4.3 Configuration Management

This section describes the configuration management tools used by ECS operators:

1. ClearCase
2. ECM CCR Tool
3. ClearCase BLM
4. Remedy (Inventory, Logistics and Maintenance {ILM} Manager)
5. FLEXnet Publisher
6. TestTrack Pro

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4.3.1 ClearCase

This section presents an orientation of ClearCase. ClearCase terminology such as VOB (Versioned Object Base, a public storage area for files) and views (operator private storage), is used throughout this section. Refer to the *ClearCase Introduction* document for both a more detailed description of ClearCase and an explanation of the terminology used. Refer to ClearCase's Introduction, Administrator, and Reference documentation for detailed explanations of ClearCase functionality.

ClearCase is a COTS software product used in ECS to perform source code management and build functions. It provides the staffs at ECS sites and Riverdale the capability to organize and store software in a software library, to control software changes and versions, and to assemble sets of software for release purposes. Specifically, ClearCase is used at the ECS Development Facility (EDF) to control access to custom code files; to control and log file changes; to perform builds of software and keep a record of the build's content (files, compiler, and other resources used).

The ClearCase view server and VOB server run on Linux-based hosts.

ClearCase is used to perform a variety of operator functions. The most frequently used functions are listed in Table 4.3.1-1.

Table 4.3.1-1. Common ECS Operator Functions Performed with ClearCase (1 of 2)

Operating Function	Command/Script or GUI	Description	When and Why to Use
Establish a View	Setview /GUI (View Menu, Set Option) selection	The command or the GUI selection activates a view and allows user access to controlled files.	(1) Used to activate a reproducible workspace for a developer for working with specific file versions and directories for a task (2) Used to assemble sets of software for release purposes
Checkout Software	Checkout/GUI (Checkout) selection	The command or the GUI creates a view private, modifiable copy of a file version.	Used when a developer/maintainer needs to modify an existing version of software.
Checkin Software	Checkin/GUI (Checkin) selection	The command or the GUI selection creates a permanent new version of a file.	Used when a developer/maintainer needs to return a modified file version to the ClearCase software library.

Table 4.3.1-1. Common ECS Operator Functions Performed with ClearCase (2 of 2)

Operating Function	Command/Script or GUI	Description	When and Why to Use
Perform software builds	Clearmake/GUI (Building menu)	(1) ClearCase build utility that automates the process of software builds (2) Facilitates derived object sharing (3) Creates a record of the build so that it can be repeated	Used when it's time to build, integrate and/or test developed/revised software.
Display the mount-point and storage directory of all VOBs on the system	Cleartool lsvob/GUI (Admin menu)	ClearCase utility that determines and displays default/specified information about all of the VOBs that have been established.	(1) Used to list one or more VOBs (2) Used to determine which VOBs are mounted (3) Used to determine which VOBs are private or public (refer to *ClearCase Reference Manual* for details)

4.3.1.1 Quick Start Using ClearCase

To invoke the ClearCase graphical user interface GUI from the command line prompt type:

/usr/atria/bin/xclearcase.

4.3.1.2 ClearCase Graphical User Interface

ClearCase has a Command Line Interface (CLI) and a GUI. The GUI enables execution of all the common functions and facilitates graphical examination of the version history of objects in VOBs. When ClearCase is invoked, a Transcript screen as shown in Figure 4.3.1-1 appears. The Transcript screen displays status of functions executed and displays warning and error messages. It automatically appears when the status of an activity needs to be displayed.

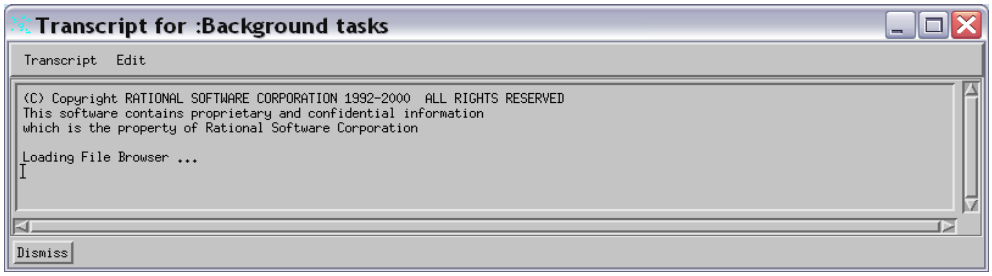

Figure 4.3.1-1. ClearCase Transcript Screen

4.3.1.2.1 Establish View

Operator access to versions of files in a VOB is facilitated by a view. When ClearCase is initiated, the operator is asked to select a view. Available views are displayed in the View Tag Browser Screen as shown in Figure 4.3.1-2. Select a view by highlighting the desired view and clicking the "Ok" button at the bottom of the screen.

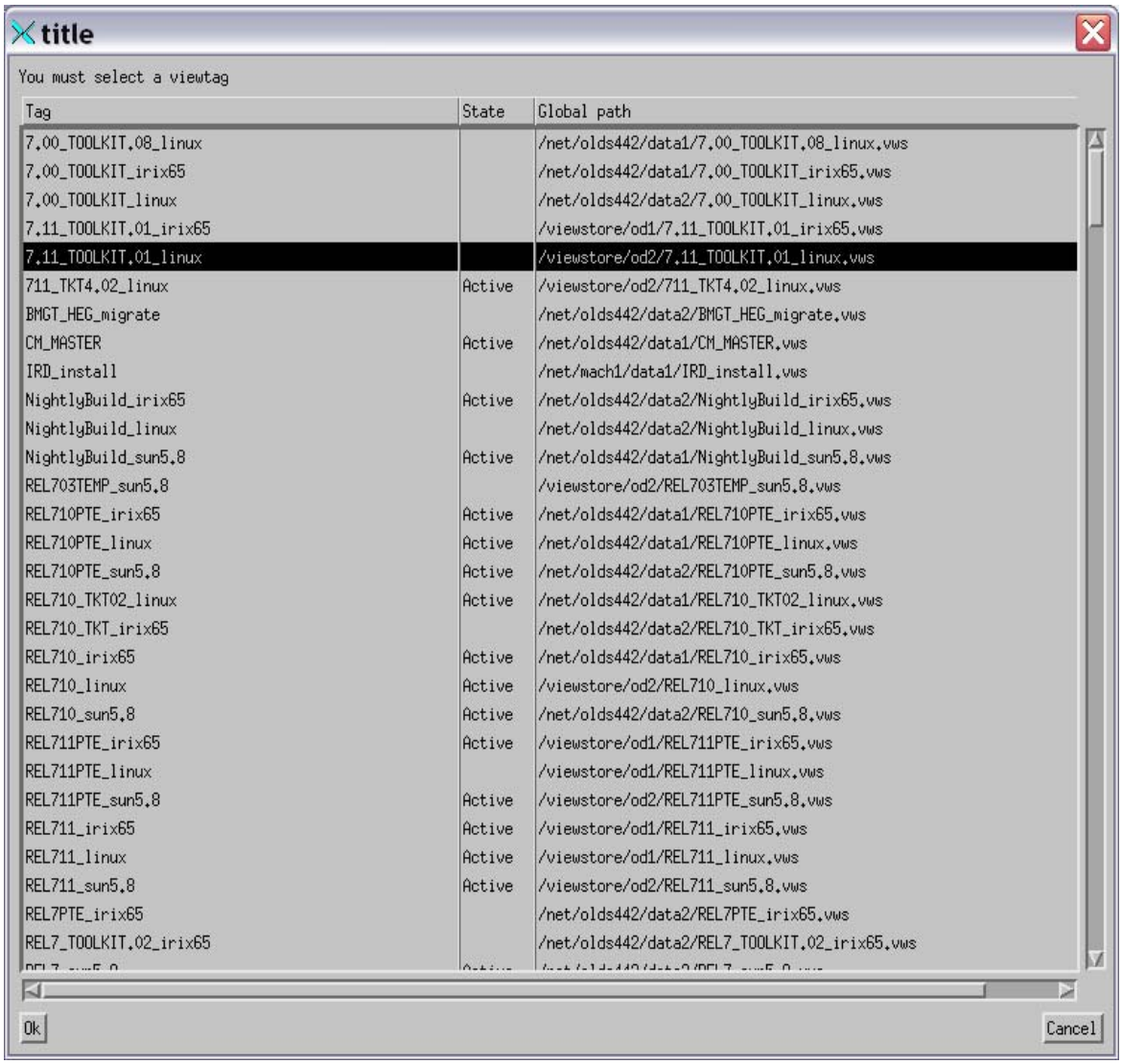

Figure 4.3.1-2. View Tag Browser Screen

After a View is selected the ClearCase File Browser screen, the main GUI screen, appears as shown in Figure 4.3.1-3. The File Browser screen displays the current directory name just below the toolbar and displays the contents of the directory in the space below the directory's name. A

variety of GUI-oriented functions can be initiated from this screen. Explanations of the menu bar and the toolbar items are provided in Chapter 3 of the ClearCase User's Manual.

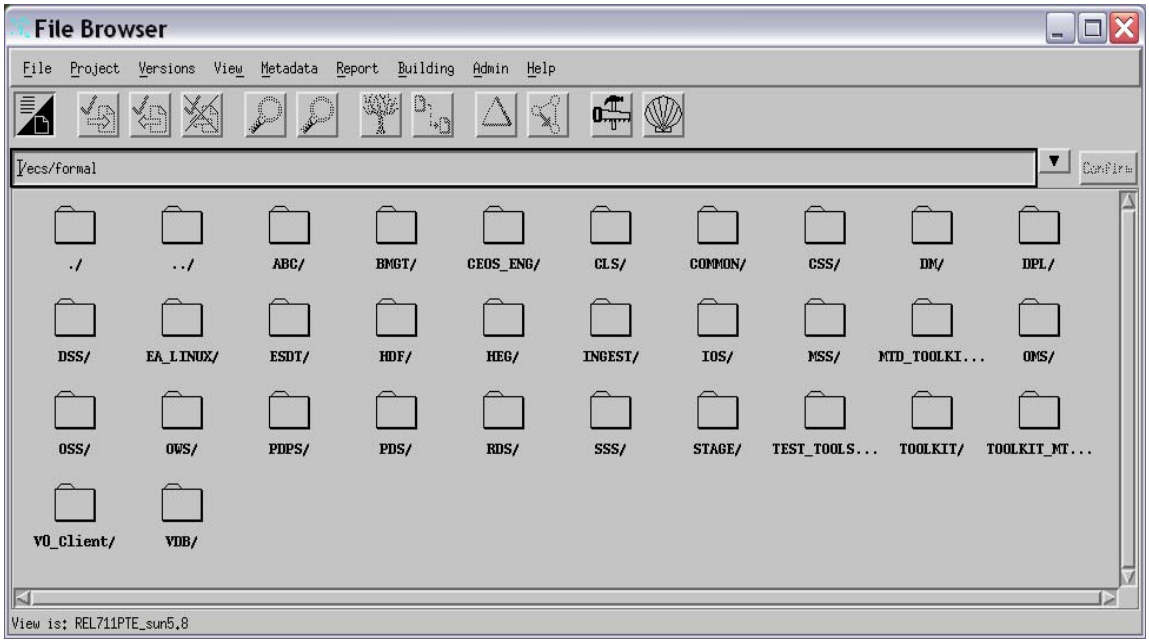

Figure 4.3.1-3. ClearCase File Browser Screen (Main Screen)

4.3.1.2.2 Checkout Software

Software file versions in a ClearCase VOB are in a read-only state. An operator must check a file version out of the VOB before any editing of the file version can be accomplished. Check out a file version by selecting the file and clicking the checkout icon on the toolbar. An alternate method is to select the file, click the Versions menu, then the Checkout option, then one of the "Reserved or Unreserved" options shown in Figure 4.3.1-4.

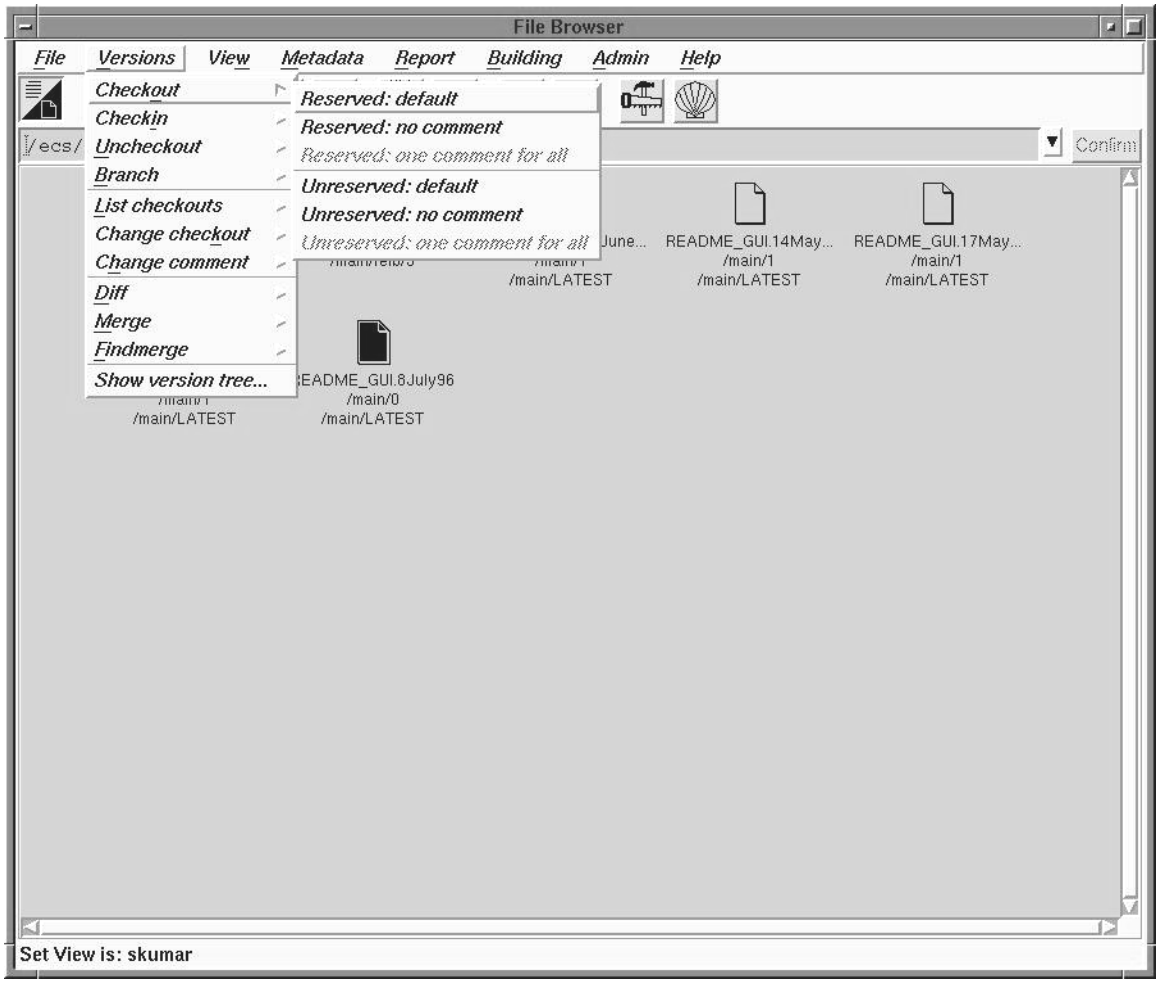

Figure 4.3.1-4. ClearCase File Browser Screen (Checkout Software)

If the operator is authorized and the view is set up to checkout files, then the checkout process continues and the ClearCase Prompt screen appears as shown in Figure 4.3.1-5. This screen gives the operator the opportunity to enter an explanation of why the file version is being checked out.

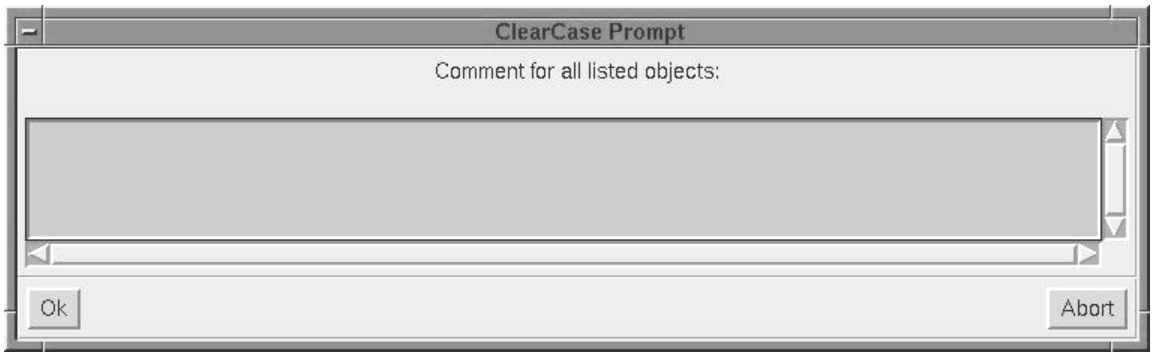

Figure 4.3.1-5. ClearCase Prompt Screen (Checkout Comment)

After appropriate comments are entered, click the "Ok" button and ClearCase adds the comments to the historical record for the file version. The File Browser screen reappears as shown in Figure 4.3.1-6 and it shows that the file version has been checked out. Note the added check mark for the README_GUI.8.July96, file. Addition of the check mark is an indication of a successful checkout.

