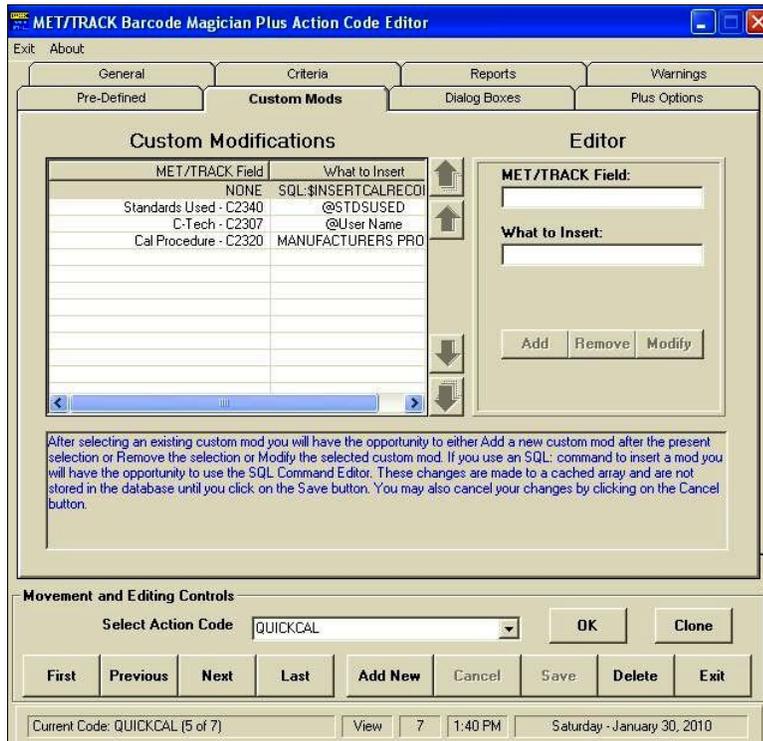
There are some things to note about using the @STDSUSED Function. You must use the SQL Function with the $INSERTCALRECORD$ variable at the beginning of the Custom Mods. Our example only has four entries in the complete Custom Mods list. We have not used any Dialog Boxes in our example simplifying the Action Code. We have not used any Criteria Checks either. It is very important to enter the Action Code statements in the proper sequence. We must create the Cal Record with the $INSERTCALRECORD$ variable first before applying any other modifications. If we apply modifications first, then these will be applied to the most current cal record. Our example over writes the operator name and procedure used. Be sure to test your action code carefully when creating cal records.

On the Next page, we will see how the Run Time Program prompts for the data.
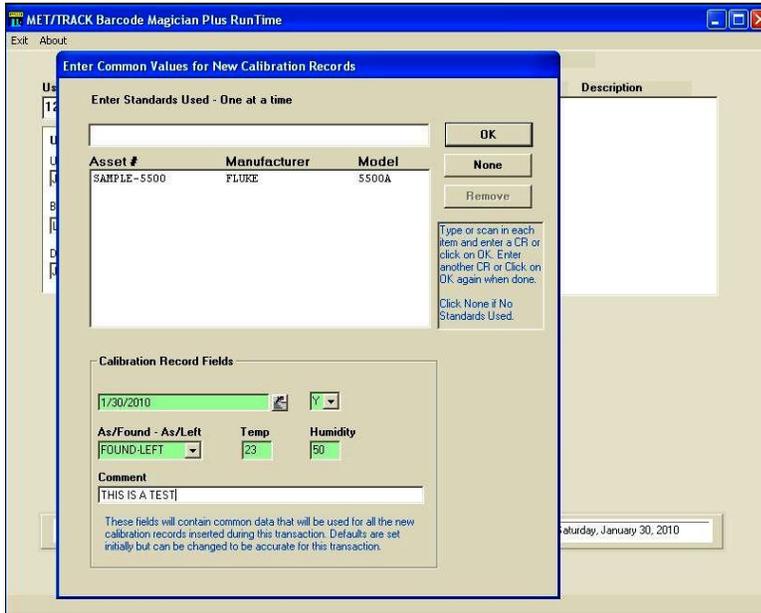
Entering Batch Calibration Records in Run Time

In our example we have started the Run Time Program and executed the QUICKCAL Action Code. The Dialog Entry at left is displayed. Remember, when this variable is used, all of the assets processed will have the same information entered. First, we enter the Cal Date for all the assets and fill out the fields for Pass, As Found/As Left, Temperature, Humidity, and Comments. Next, we start entering the standards. As the standards are entered, the program checks the Due Date of the standards against the UUT Cal Date to verify the standards used are valid. If a standard is invalid, the program will display this information and it will not allow you to enter the invalid standard. After you have entered the standards, click OK with a blank entry for a standard.