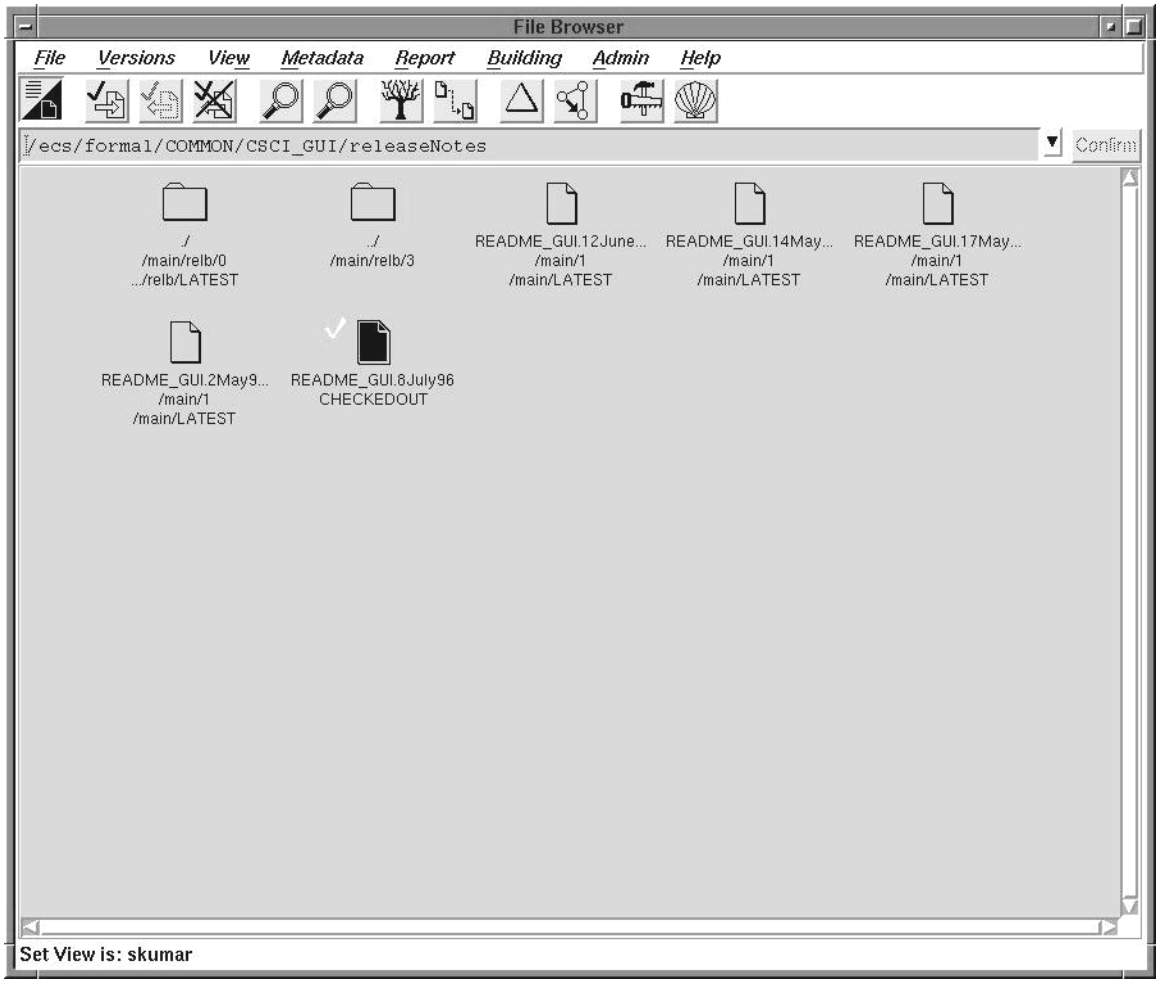

Figure 4.3.1-6. File Browser Screen (File Version Checked-Out)

To verify that the file version has been checked out on a branch, click the Vtree icon on the File Browser toolbar. This activates the Version Tree Browser and it displays a graphical image of the branching as shown in Figure 4.3.1-7. Note that the checked out file version has been placed on the main branch (/main) in the example below.

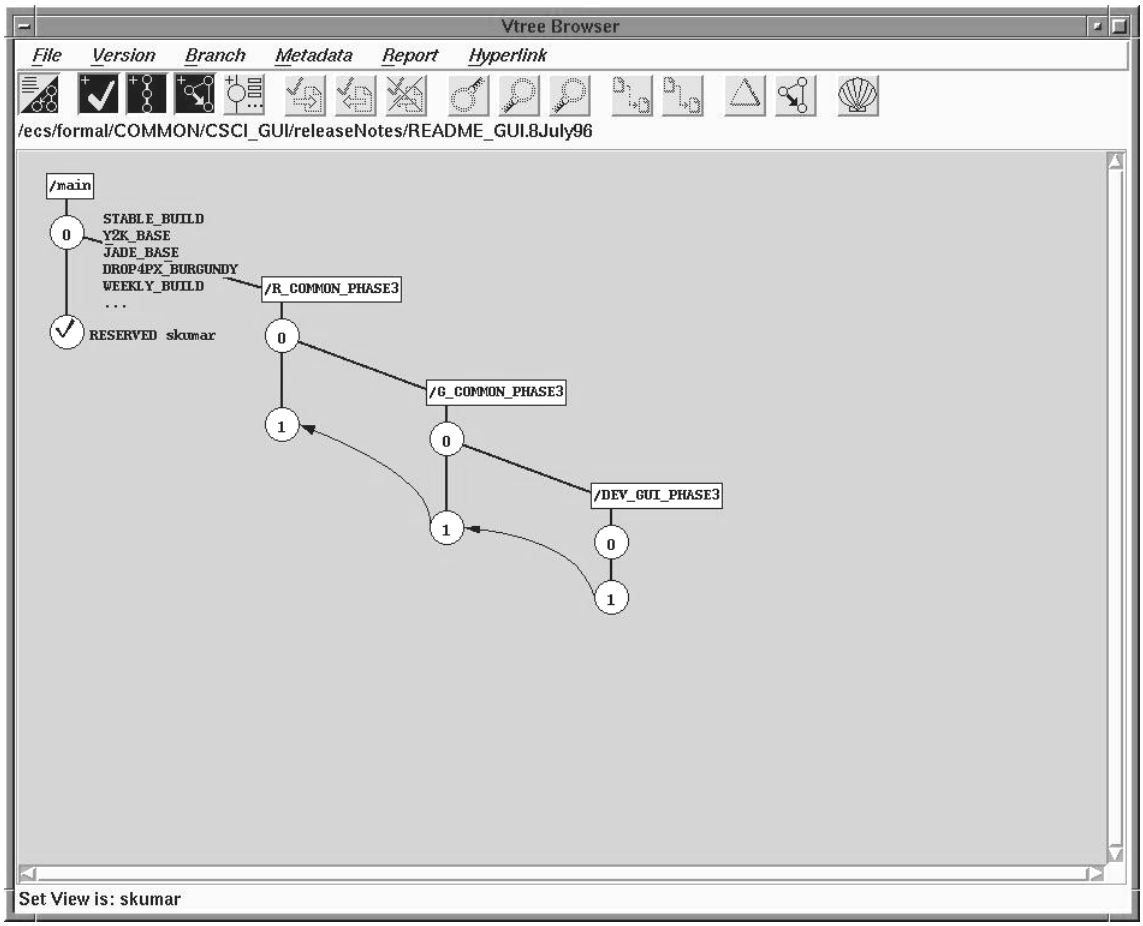

Figure 4.3.1-7. ClearCase Version Tree Screen

4.3.1.2.3 Checkin Software

A software file version checked out of the ClearCase library for editing must be checked in to the library for it to become a new version of the original file. Click the checkin icon on the File Browser toolbar to initiate the check-in process. A ClearCase Prompt box appears as shown in Figure 4.3.1-8 to facilitate the adding of comments at check in to the file version's record. Enter a comment and click the "Ok" button to continue or just click the "Ok" button to continue the check-in process.

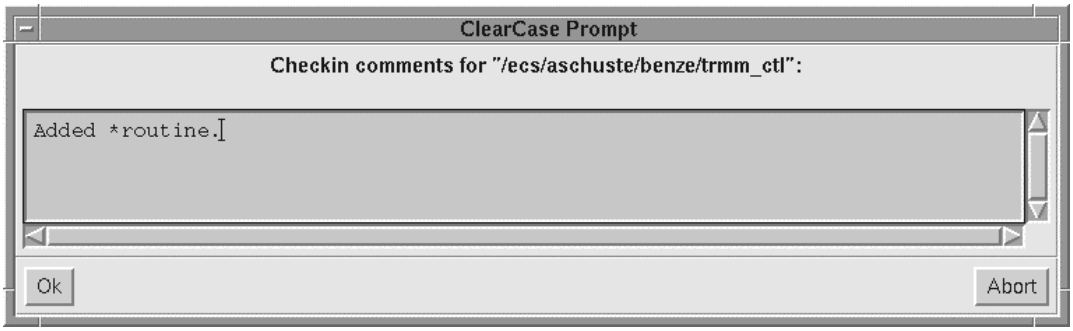

Figure 4.3.1-8. ClearCase Prompt Screen (Checkin Comment)

The File Browser screen reappears as shown in Figure 4.3.1-9 and it shows that the file version has been checked in. Note that the check mark that was next to the README_GUI.8July96 file has been removed. Removal of the check mark is an indication of a successful checkin.

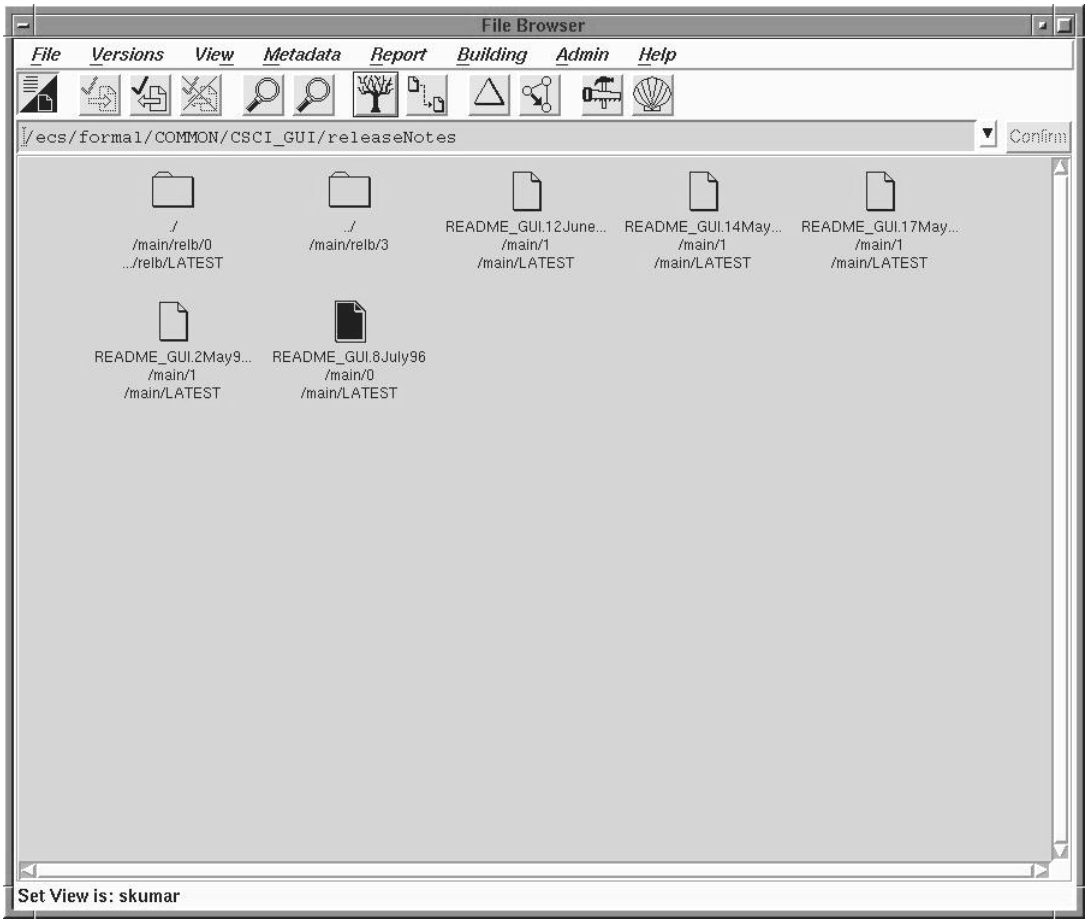

Figure 4.3.1-9. ClearCase File Browser Screen (File Checked-In)

4.3.1.2.4 Perform Build

The Building menu on the File Browser as shown in Figure 4.3.1-10 is used to produce derived objects. The Building menu is the GUI version of the command line interface build utility called clearmake. Reference the *ClearCase Introduction* and the clearmake section of the *ClearCase Command Reference* documents for information on the use of this capability.

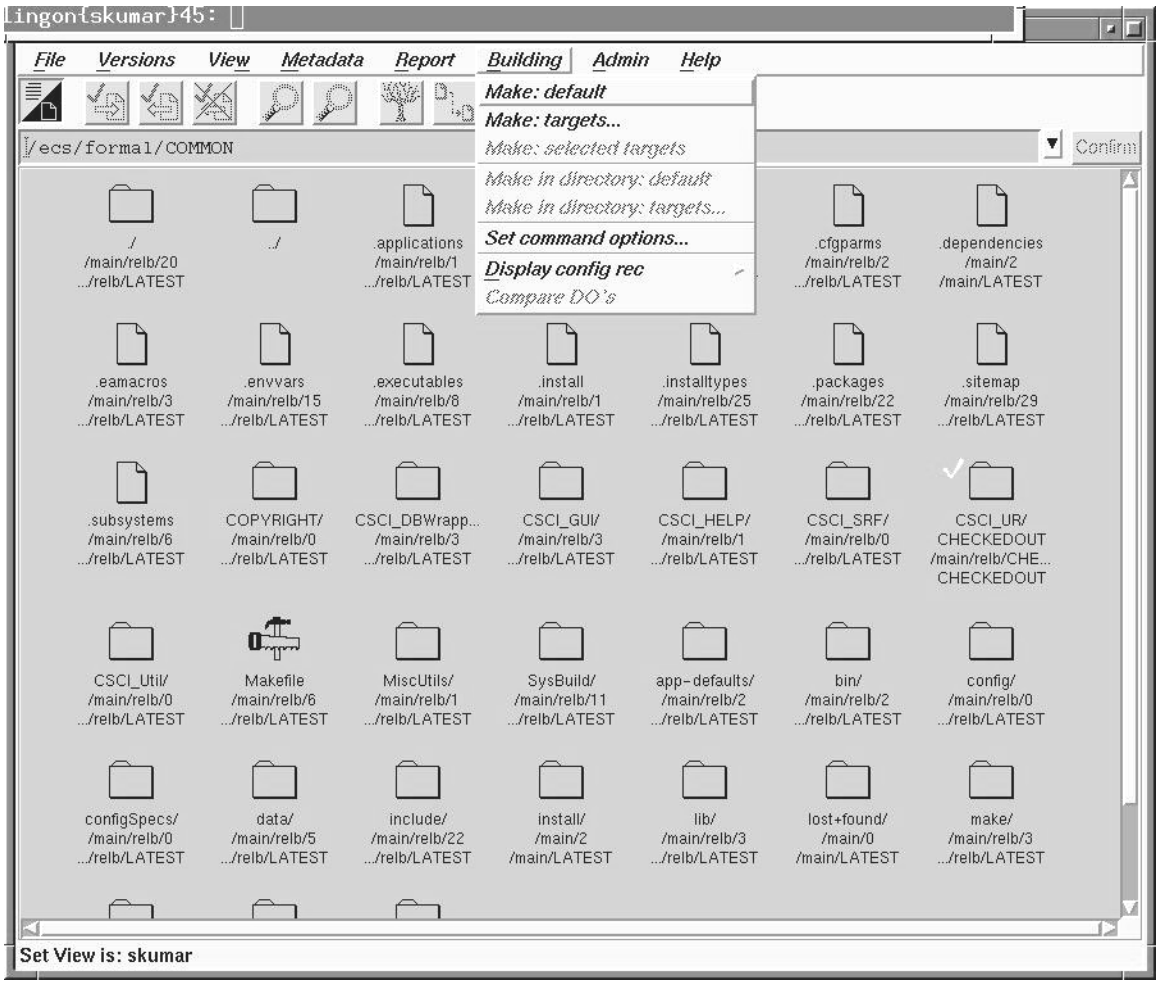

Figure 4.3.1-10. File Browser Screen (Build Menu)

4.3.1.3 Required Operating Environment

For all COTS packages, appropriate information on operating system environments, tunable parameters, environment variables, and a list of vendor documentation can usually be found in EEB's release notes for each product. Refer to the latest release notes for ClearCase posted on the ECS Baseline Information System web page at your local site.

4.3.1.4 Databases

ClearCase data is stored in VOBs and views. Reference the *ClearCase Administrator's Guide* for a detailed description of the ClearCase databases.

4.3.1.5 Special Constraints

None

4.3.1.6 Outputs

Reference the *ClearCase Command Reference* document for a description of the ClearCase outputs.

4.3.1.7 Event and Error Messages

ClearCase creates an event record for most of the processing activities that modify the VOB and stores it in the VOB database. These records are linked to the derived objects. These records provide a chronological event history for the objects. Reference the *ClearCase Reference Manual* for detailed information about logging of ClearCase events. The reference manual describes the contents of an event record, VOB objects that have event histories, and ClearCase operations that cause event records to be written.

ClearCase error messages indicate that a problem has occurred. Some errors are user correctable and others require correction by the operations staff. In both cases, ClearCase records error and status information in its log files. Reference the *ClearCase Reference Manual* for a description of the error logs, the ClearCase programs that use them, the error logs location, and their format.

4.3.1.8 Reports

None

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4.3.2 Microsoft® Access® EMD Change Manager (ECM) Configuration Change Request (CCR) Tool

There are two CCR tools, one for use in the Riverdale facility and one for use at LP DAAC. The LP DAAC version is used for LP DAAC internal change control, while the Riverdale version is used for the entire ECS program. The LP DAAC version was derived from the Riverdale version and provides a subset of features for LP DAAC use. Unless otherwise stated, the following describes the Riverdale version of the tool. For the LP DAAC version, simply exclude Procurement Type CCRs and the Stakeholders function.

The Access® CCR tool is a custom application specifically designed to serve as an efficient configuration management tool to facilitate change control against the ECS baseline. It generates and maintains records in a Microsoft® Access® application that describe what changes are to be applied to the operational system baseline configurations for the DAACs (LP DAAC, ASDC, NSIDC), VATC, PVC, and the EDF2 hosts at the ECS Development Facility (EDF) which are provided through the ECS Baseline Information System (EBIS). The CCR tool has created and approved 3082 CCRs and managed 8167 Engineering Change Orders (ECOs) electronically for ECS since January 1, 2005. Exported CCRs are conveyed by EBIS, and EBIS change tracking pages use embedded hyperlinks to reference them, signifying their importance to change control.

Inputs to the tool are created CCRs which get electronically circulated for Sponsorship, Stakeholder review, and Change Configuration Board (CCB) approval. The LP DAAC version does not include the Stakeholder review step. The tool is integrated with IBM® Lotus® Notes®. A feature of the tool is the recording of electronic signatures. At the time of signing, the date and time of the User's PC is recorded and their name. This is important for the change record.

Outputs from the tool are 4 PDF files, corresponding to the CCR cover sheet, the additional sheet, the Stakeholders sheet, and the Engineering Change Orders (ECO) sheet. Also, an HTML formatted file contains the four sheets in a single file. Any ECOs within approved CCRs then are used to modify the baseline with the use of the ClearCase® BLM tool. Open ECO reports are also an output of the tool to ensure ECOs are managed.

The following COTS software are prerequisites for the CCR Tool:

- Microsoft® Office® Access® 2003 (SP2 or higher)
- IBM® Lotus® Notes® 6.5 [Release 6.5.2 June 01, 2004] or higher
- Microsoft® Office® Word® 2003 (SP2 or higher)

4.3.2.1 Introduction

An introduction of the tool functionality is in order before proceeding with the actual User Instructions.

Approved, non-Procurement CCRs are available on EBIS from the following at the URLs:

http://pete/baseline/	(for Riverdale use only, primary repository)
http://ebis.gsfc.nasa.gov:10160/baseline/	(ESDIS only)
http://e4iil01u.ecs.nasa.gov:10160/baseline/	(LP DAAC only, previously EDC DAAC)
http://l4iil01.larc.nasa.gov:10160/baseline/	(ASDC only, previously LaRC DAAC)
http://n4iil01u.ecs.nasa.gov:0160/baseline/	(NSIDC only)

Timely coordination of the CCR and getting concurrences/approvals from affected offices is the primary goal of the ECM CCR tool and thereby the tool makes extensive use of the project's integrated email capability. Figure 4.3.2-1 on the next page shows the process from a high level. The diagram shows the email flow as a result of electronic signatures being applied as the CCR progresses.

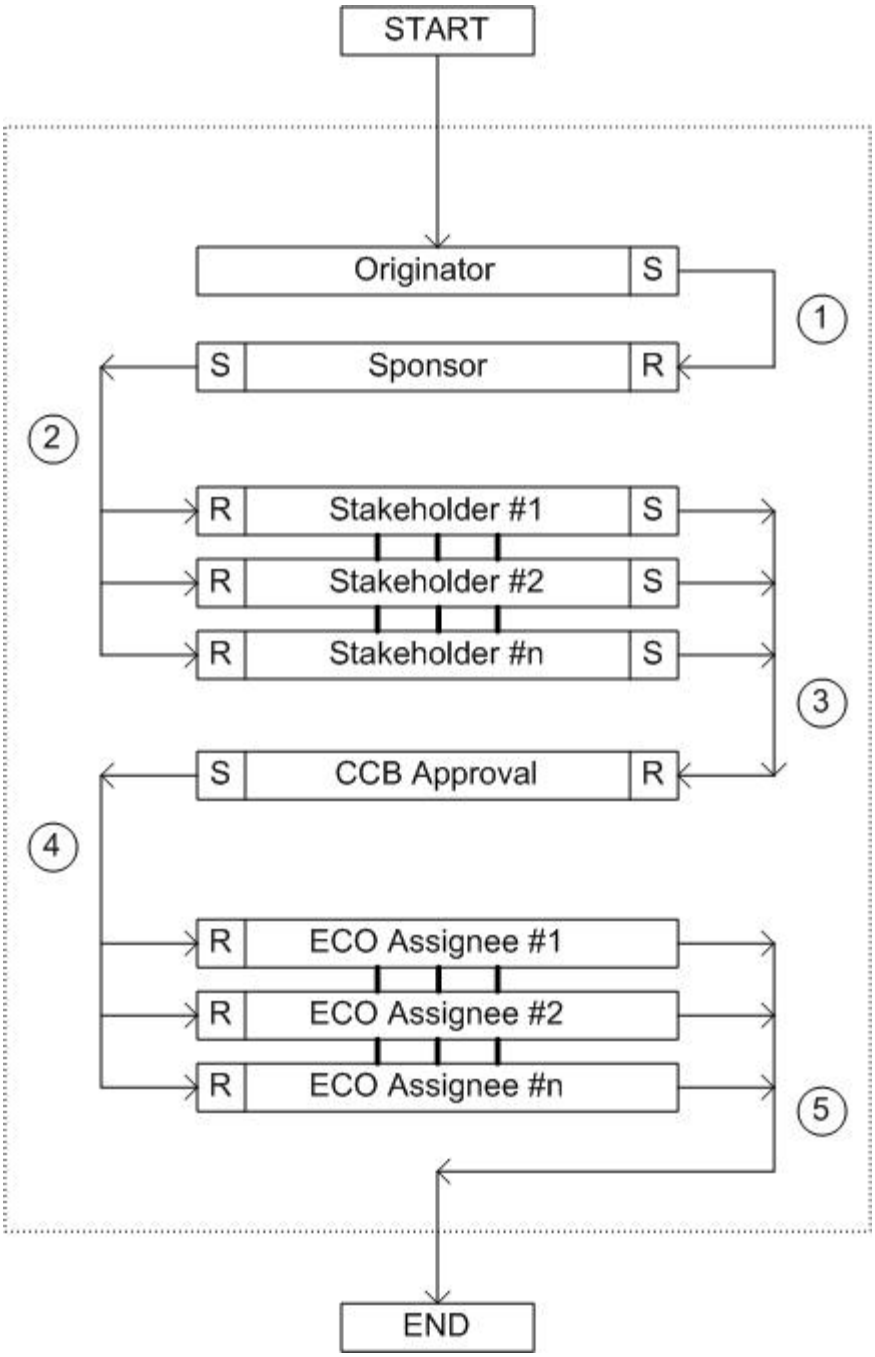


Figure 4.3.2-1. CCR Tool Flowchart

4.3.2.1.1 Pre-Approval Stage

The pre-approval stage occurs with an Originator completing the CCR, including the first sheet, the Supplementary Procurement Information sheet (in Procurement CCR only), the additional

sheet, and the Stakeholder sheet, and the associated ECOs. Just after the Originator electronically signs, an email will be constructed and **S**ent to the perspective Sponsors, indicated by the "Originator" box and the **S** in the box to the right. The **R** just the left of the Sponsors box indicates that the Sponsors **R**eceives the email notice from the Originator, and needs to review the CCR, and needs to apply their electronic signature.

When a Sponsor signs a CCR, the CCR process takes one of two paths:

- For non-Procurement CCRs, the Stakeholders have to review the CCR after the Sponsor signs and the Stakeholders will be sent email concurrently. The Stakeholder email list is generated from the check boxes that were marked by the Originator during the formation of the CCR. The Authorized Signature list provides those folks who may sign for each check.

- For Procurement CCRs, the Procurement POCs have to review the CCR after the Sponsor signs and they are emailed concurrently. The Procurement POCs email list is generated from the information entered on the Supplementary Procurement Information page of the CCR. Once all Procurement POCs have concurred on the CCR, the Stakeholders have to review the CCR next and are emailed concurrently. Note, if a Procurement POC nonconcurs on the CCR, the CCR is sent back to the Originator for revision.

4.3.2.1.2 Approval Stage

After a CCR is sponsored, all Stakeholders are concurrently emailed to notify them of a new CCR that needs to be reviewed. The CCR moves into this approval stage to allow all Stakeholders to review the CCR. Each Stakeholder must interact with the tool in order to agree or disagree. Stakeholders may provide comments should they choose. If at any time a significant change needs to be made to any information contained within the CCR, the CCR should be "modified." Once "modified," the CCR will need to be re-circulated for signatures. Only the Originator can "modify" the CCR.

The approval stage of the CCR consists of the CCB chairperson's signatures. The CCR is approved when the appropriate chairperson(s) signs. Once the CCR is approved, then all of the ECOs assignees are emailed. The Originator generated the ECOs earlier during the creation of the CCR.

4.3.2.1.3 Post-Approval Stage

The post-approval stage of the CCR process consists of the ECOs being worked. The CCR is considered closed when all of the ECOs have been worked. In order to close an ECO, the ECO assignee needs to interact with the tool to get credit for closure. Once the CCR is closed within the tool, all records are frozen. CCR Closure is the **END** of the change control process depicted in Figure 4.3.2-1 above. If after the CCR is approved, and the intent of the CCR needs to be changed because of something learned after the CCR approval, then the CCR should be revised. A revision means to CLONE the original CCR, and provide text within the CCR that clearly indicates the changes. The revised CCR then needs to be re-circulated for signatures, just like the originally processed CCR.

4.3.2.2 Tool Usage

Upon launch, the tool presents the copyright banner depicted in Figure 4.3.2-2 shown below. This only is shown for 6 seconds, then the Main Menu is shown.

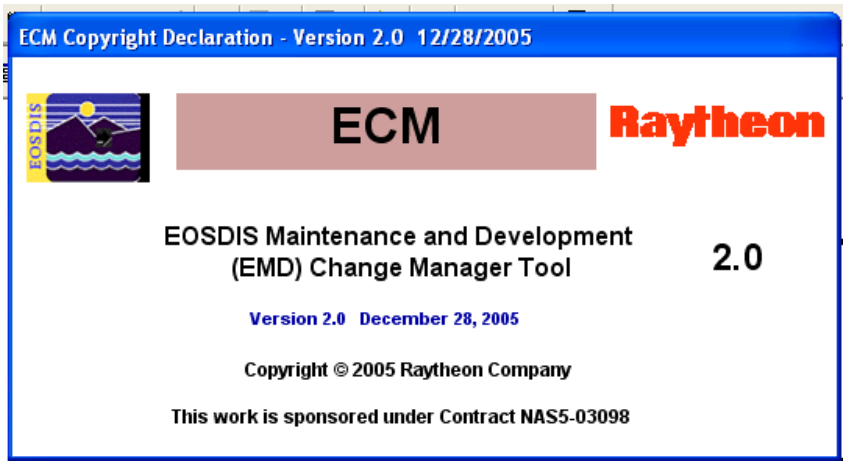


Figure 4.3.2-2. ECM Tool Copyright/Version Banner

The version and date are provided in the header of the Copyright Banner. The User's Guide will be kept current to the state of the tool's software. Currently the code version is "Version 2.0 and the User's Guide revision that goes with the code's 2.0 version is "Revision 2.0."

When the ECM banner page ends, the "EMD CCR Tool - Main Menu" will appear as shown in Figure 4.3.2-3. All functions of the CCR tool are available from this Main Menu.

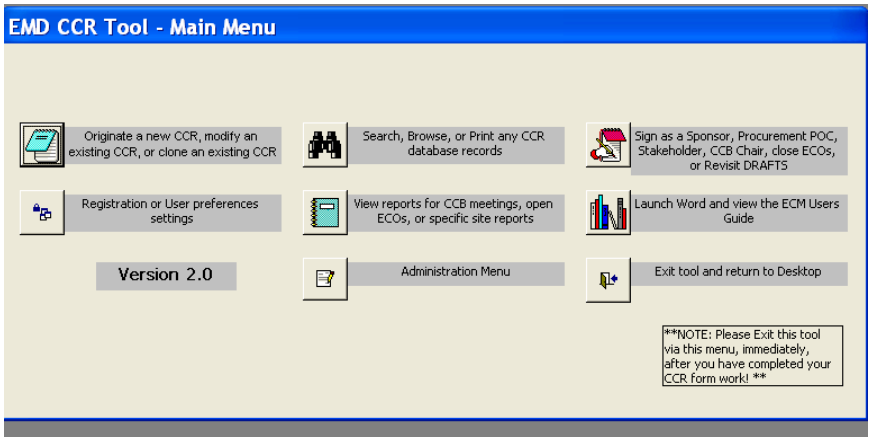


Figure 4.3.2-3. ECM Tool Main Menu

4.3.2.2.1 Password Changes

To change your password, when you know you old password, follow the following steps:

1) From the CCR Tool – Main Menu, go to the Microsoft® Access main menu bar at the top of the window. Select the "User and Group Accounts" icon, which is the right most icon. The icon is a profile of a right facing woman. If you hold you mouse cursor over the icon for a few seconds, a small text box will be displayed indicating "User and Group Accounts".

2) Select the icon.

3) A User and Group Accounts window will appear. You will only be able to change your own password. There are three tabs that appear within the window, with the "Users" tab showing as the default. Refer to Figure 4.3.2-4 below.

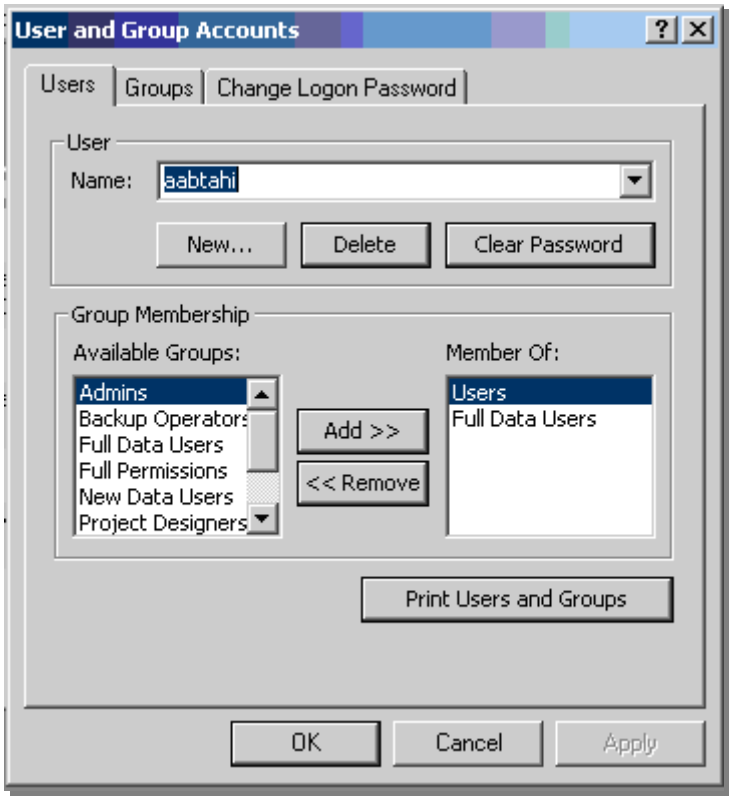


Figure 4.3.2-4. User and Group Accounts Window

4) Double click on the Name: that is shown, probably "aabtahi". Enter your name id, which is your first initial followed by up to 7 letters of your last name.