The next entries for the action code will be Dialog Box(s) or the asset list. If you want to change an entry created by the $INSERTCALRECORD$ variable, then use the Custom Mods function to over write the field. This is a very easy variable to use for creating batch calibration records. Experiment with the variable and be sure to verify the operation on a test asset number.
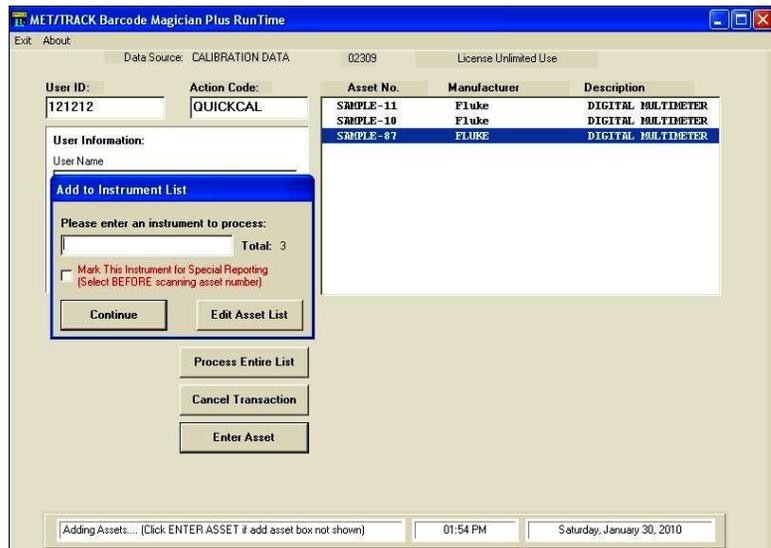
Entering the Instruments to Create Calibration Records

Appendix E – Adding Maintenance Records *(New)*
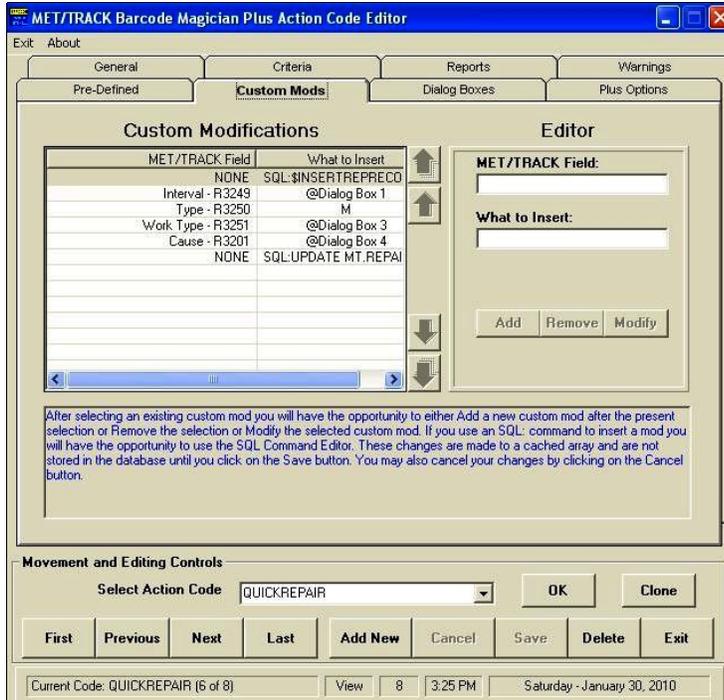
Inserting New Repair Records – Custom Mods

Barcode Magician 1.7.1 has a new variable, $INSERTREPRECORD$ that makes it easy to create a batch of repair or maintenance records. $INSERTREPRECORD$ inserts a new repair record. If this variable is not used first, then BCM17 will update the most current repair record. We are going to create an example using this feature. We will call our Action Code QUICKREPAIR.