5) Next, select the "Change Logon Password" tab.

6) The “Change Logon Password” tab, when selected, will present a form by which you can modify your password.

7) Enter your current password into the “Old Password:” text box, then your new password in the “New Password:” text box and the “Verify:” text box. Refer to Figure 4.3.2-5.

Figure 4.3.2-5. Change Logon Password Tab

8) Then select the “OK” button at the bottom of the form for the change to take place.

9) An administrator can reset your password to “null”, should you forget your password. Then you may reset your password from “null” to whatever you like. Note that you do not enter any text at all into the “Old Password:” text box when your password has been reset to “null”. “Null” just means that the password does not have any characters.

4.3.2.2.2 Accessing the User’s Guide

The ECM CCR Tool Users Guide can be viewed and printed from the Main Menu (Figure 4.3.2-3). When selected, the icon showing stacked books will launch Microsoft® Word and display the User’s Guide.

4.3.2.2.3 Logging off the CCR Tool

A user should exit the tool and Microsoft® Access by selecting the "**Exit tool and return to Desktop tool**" button on the Main Menu window. It is positioned at the bottom right section of the Main Menu. Note, one should always navigate back to the Main Menu and exit the CCR tool using the **Exit tool and return to Desktop** button." Please do not exit any other way. Exiting the tool via the aforementioned button will properly close the ECM CCR Tool and Microsoft® Access and leave you at your Desktop. Also, always log in, perform your work, then log out of the tool when finished.

4.3.2.3 CCR Creation, Draft, Modify, and Clone Functions

Configuration Change Requests (CCR) are used to gain approval for additions, modifications, and deletions of configuration control items in the ECS baseline and configuration control items in the EDF. This section will cover how to create and modify a CCR.

4.3.2.3.1 CCR Creation

After logging into the CCR tool, the CCR tool's Main Menu is eventually displayed as shown in Figure 4.3.2-6 below. All CCR process activity is initiated from the Main Menu.

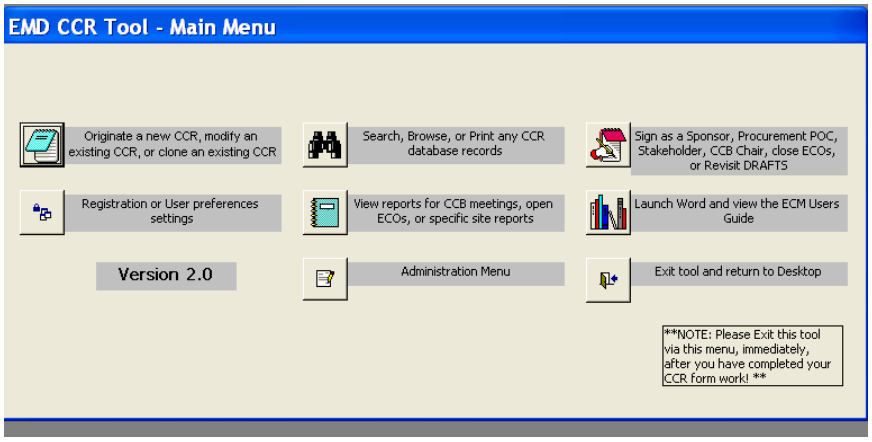


Figure 4.3.2-6. CCR Tool Main Menu

In order to create a CCR, either as a "Draft" or for submission, select the "**Originate a new CCR - - -**" button. It is the first button in the upper left section of the "**EMD CCR Tool – Main Menu**" window. Selecting this button will launch the CCR Creation Menu window shown below in Figure 4.3.2-7. There are four possible actions in this menu:

1) Create a new CCR – use this button to create a new CCR from scratch.
2) Modify an existing CCR – use this button when you need to modify a CCR that has not yet been approved. Note, when you modify a CCR, any electronic signatures present in a

CCR at this point will be removed and the process starts over for this CCR. This ensures that any and all changes are reviewed by those that signed the CCR before the change was made.

3) Clone an existing CCR – use this button when you need to revise an approved CCR or when you want to create a CCR with a new CCR number using an existing approved CCR as a basis.

4) Return to main menu – use this button when you want to leave the CCR Creation/Edit Menu and return to the tool's Main Menu.

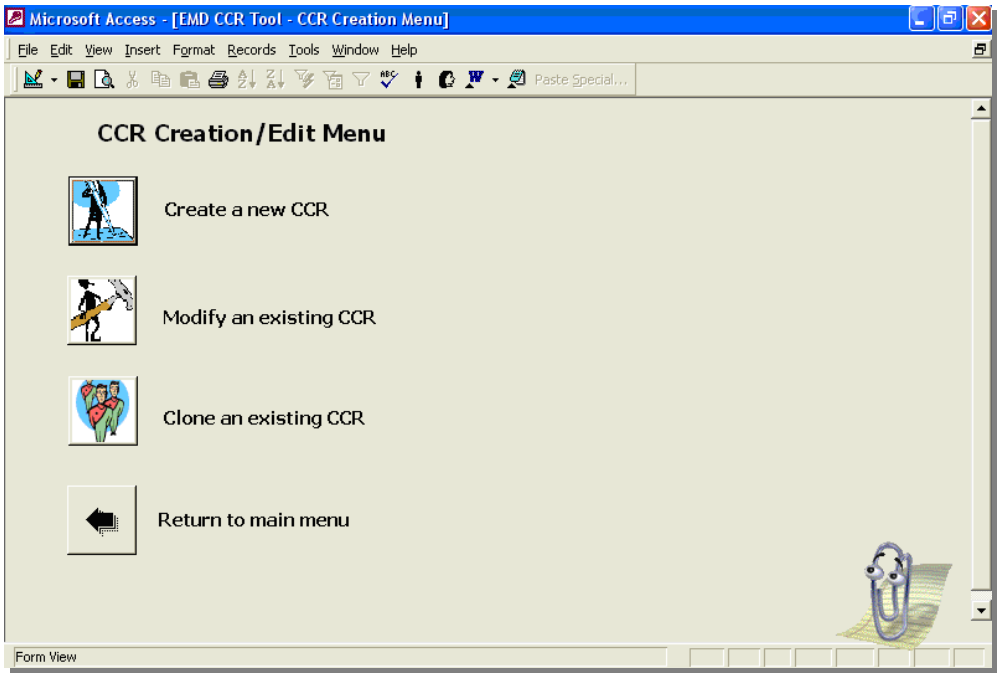


Figure 4.3.2-7. CCR Creation Menu

Clicking the **Create a new CCR** button will initiate the CCR creation process. The CCR tool will automatically display the forms that are required for the CCR based on the user's input. The first form to be displayed will be the Main CCR Form Sheet.

4.3.2.3.2 Main CCR Form Sheet

The first form that is displayed is the CCR Form and it is shown in Figure 4.3.2-8 below. The first seven fields: "**1. Originator:**", "**2. Log Date:**", "**3. CCR #:**", "**4. Rev:**", "**5. Telephone:**", "**6. Rm #**", and "**7. Org:**" are automatically filled by the CCR tool. The remainder of the fields is to be completed by the CCR originator.

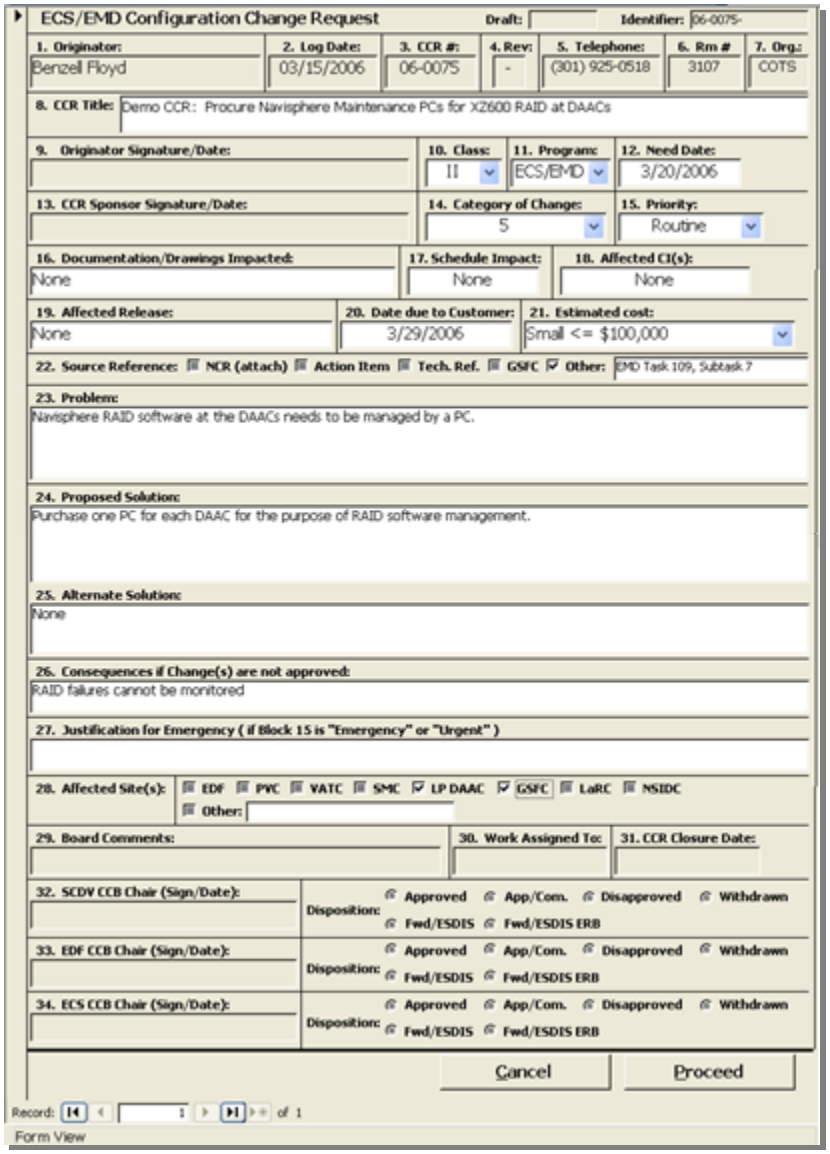

ECS/EMD Configuration Change Request
Draft:
Identifier: 06-0075-
1. Originator: Benzell Floyd
2. Log Date: 03/15/2006
3. CCR #: 06-0075
4. Rev: -
5. Telephone: (301) 925-0518
6. Rm # 3107
7. Org.: COTS
8. CCR Title: Demo CCR: Procure Navisphere Maintenance PCs for XZ600 RAID at DAACs
9. Originator Signature/Date:
10. Class: II
11. Program: ECS/EMD
12. Need Date: 3/20/2006
13. CCR Sponsor Signature/Date:
14. Category of Change: 5
15. Priority: Routine
16. Documentation/Drawings Impacted: None
17. Schedule Impact: None
18. Affected CI(s): None
19. Affected Release: None
20. Date due to Customer: 3/29/2006
21. Estimated cost: Small <= $100,000
22. Source Reference: NCR (attach) Action Item Tech. Ref. GSFC Other: EMD Task 109, Subtask 7
23. Problem: Navisphere RAID software at the DAACs needs to be managed by a PC.
24. Proposed Solution: Purchase one PC for each DAAC for the purpose of RAID software management.
25. Alternate Solution: None
26. Consequences if Change(s) are not approved: RAID failures cannot be monitored
27. Justification for Emergency (if Block 15 is "Emergency" or "Urgent")
28. Affected Site(s): EDF PVC VATC SMC LP DAAC GSFC LaRC NSIDC Other:
29. Board Comments:
30. Work Assigned To:
31. CCR Closure Date:
32. SCDV CCB Chair (Sign/Date):
33. EDF CCB Chair (Sign/Date):
34. ECS CCB Chair (Sign/Date):
Disposition: Approved App/Com. Disapproved Withdrawn Fwd/ESDIS Fwd/ESDIS ERB
Cancel
Proceed
Record: 1 of 1
Form View

Figure 4.3.2-8. CCR Form

The forms used to create a CCR are determined by the "Category of Change" value that is selected in field # 14. In this example, the "Category of Change" value is "5" (for Procurement).

So a Procurement type CCR is being created. All of the white background fields need to be completed by the user. Cutting and pasting text files can be performed when entering data.

Fields 10, 11, 14, 15, and 21 have drop down menus, which constrain the entry that may be entered. Field 22, *Source Reference*, and field 28, *Affected Sites*, have check boxes. Check the appropriate boxes. Note, if "Other" is checked in field # 22 or field # 28, you must enter the name of the source/Affected Site name respectively in the box beside "Other".

When the fields are completed, select the "**Proceed**" button. Note, if any required fields have not been populated, then a message from the Office Assistant will appear, stating the field that needs some text. Simply go back onto the form and complete the missing field. If everything is in order, clicking the Proceed button will take you to the next form. The next form to be displayed is determined by the value in field #14, the "Category of Change field." If the value is a number other than "5," then the Additional Sheet form (Section 4.3.2.3.2.2) is displayed next. If the value is "5," then the Supplementary Procurement Information form (Section 4.3.2.3.2.1) is displayed, next.

4.3.2.3.2.1 Supplementary Procurement Information

The Supplementary Procurement Information sheet is the next sheet to be displayed if the CCR is a procurement type CCR. The Supplementary Procurement Information sheet holds the specific procurement information and the name of the Bill of Material (BOM) file that is associated with the CCR. The Supplementary Procurement Information sheet is displayed below in Figure 4.3.2-9.

Some fields are automatically populated by the CCR tool, but the information in the white boxes on the form needs to be entered by the user. Fields' value criteria are as follow: Field # 5, "Not to Exceed" must be greater than zero. Field # 6, "On Dock Need Date" must have a date entered. Field number 8, Sub Task Lead, must have a name selected from the pull-down menu or the word, "NoOne," entered in the Sub Task Lead's box.

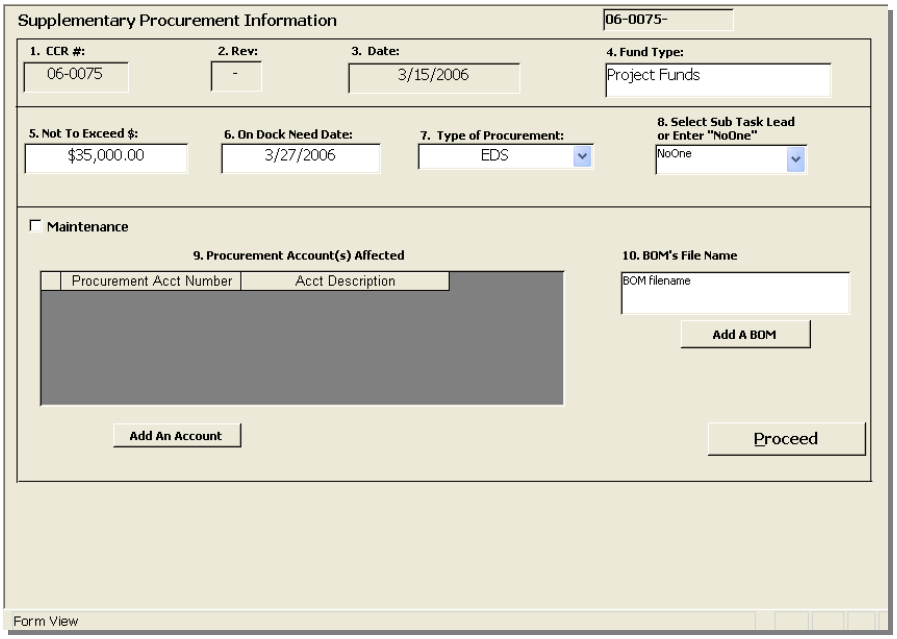


Figure 4.3.2-9. Supplementary Procurement Information form

Every Procurement type CCR must have at least one Procurement Account entered. To enter an account number, click the Add Account button and the Add Procurement Account window is displayed as shown in Figure 4.3.2-10 below.