The example at left shows the entry in the Custom Mods screen. The first entry must be $INSERTREPRECORD$. In the MET/TRACK field select NONE and enter SQL: $INSERTREPRECORD$ in the What to Insert field. There are three dialog boxes and the next screen shows the dialog box entries. The User is prompted for the interval in months, the work type, and a short note. We have also added an SQL statement that calculates a due date. This is a minimum example and you may want to enter more fields. The SQL statement reads as:

UPDATE MT.REPAIR SET R3247 = DATEADD(MONTH,(SELECT R3249 FROM MT.REPAIR WHERE MT.REPAIR.RTAG ='$RTAG$'),'$TODAY$')

This example utilizes the BCM17 variable $RTAG$ in order to update the record that has been created. The DATEADD function will add $TODAY$ to the interval in months which has been updated in R3249. We could have done this differently with $BOX1$ variable in place of R3249 or easier yet with the system variable $CALCPMDUEDATE$. SQL:$CALCPMDUEDATE$

We also have utilized the custom BCM Val feature for Dialog Box. The prompt reads "Enter the Work Type (V, F, L, C, R)". BCM17 will validate V,F,L,C,R which will update the Work Type field R3251, and is a required field. When this Action Code is executed in the Run Time program, BCM17 prompts with the three Dialog Boxes, then asks for the instruments to process. This is a very useful feature. On Time Support is available to create custom SQL scripts and provide assisance.
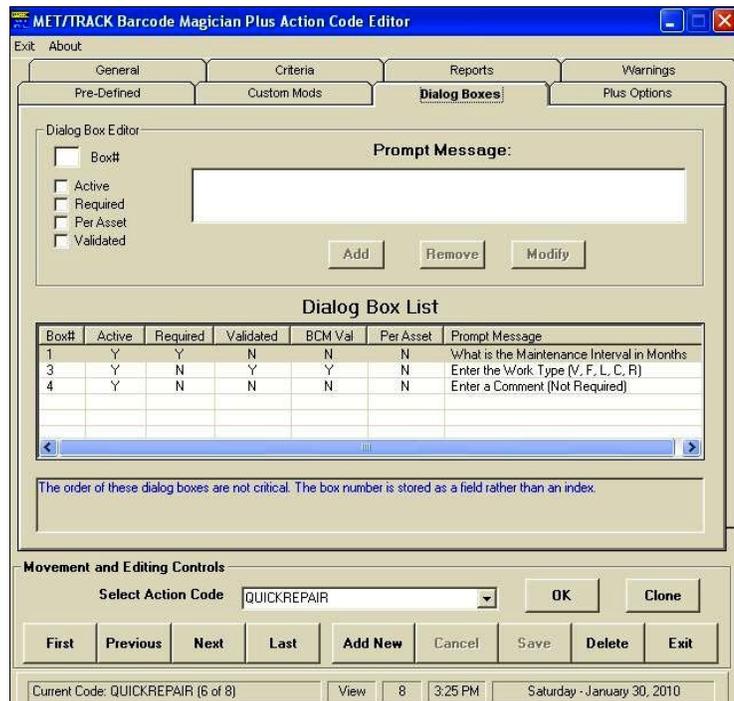
Inserting New Repair Records - Dialog Box Entry

Appendix F – Utilizing the Pictures Function *(New)*

Earlier in the System Configuration part of the manual, we briefly discussed configuring the Pictures option so that instrument pictures can be displayed in BCM17 Run Time. There are three issues that must be determined.

- A file location for the pictures (in JPG, GIF, BMP, PDF format)
- A database reference in the inventory table or a merge table.
- A location of the pictures specified in the Workstation Configuration program.

In our previous example, we had selected field i4242 for the picture file name. The problem that can occur is that if you have many assets, it becomes difficult to update every single inventory entry. Another more preferred method is to configure the model number merge table to enter the picture name. The only issue is that the model number must be unique, which is very difficult to do because of the large number of manufacturers. Many manufacturers use the same model numbers. It might be possible to create a model number scheme that has a model number prefix in order to obtain a unique model number. This is very possible through SQL to do this.
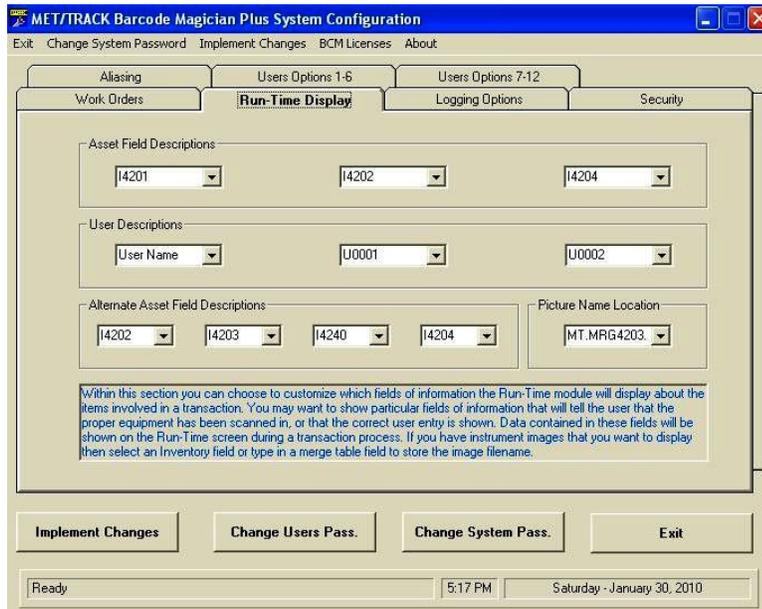
Entering the Picture Name Location in System Configuration

In our example we are going to open the the System Configration Program and click on the Run-Time Display tab.