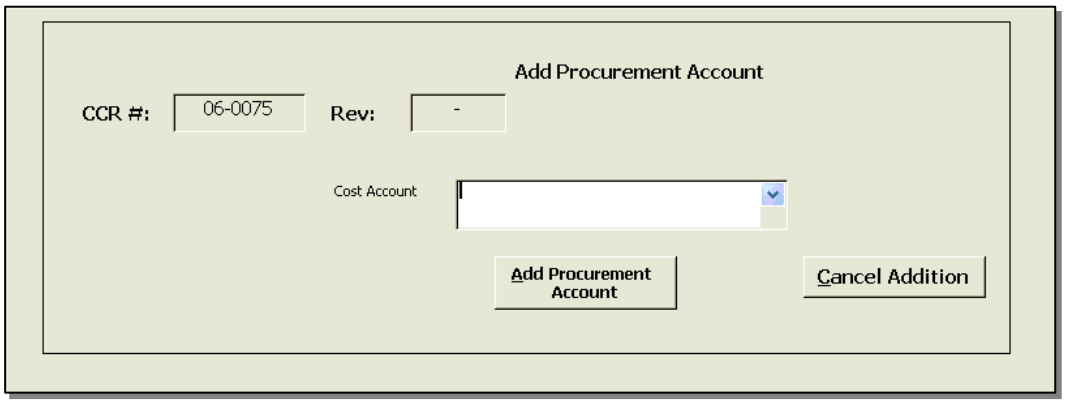


Figure 4.3.2-10. Add Procurement Account Window

On the Add Procurement Account window, click the pull-down on the Cost Account field and a list of valid Cost Accounts are displayed as shown in Figure 4.3.2-11.

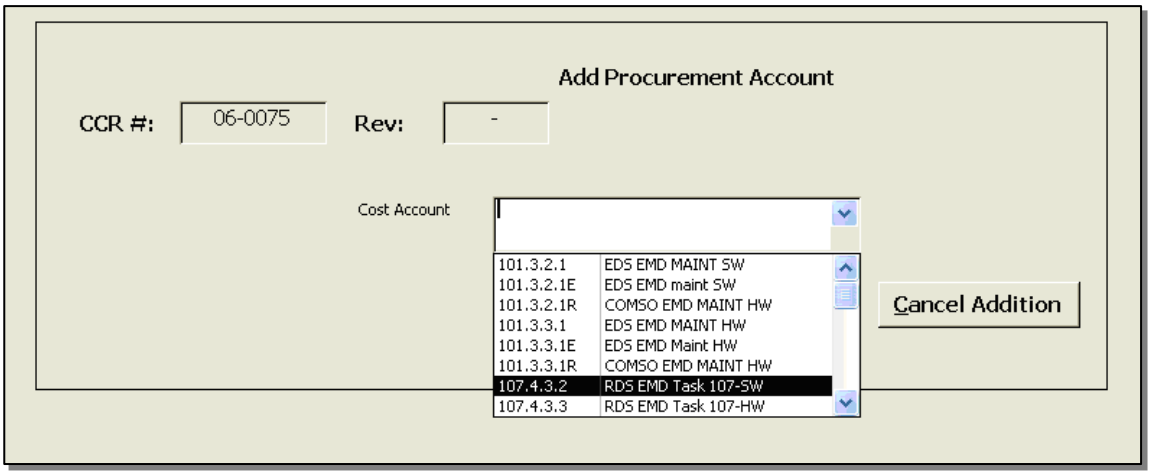


Figure 4.3.2-11. Cost Accounts List

Select the appropriate account from the pull-down menu and the account number will be displayed in the Cost Account field as shown in Figure 4.3.2-12.

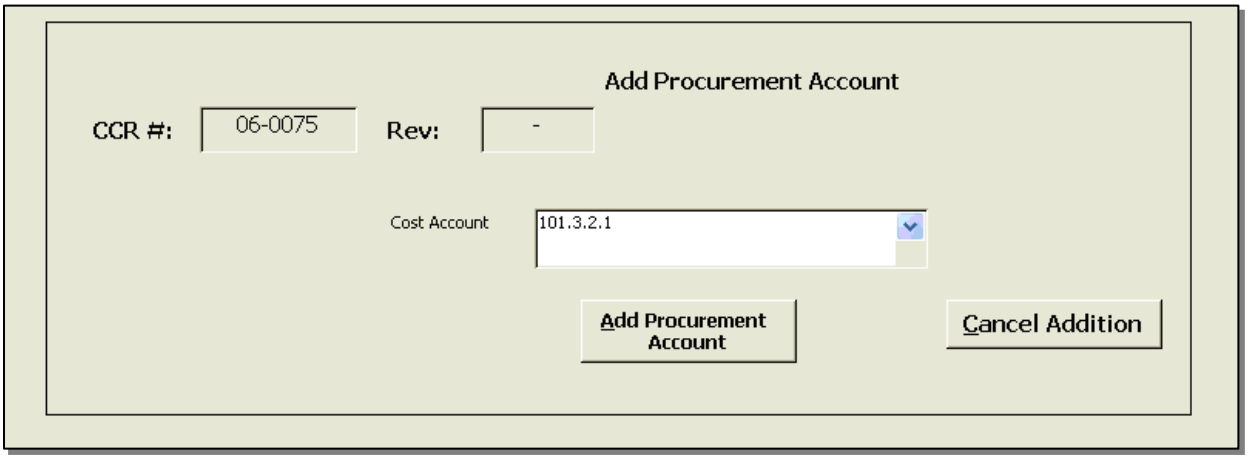


Figure 4.3.2-12. Cost Account Number Selected

Click the "Add Procurement Account button and the account is added to the Supplementary Procurement form as shown in Figure 4.3.2-13.

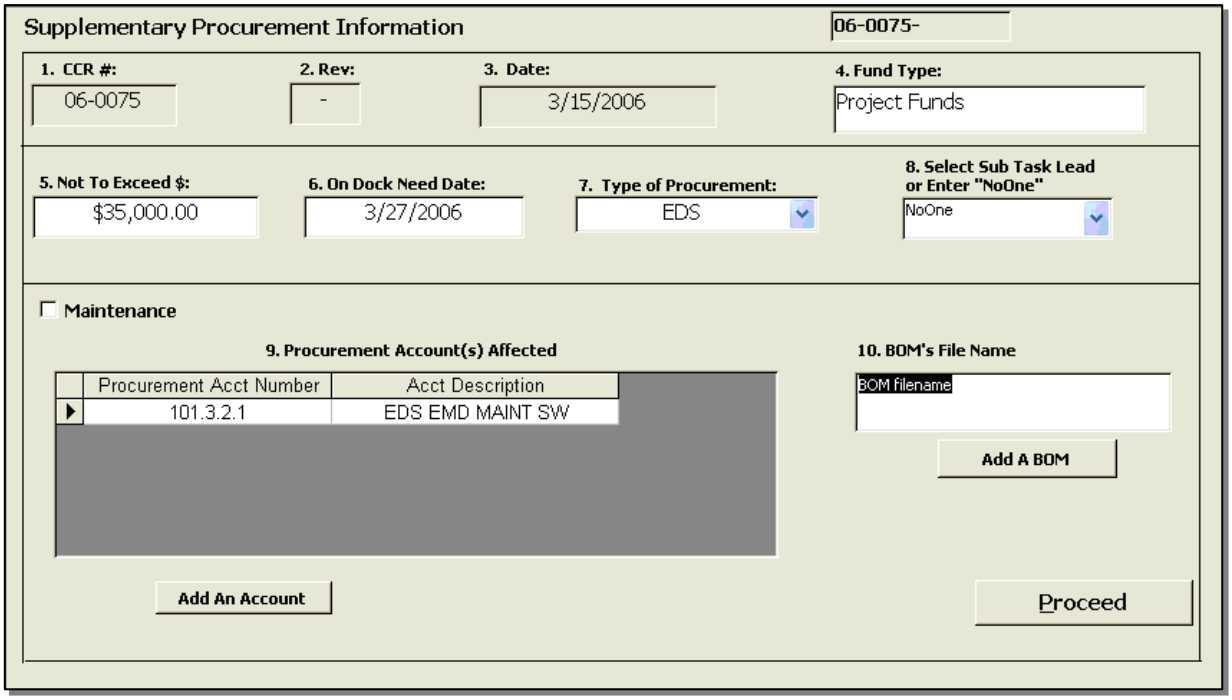


Figure 4.3.2-13. Account Number Added

Each Procurement type CCR has to have a Bill of Material (BOM) attached for review by the Sponsor, Procurement POCs, Stakeholders and CCB Chairpersons. Click the "Add A BOM" button and the Procurement BOM Snapshot window is displayed as shown in Figure 4.3.2-14.

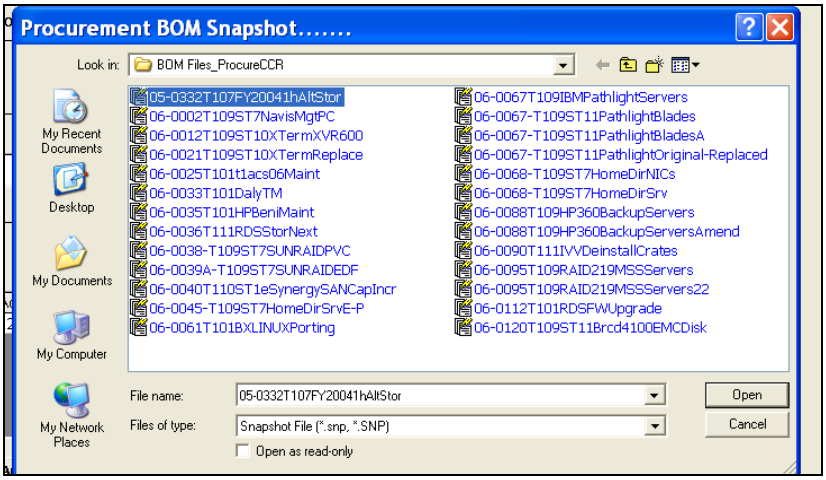


Figure 4.3.2-14. BOM Files

Select the BOM file that is associated with the CCR that you are working on and then click the Open button on the Procurement BOM Snapshot window. The BOM file information should now be displayed in the BOM's Filename box as shown in Figure 4.3.2-15.

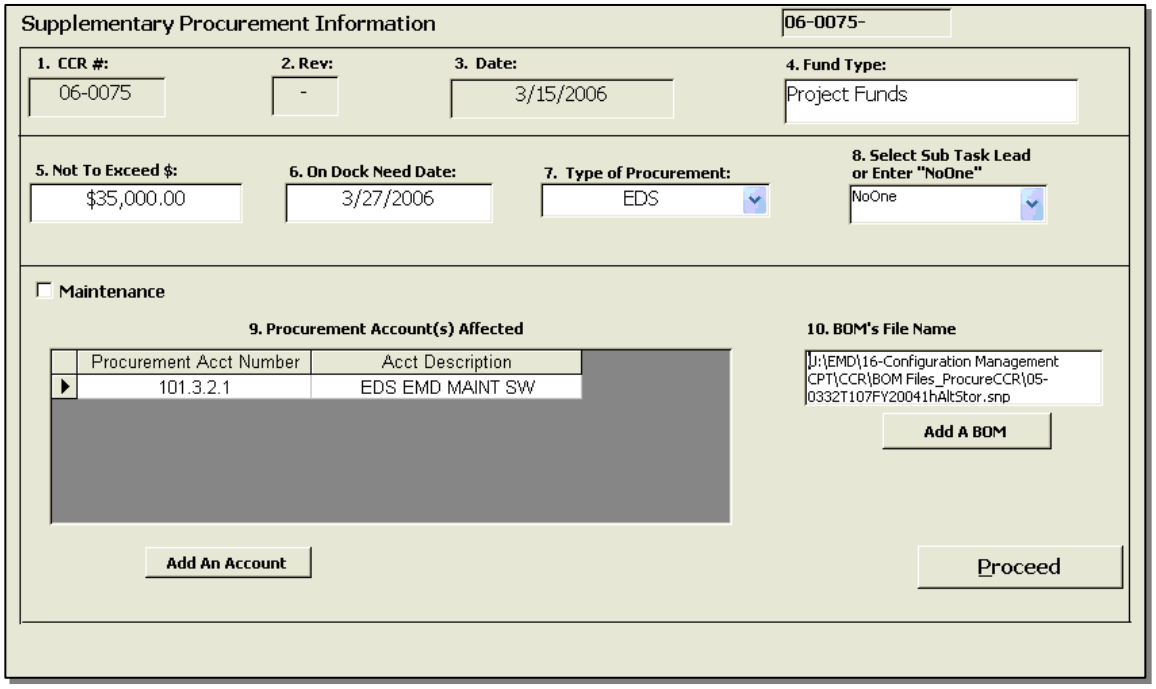


Figure 4.3.2-15. BOM file Added

Once the Supplementary Procurement Information sheet is completed, click the Proceed button. If any of the required fields are not completed, the CCR tool will provide an informative message and remain on the Supplementary Procurement Information form until you complete the entry or entries. If all required fields are completed, the CCR tool will take you to the Additional Sheet form.

4.3.2.3.2.2 Additional Sheet

The Additional Sheet is used to hold information that would not fit on the CCR Form page, information that provides further explanation for the information on the CCR Form page, or brief installation instructions. The Additional Sheet form is displayed in Figure 4.3.2-16.

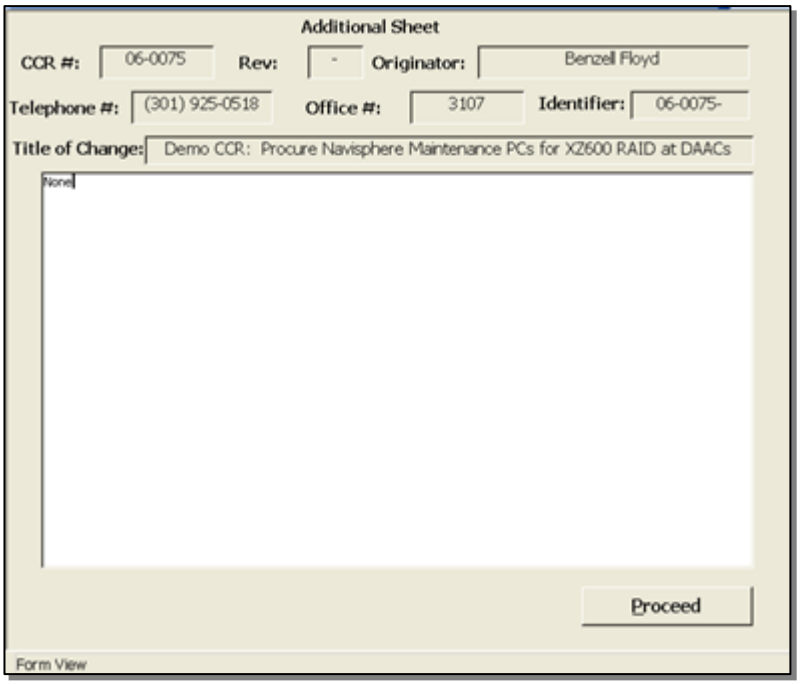


Figure 4.3.2-16. Additional Sheet Form

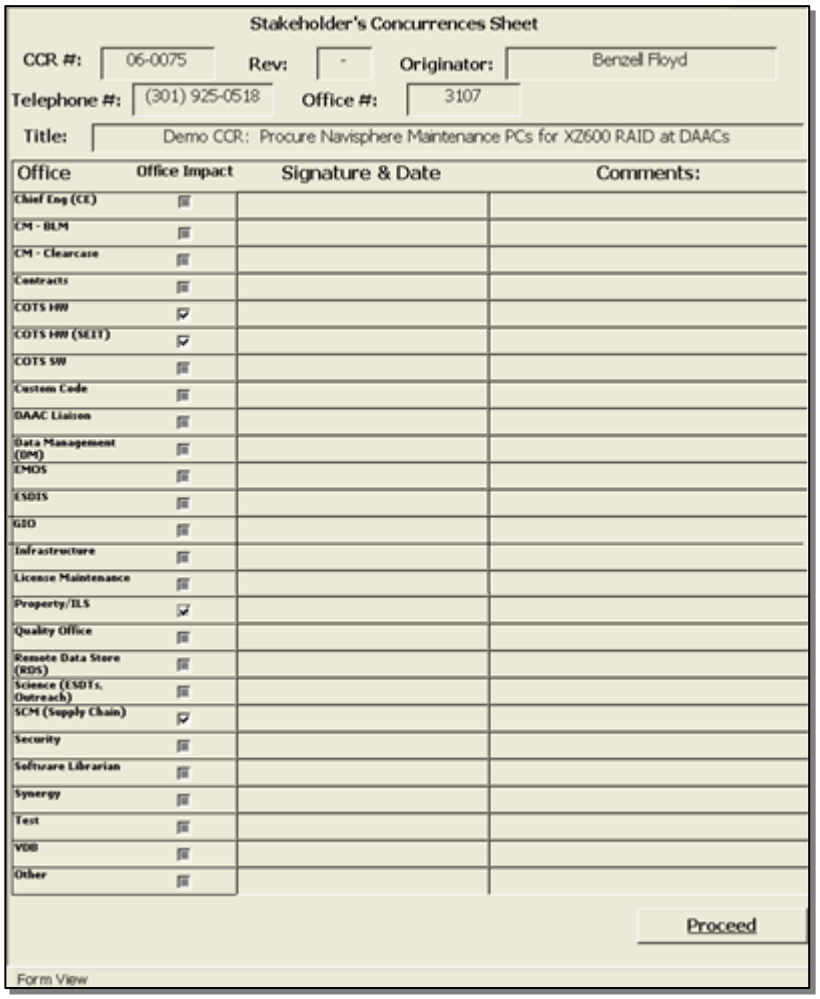
If there is no additional information to be entered, enter "None" in the white space.

Note: Place lengthy installation instructions in a separate file (attachment) and make reference to that file's name and location (usually L:\CCR_Attachment\<CCR Number>) in the white space on the Additional Sheet page.

Once you are satisfied with the entry, select the "**Proceed**" button to continue. Once the Proceed button is selected, the CCR tool moves to the Stakeholders Concurrences Sheet.

4.3.2.3.2.3 Stakeholder's Concurrences Sheet

The Stakeholder's Concurrences Sheet is displayed after the Additional Sheet is removed. The Stakeholder's Concurrences Sheet is used to show the Offices that may be impacted by the solution being proposed on the CCR and to document the Offices' concurrences. The Stakeholder's Concurrences Sheet is shown in Figure 4.3.2-17. The CCR header information is automatically filled in by the CCR tool. Select the boxes for the offices that will be impacted by the CCR. You must select at least one office.



Stakeholder's Concurrences Sheet

CCR #: 06-0075 Rev: - Originator: Benzeil Floyd

Telephone #: (301) 925-0518 Office #: 3107

Title: Demo CCR: Procure Navisphere Maintenance PCs for XZ600 RAID at DAACs

Office	Office Impact	Signature & Date	Comments:
Chief Eng (CE)	☐		
CM - BLM	☐		
CM - Clearcase	☐		
Contracts	☐		
COTS HW	☑		
COTS HW (SEIT)	☑		
COTS SW	☐		
Custom Code	☐		
DAAC Liaison	☐		
Data Management (DM)	☐		
EMOS	☐		
ESDIS	☐		
GIO	☐		
Infrastructure	☐		
License Maintenance	☐		
Property/ILS	☑		
Quality Office	☐		
Remote Data Store (RDS)	☐		
Science (ESDTs, Outreach)	☐		
SCM (Supply Chain)	☑		
Security	☐		
Software Librarian	☐		
Synergy	☐		
Test	☐		
VDB	☐		
Other	☐		

Proceed

Form View

Figure 4.3.2-17. Stakeholders' Concurrences Sheet

After the applicable impact offices have been selected, select the **Proceed** button to move to the last page of the CCR Form, the Engineering Change Order (ECO) Sheet.

4.3.2.3.2.4 Engineering Change Orders (ECOs) Sheet

The Engineering Change Order Sheet is used to describe the tasks that have to be completed for implementation of the CCR's solution. There must be at least one ECO on each CCR. Figure 4.3.2-18 shows the starting window for the ECO Sheet.

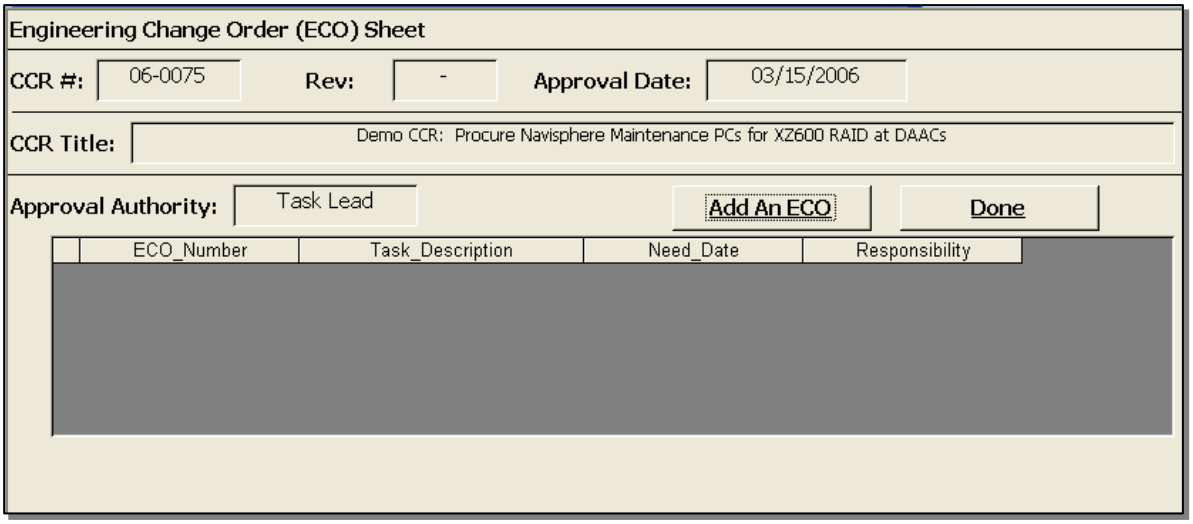


Figure 4.3.2-18. Starting Window for the ECO Sheet

To enter an ECO, click the **Add An ECO** button. The CCR tool will then display the "Add An ECO" as shown in Figure 4.3.2-19. The ECO number field will be filled in by the CCR tool. The CCR originator must filled in the remaining fields: **Task Description** {summarize the action to be completed; use action verbs, for example, install software, remove server, etc.; also include details like location of files, machine name, software to be replaced, etc.}. **Responsibility** {Select the individual or the organization that will be responsible for completing the task). **Need Date** {Enter the date that action is to be completed.} Example entries for these fields are shown in Figure 4.3.2-19.

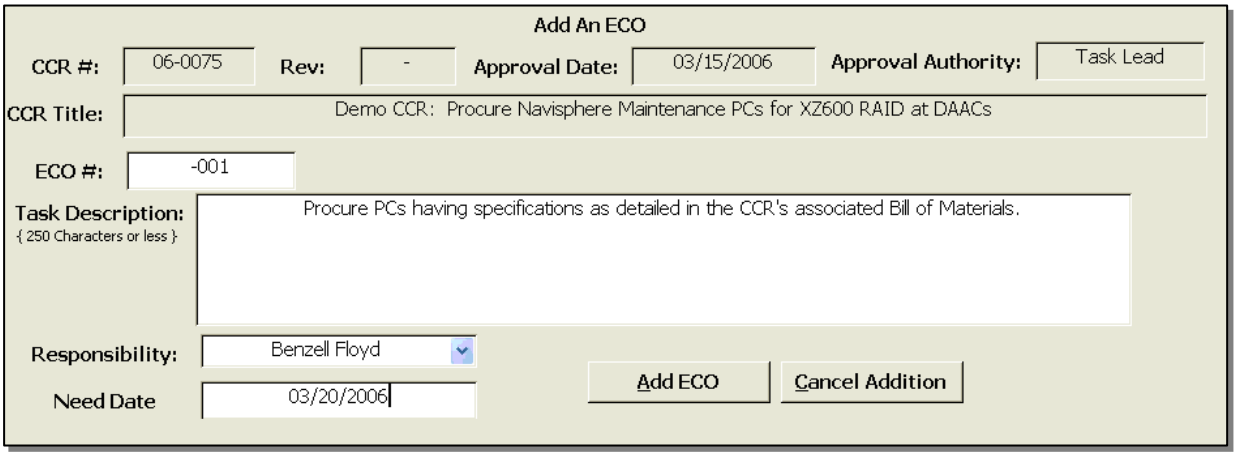


Figure 4.3.2-19. Completed ECO Entries

After all fields are completed, click the **Add ECO** button to store the ECO. After the ECO is stored, the CCR tool moves back to the initial ECO window. The added ECO is now displayed as shown in Figure 4.3.2-20. If there are other ECOS to be added, select the **Add An ECO** button again and repeat the aforementioned ECO process.

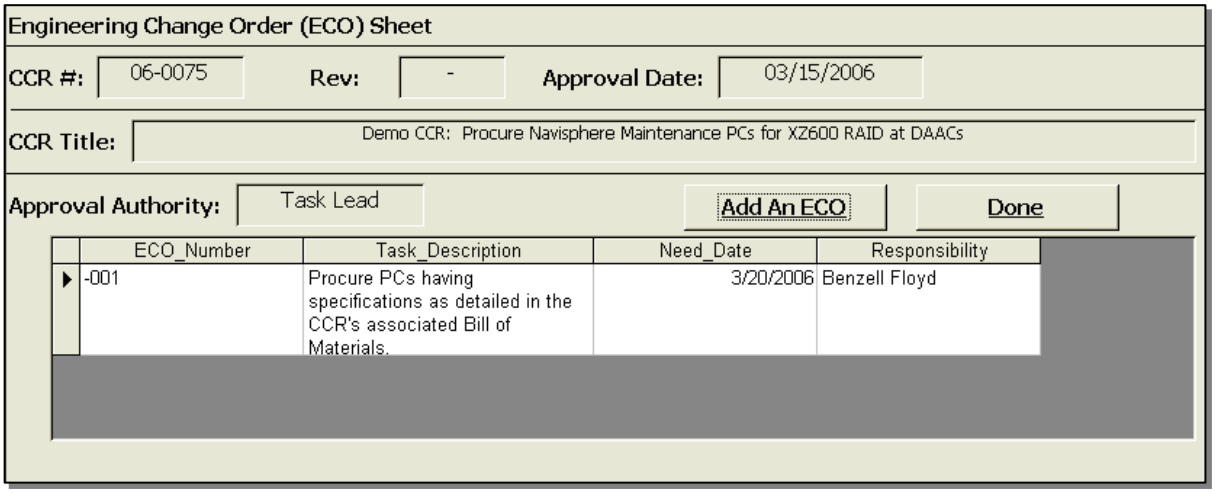


Figure 4.3.2-20. Added ECO Displayed

All of the added ECOs will be displayed will be displayed as shown Figure 4.3.2-21. Once all of the ECOs have been added, select the **Done** button to continue the CCR creation process.

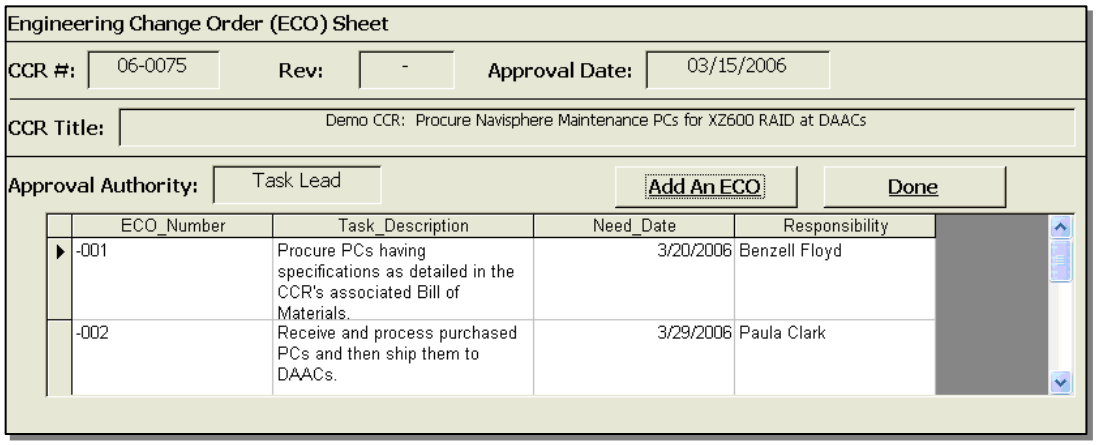


Figure 4.3.2-21. Complete List of ECOs

Once the tool determines it has all the information, the Office Assistant prompt as shown in the bottom right side of Figure 4.3.2-22 below will appear. The purpose of this prompt is to

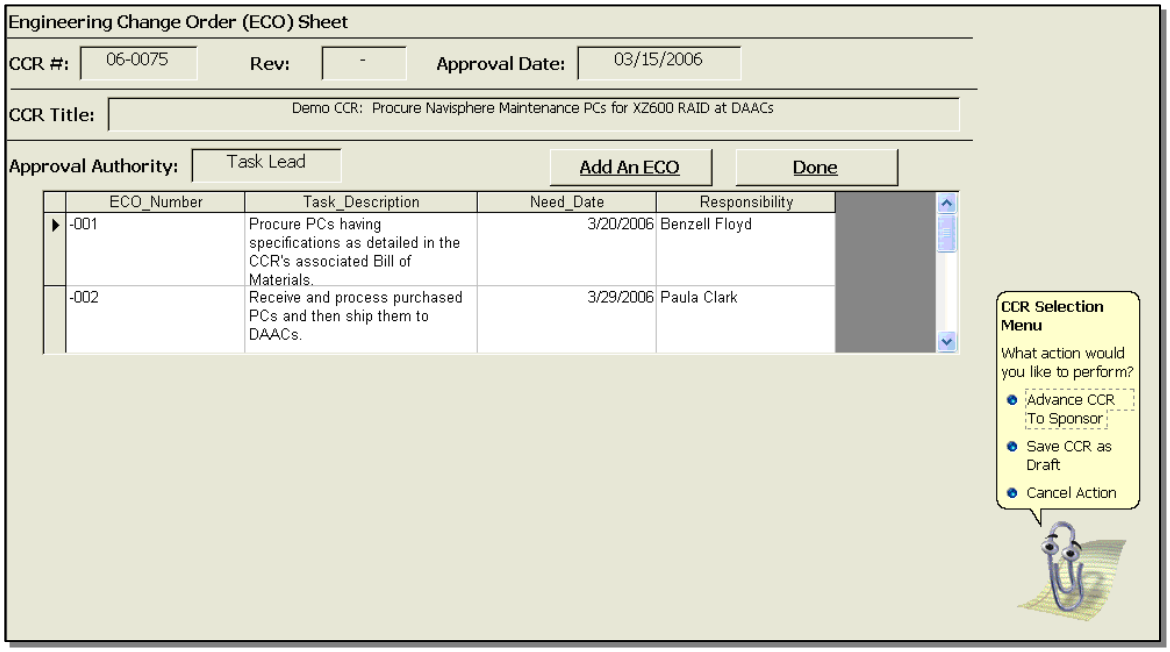


Figure 4.3.2-22. CCR Selection Menu

determine what you want to do next. To proceed, select one of the listed actions:

1) Advance CCR to Sponsor – select this action if you are satisfied with the content of the CCR and you are ready to sign the CCR and send it to the sponsor for signature.

2) Save CCR as Draft – select this action if the CCR is incomplete and you're not ready to sign it.

3) Cancel Action – select this action if you are not ready to leave the ECO form.

Correct responses to actions 1) and 2) are provided in the following Sections 4.3.2.3.3 and 4.3.2.3.4.

4.3.2.3.3 Advance CCR to Sponsor Action

Selecting Advance CCR to Sponsor will cause the Office Assistant prompt to be displayed as shown in Figure 4.3.2-23.

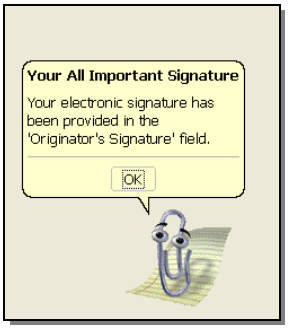


Figure 4.3.2-23. Confirmation of Originator Signature

Click the OK button and the next Office Assistant prompt is displayed as shown in Figure 4.3.2-24. Click the OK button on the Next Step prompt and the CCR tool takes you back to

Figure 4.3.2-24. Confirmation of Emailing CCR to Sponsor

the CCR Creation Menu as shown in Figure 4.3.2-25. At this point, the CCR has been created and is stored in the CCR tool database. It can be reviewed by all CCR tool users if it is a non-procurement CCR. It can only be reviewed by procurement authorized personnel if it is a procurement CCR.

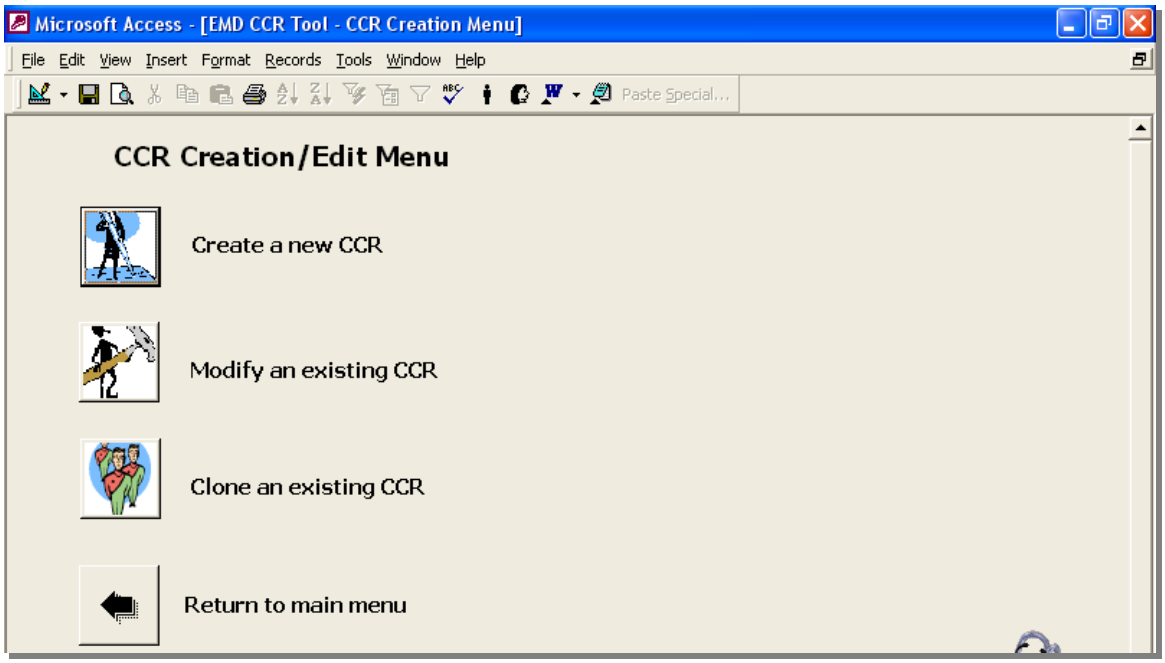


Figure 4.3.2-25. CCR Creation/Edit Menu

From CCR Creation/Edit Menu, click the "Return to main menu" button to get back to the Main Menu.