There is a small entry box under in the Picture Name Location. Notice that this appears to be a validated field, and if you click and display the pick list, you will see inventory field list. The picture function can support having the picture name in a character inventory field, or you can type in a merge table name with the field element. In our example, we typed in **mt.mrg4203.picture**. Before doing this we had created the table using the merge table configuration tool in the MET/TRACK administration program.

After we have set our location, click the Implement Changes button and exit the System Configuration program.

We have created some picture files for a few of our instruments and have them entered in the MT.MRG4203.PICTURE field. You will also notice there is a cost field that is used for tracking instrument calibration cost. It is not necessary to enter the path or server designation in the picture field. The server and directory path are configued in the Workstation Configuration Program. We now have our pictures configured and ready to use in the Run Time Program.

The MT.MRG4203 Table

Appendix G – Implementing Security Access Features in Action Codes

With several large BCM17 systems, there is always the issue of limiting access to certain Action Codes. For example, we may have a company with multiple sites that need to restrict Action Codes per site or may want to utilize a security level(s). You can configure the workstation to only access certain Action Codes, but that may take time and it has to be configured to that workstation locally. A function in the Criteria section of the Action Code Editor called "CONTAINS", can be combined with the fields in the BCM17 Users Database. First, lets take a look at the Users Database screen again.

Configuring Security Levels for Users

In our example at left, we have set up the User Level field and Site field in the BCM17 System Configuration for the Users Database. We opened the Users Database and these new fields are configured. In the Users Level field, notice that the drop down list has three different selections. John James is at the DALLAS site and will be able to run an Action Code as long as CRIB is in the User Level field. John Doe is at the PHOENIX site and his user level is CUSTODIAN.

We can use these two fields to control the access of the Action Codes by site and user level. The next step is to configure the Criteria Section in the Action Code Editor.

We have modified our CHECKOUT Action Code and added another criteria. Notice that we configured UserLevel - U0008 to using the Contains function to verify that CRIB is in the User Level field. Using Contains, is one method to make BCM17 look at a field for certain information. Another user, John Smith, has a level ADMIN, CUSTODIAN, CRIB. John Smith is our administrator in this case.

We could also have added another criteria to check the site field also. This method would allow control of Action Codes per site, because our company may have different business rules per site.

John Smith and John James both can run the Action Code without any problems.

Configuring the Action Code for User Levels
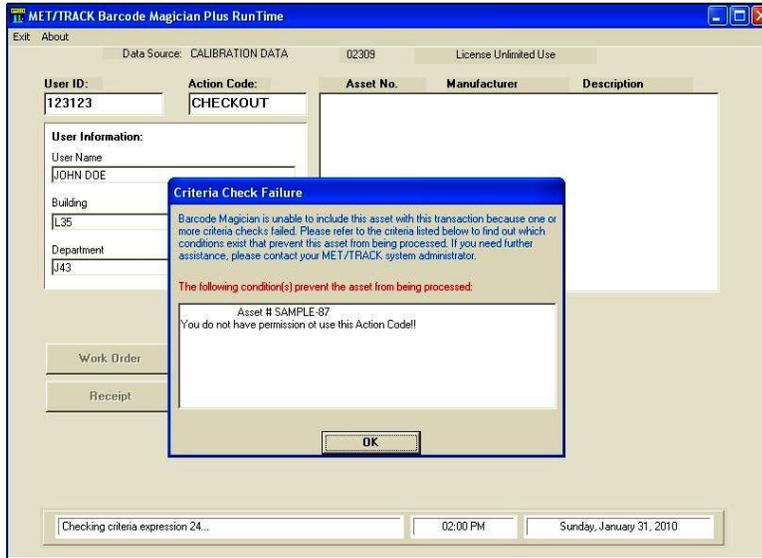
Checking User Levels in the Run Time Program

When we tried to check out an instrument for John Doe, the criteria failed and displayed a message that he cannot use that aciton code. John Doe is only a CUSTODIAN and does not have the word CRIB in his user level.

The Action Code will not display this message until a tool is entered to be processed. At that point the critera is checked.

This same process could be accomplished using an SQL statement, but this method is much simpler and it requires some consideration on how to organize the security level.