4.3.2.3.4 Save CCR as Draft Action

Selecting the "Save CCR as Draft" action will cause the Office Assistant prompt in Figure 4.3.2-26 to be displayed.

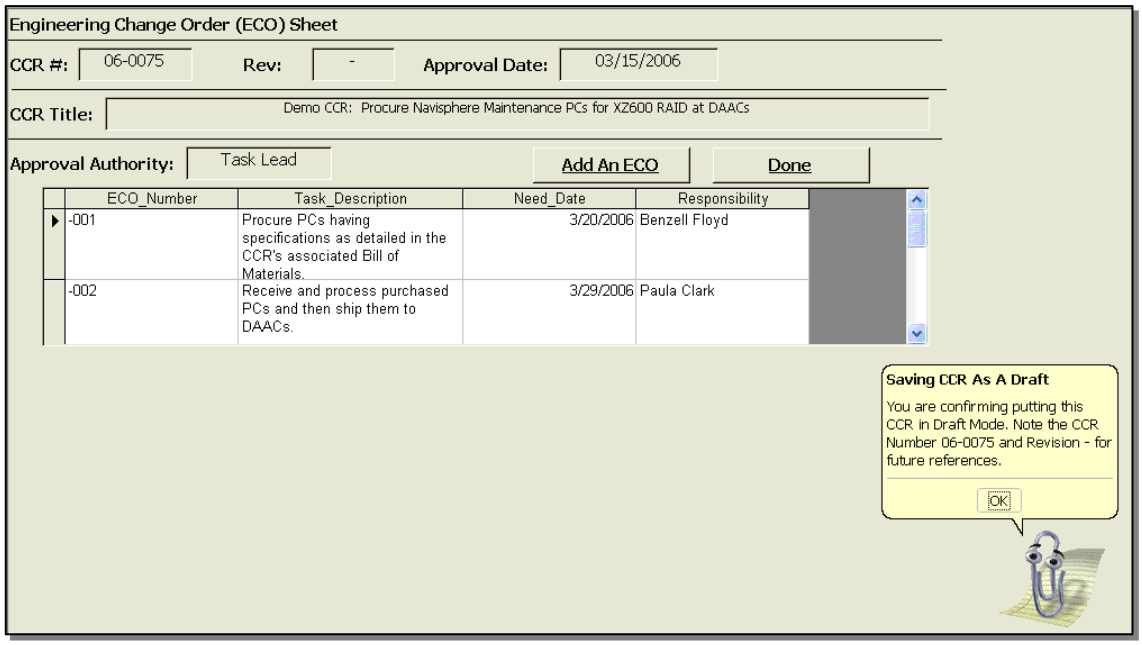


Figure 4.3.2-26. Saving CCR As A Draft

Click the OK button on the Office Assistant "Saving CCR As A Draft" prompt and the CCR tool will take you back to the CCR Creation/Edit Menu shown in Figure 4.3.2-27. At this point, the CCR has been stored as a draft CCR and only the CCR's originator can review it. Click the "Return to main menu" button to get back to the Main Menu.

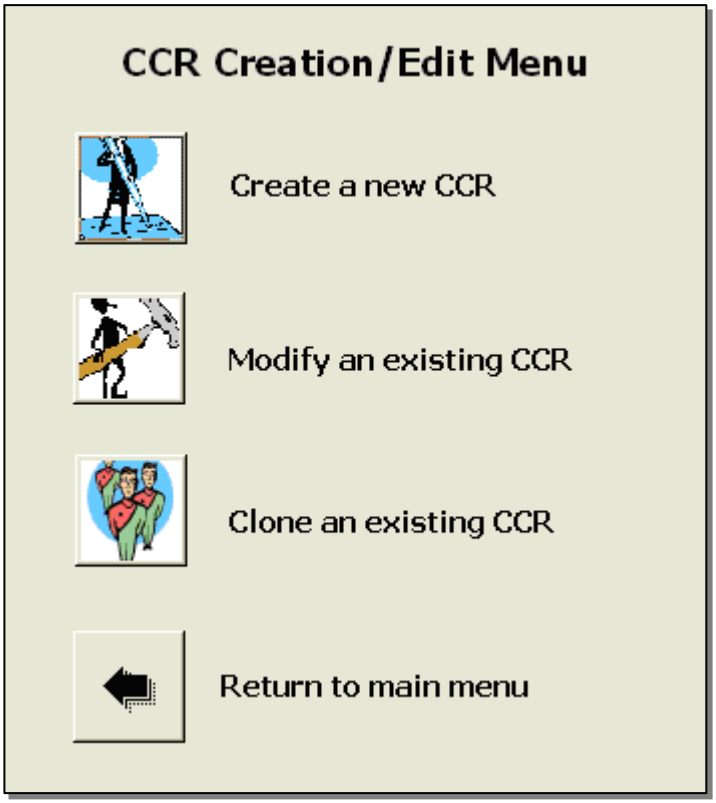


Figure 4.3.2-27. CCR Creation/Edit Menu

4.3.2.4 CCR Attachments

Some CCRs need to have an attachment, a file that can be viewed by Sponsors, Procurement POCs and Stakeholders. The attachment file should be stored on the "L" drive in the folder: L:\CCR_Attachments\<CCR #>. For example, an attachment file for CCR # 06-0075 would be placed in "L:\CCR_Attachments\06-0075." Be sure to make reference to the attachment in the note section of the Additional Sheet. For example, on the Additional Sheet, enter "The documentation for CCR # 06-0075 has been placed in the following location: L:\CCR_Attachments\06-0075."

4.3.2.5 CCR Draft

At the end of the CCR creation process, the CCR originator has the option of signing a CCR and sending it to the Sponsor for signature or the CCR can be saved as a draft. If the CCR is saved as a draft CCR then only the CCR originator can review and make changes to it. The CCR has to be taken out of "draft" mode, so to speak, by its originator, finalized, and then signed by the originator before anyone else can see it. This section tells how to complete a draft CCR.

4.3.2.5.1 Retrieve the Draft CCR

Login into the CCR tool and eventually the Main Menu is displayed as shown in Figure 4.3.2-28.

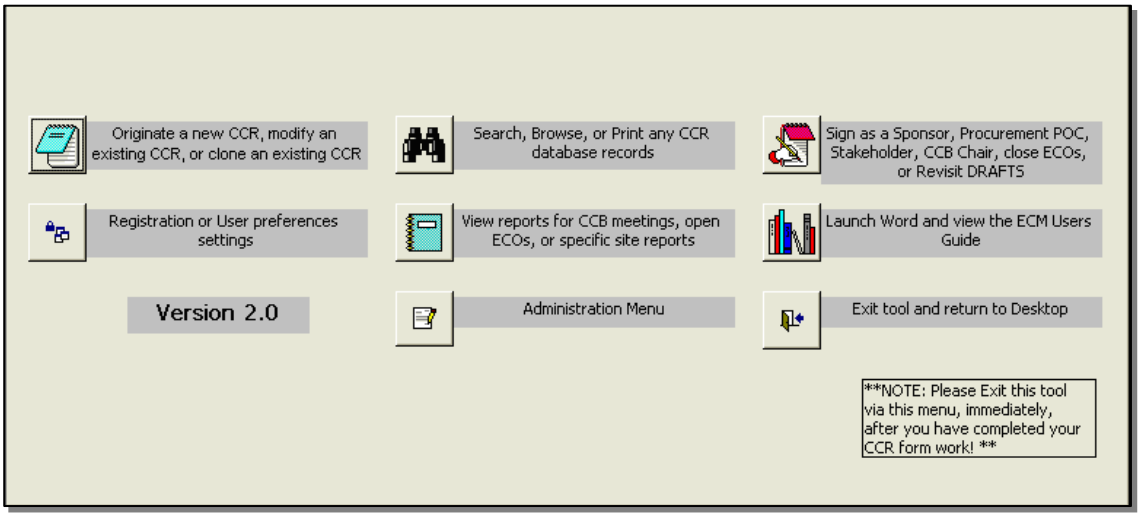


Figure 4.3.2-28. CCR Tool's Main Menu

Click the button in the upper right corner with "Revisit DRAFTS" in its label. The CCR tool will display the My Work Menu as shown in Figure 4.3.2-29. Click the "Draft Mode" CCRs button to get to a list of your draft CCRs.

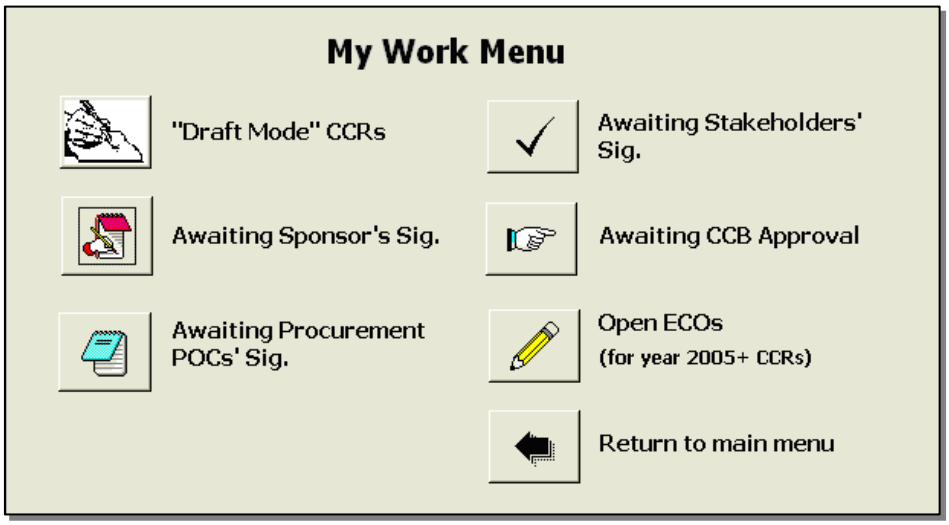
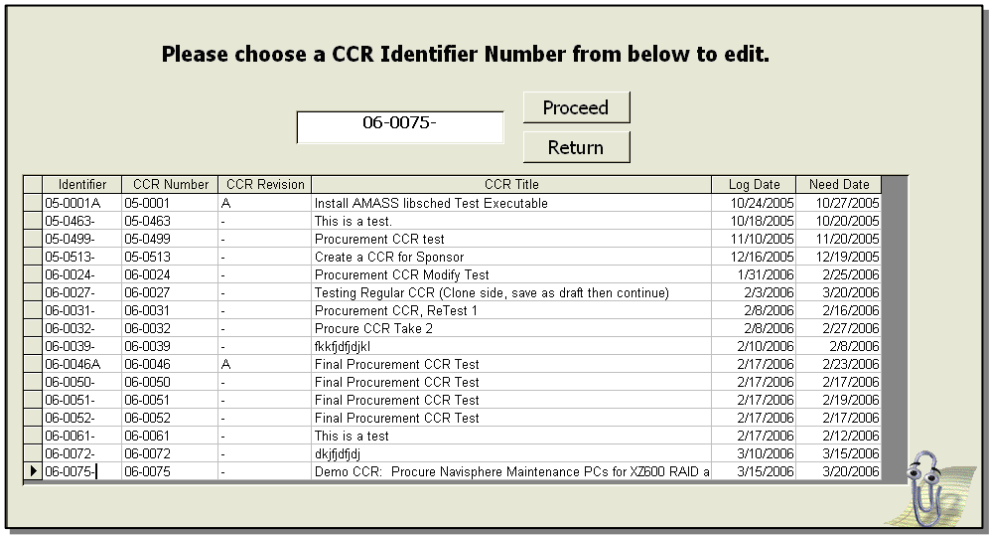


Figure 4.3.2-29. My Work Menu

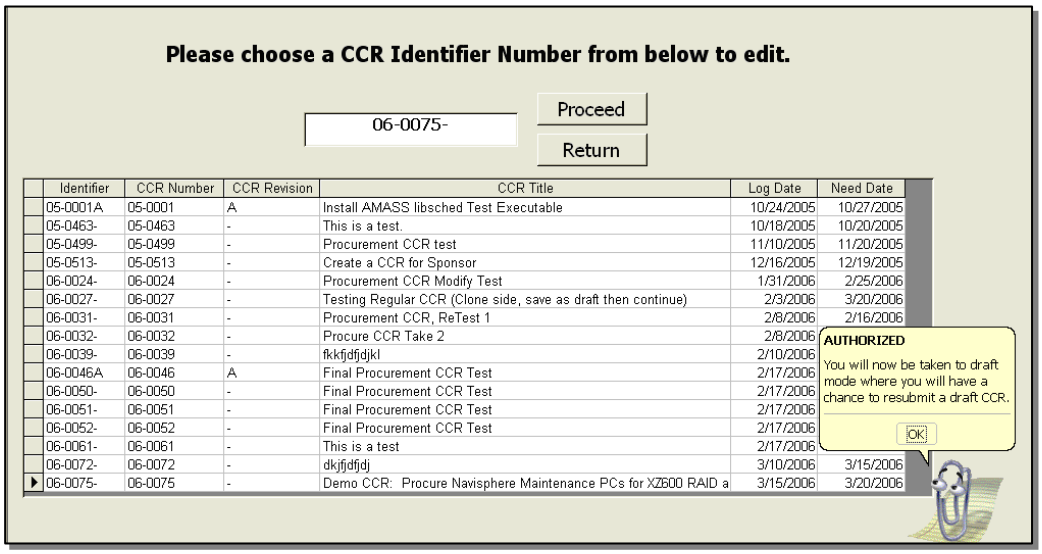
When the “Draft Mode” CCRs button is clicked, the CCR tool will display the “My Work Menu – Drafts” form as shown in Figure 4.3.2-30. Click the desire CCR number in the Identifier column and the CCR tool will copy that CCR number to the white space above the list of CCR numbers. At this point, if you click the “Return” button, you will be taken back to the My Work Menu.



Identifier	CCR Number	CCR Revision	CCR Title	Log Date	Need Date
05-0001A	05-0001	A	Install AMASS libsched Test Executable	10/24/2005	10/27/2005
05-0463-	05-0463	-	This is a test.	10/18/2005	10/20/2005
05-0499-	05-0499	-	Procurement CCR test	11/10/2005	11/20/2005
05-0513-	05-0513	-	Create a CCR for Sponsor	12/16/2005	12/19/2005
06-0024-	06-0024	-	Procurement CCR Modify Test	1/31/2006	2/25/2006
06-0027-	06-0027	-	Testing Regular CCR (Clone side, save as draft then continue)	2/3/2006	3/20/2006
06-0031-	06-0031	-	Procurement CCR, ReTest 1	2/8/2006	2/16/2006
06-0032-	06-0032	-	Procure CCR Take 2	2/8/2006	2/27/2006
06-0039-	06-0039	-	fkkfjdfjdjkl	2/10/2006	2/8/2006
06-0046A	06-0046	A	Final Procurement CCR Test	2/17/2006	2/23/2006
06-0050-	06-0050	-	Final Procurement CCR Test	2/17/2006	2/17/2006
06-0051-	06-0051	-	Final Procurement CCR Test	2/17/2006	2/19/2006
06-0052-	06-0052	-	Final Procurement CCR Test	2/17/2006	2/17/2006
06-0061-	06-0061	-	This is a test	2/17/2006	2/12/2006
06-0072-	06-0072	-	dkjfjdfjdj	3/10/2006	3/15/2006
06-0075-	06-0075	-	Demo CCR: Procure Navisphere Maintenance PCs for XZ600 RAID a	3/15/2006	3/20/2006

Figure 4.3.2-30. My Work Menu – Drafts form

If you click proceed, the CCR tool will display the prompt shown in Figure 4.3.2-31. Click OK to proceed.



Identifier	CCR Number	CCR Revision	CCR Title	Log Date	Need Date
05-0001A	05-0001	A	Install AMASS libsched Test Executable	10/24/2005	10/27/2005
05-0463-	05-0463	-	This is a test.	10/18/2005	10/20/2005
05-0499-	05-0499	-	Procurement CCR test	11/10/2005	11/20/2005
05-0513-	05-0513	-	Create a CCR for Sponsor	12/16/2005	12/19/2005
06-0024-	06-0024	-	Procurement CCR Modify Test	1/31/2006	2/25/2006
06-0027-	06-0027	-	Testing Regular CCR (Clone side, save as draft then continue)	2/3/2006	3/20/2006
06-0031-	06-0031	-	Procurement CCR, ReTest 1	2/8/2006	2/16/2006
06-0032-	06-0032	-	Procure CCR Take 2	2/8/2006	
06-0039-	06-0039	-	fkkfjdfjdjkl	2/10/2006	
06-0046A	06-0046	A	Final Procurement CCR Test	2/17/2006	
06-0050-	06-0050	-	Final Procurement CCR Test	2/17/2006	
06-0051-	06-0051	-	Final Procurement CCR Test	2/17/2006	
06-0052-	06-0052	-	Final Procurement CCR Test	2/17/2006	
06-0061-	06-0061	-	This is a test	2/17/2006	
06-0072-	06-0072	-	dkjfjdfjdj	3/10/2006	3/15/2006
06-0075-	06-0075	-	Demo CCR: Procure Navisphere Maintenance PCs for XZ600 RAID a	3/15/2006	3/20/2006

Figure 4.3.2-31. Authorized to Retrieve Draft Prompt

The CCR tool will now display the selected draft CCR.

4.3.2.5.2 Finalize Draft CCR

When a draft CCR is retrieved, the focus is initially on the CCR Form page as shown in Figure 4.3.2-32. Each of the CCR Form's pages (Supplementary Procurement Information, Additional Sheet, Stakeholder's Concurrence, and ECO Sheet) is available for updates. Note, the Supplementary Procurement Information page is only on procurement type CCRs. Non-procurement CCRs will not have a Supplementary Procurement Information page.

There are some minimum changes that one has to make to a draft CCR. Dates that were entered in the "12. Need Date" and the "20. Date Due to Customer" fields during CCR creation were removed when the CCR was saved as a draft. So, even if there are no other changes on the CCR Form page, dates for these fields have to be entered again.

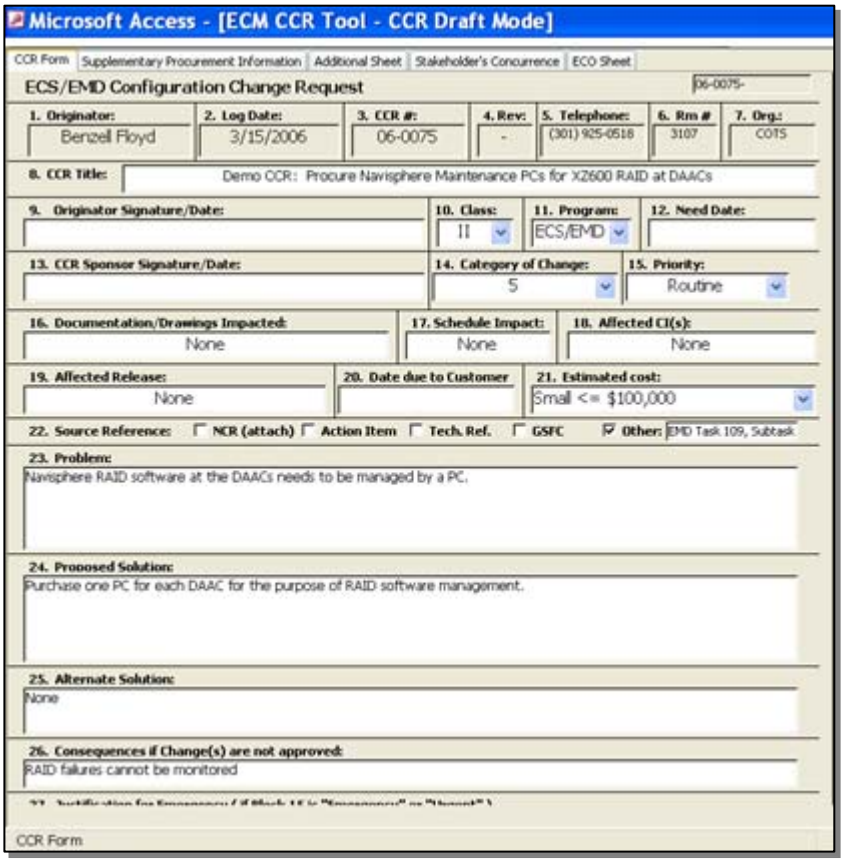


Figure 4.3.2-32. Draft CCR Form

For a procurement type CCR, the Supplementary Procurement Information page shown in Figure 4.3.2-33 must be updated as well. The date in "6. On Dock Need Date" (that was entered during

CCR creation) was removed when the CCR was placed in draft mode. So, a date has to be reentered into that field.

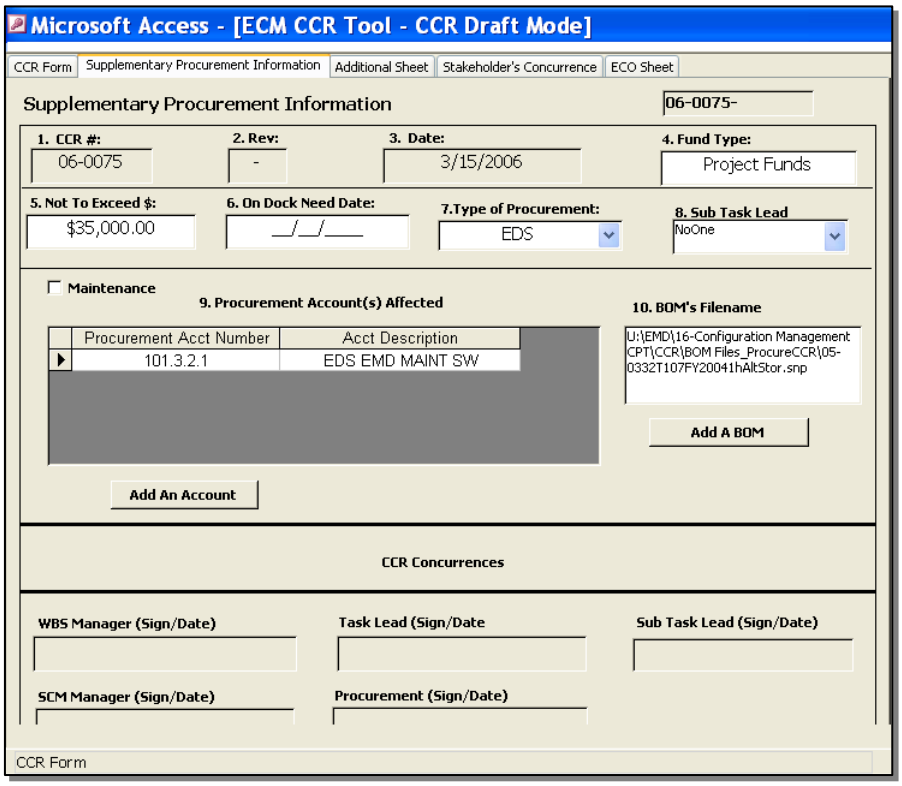


Figure 4.3.2-33. Supplementary Procurement Information Page

When all updates have been made to the draft CCR and you are ready to sign the CCR, go to the ECO Sheet page of the CCR form and click the "Done" button. Upon clicking of the "Done" button, the CCR tool displays the prompt shown in Figure 4.3.2-34.

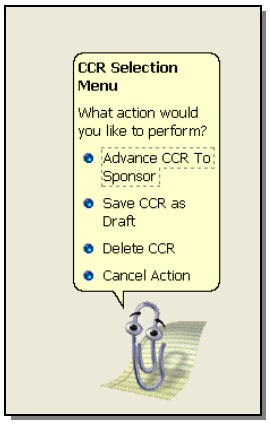


Figure 4.3.2-34. CCR Action Prompt

You have a choice of several actions:

1) Advance CCR to Sponsor – select this action if you are satisfied with the content of the CCR and you are ready to sign the CCR and send it to the sponsor for signature.
2) Save CCR as Draft – select this action if the CCR is incomplete and you're not ready to sign it.
3) Delete CCR – select this action if you want to delete the draft CCR. A message will be displayed asking if you are sure you want to delete the draft CCR. Select "Yes" to have the draft CCR deleted.
4) Cancel Action – select this action if you are not ready to leave the draft CCR form.

Select the "Advance CCR to Sponsor" action and the prompt shown in Figure 4.3.2-35 is displayed.

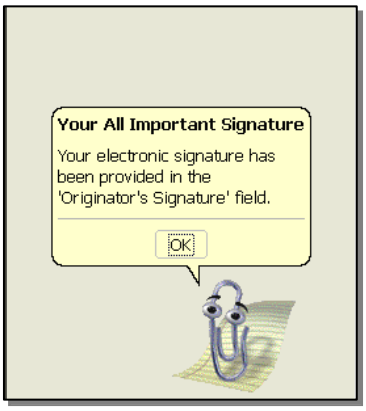
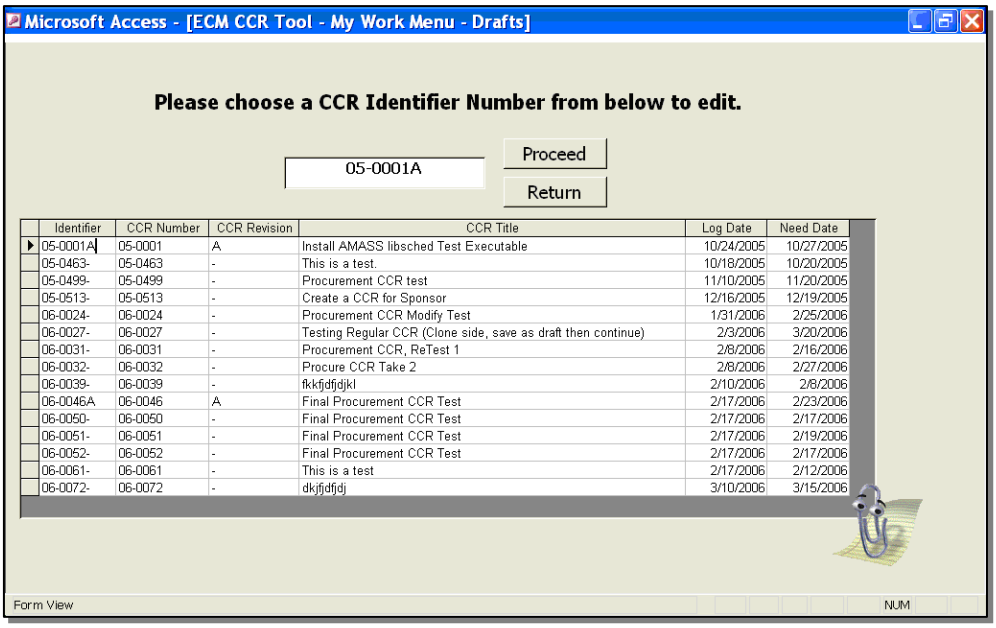


Figure 4.3.2-35. Confirmation of Signature Prompt

Click OK on the "Signature" prompt and the prompt shown in Figure 4.3.2-36 is displayed.

Figure 4.3.2-36. Next Step Prompt

Click OK on the “Next Step” prompt and the CCR tool will take you back to the My Work Menu – Drafts form, Figure 4.3.2-37 below.



Identifier	CCR Number	CCR Revision	CCR Title	Log Date	Need Date
05-0001A	05-0001	A	Install AMASS libsched Test Executable	10/24/2005	10/27/2005
05-0463-	05-0463	-	This is a test.	10/18/2005	10/20/2005
05-0499-	05-0499	-	Procurement CCR test	11/10/2005	11/20/2005
05-0513-	05-0513	-	Create a CCR for Sponsor	12/16/2005	12/19/2005
06-0024-	06-0024	-	Procurement CCR Modify Test	1/31/2006	2/25/2006
06-0027-	06-0027	-	Testing Regular CCR (Clone side, save as draft then continue)	2/3/2006	3/20/2006
06-0031-	06-0031	-	Procurement CCR, ReTest 1	2/8/2006	2/16/2006
06-0032-	06-0032	-	Procure CCR Take 2	2/8/2006	2/27/2006
06-0039-	06-0039	-	fkkfjdfjdjkl	2/10/2006	2/8/2006
06-0046A	06-0046	A	Final Procurement CCR Test	2/17/2006	2/23/2006
06-0050-	06-0050	-	Final Procurement CCR Test	2/17/2006	2/17/2006
06-0051-	06-0051	-	Final Procurement CCR Test	2/17/2006	2/19/2006
06-0052-	06-0052	-	Final Procurement CCR Test	2/17/2006	2/17/2006
06-0061-	06-0061	-	This is a test	2/17/2006	2/12/2006
06-0072-	06-0072	-	dkjfjdfjdj	3/10/2006	3/15/2006

Figure 4.3.2-37. My Work Menu – Drafts Window

Click the Return button to get back to the “My Work Menu” (Figure 4.3.2-38).

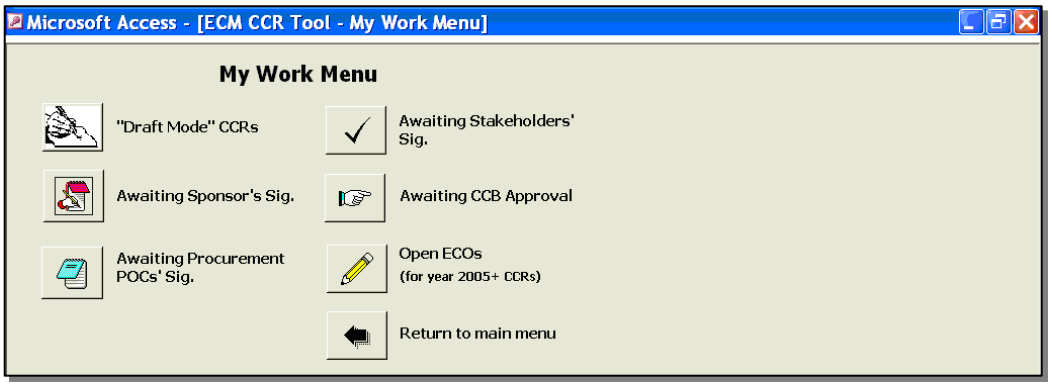


Figure 4.3.2-38. My Work Menu

Click the “Return to main menu” button on the My Work Menu to get back to the Main Menu (Figure 4.3.2-39).

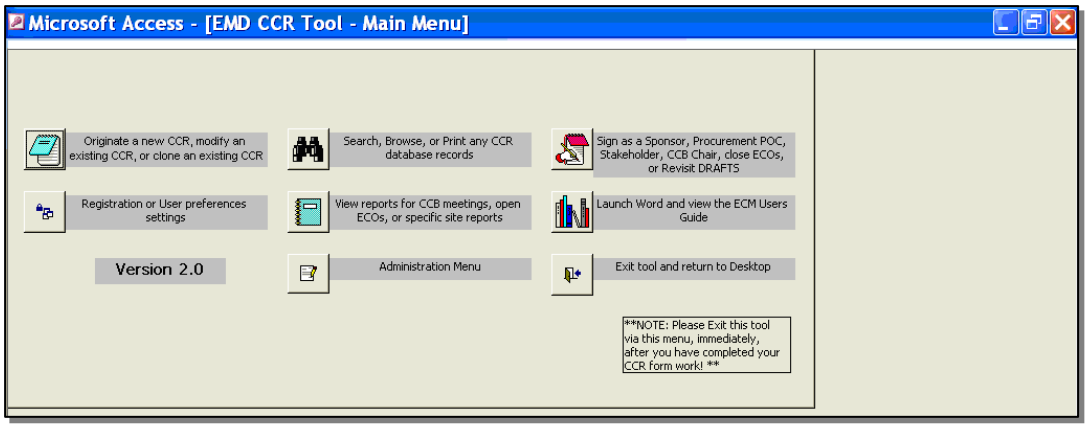


Figure 4.3.2-39. Main Menu

The draft CCR has now been finalized. The CCR tool has sent an email message to the Sponsor to let the Sponsor know that there is a CCR waiting for his/her signature.

4.3.2.5.3 Modify A CCR

Sometimes during the processing of a CCR, changes have to be made after the originator has signed but before the CCR is approved by the CCB Chairperson. In this case, the CCR has to be taken back to draft mode so that the originator can make the necessary changes. This process is the similar to modifying a Draft CCR.

4.3.2.5.4 CCR Clone

Sometimes after a CCR has been approved by CCB Chairperson(s), necessary changes to the CCR are identified. Since the CCR has already been approved, a revision to the CCR or a new CCR must be created to include the identified changes. This saves the user time when a new CCR will have similar content to an existing CCR. The default for the new CCR number is the next one available, but a check box exists that allows the user to set the new CCR to the next revision. For instance if the CCR to be cloned is “09-0123” and the user wants the new CCR to be Rev A, then by selecting the check box that appears, the new CCR will be “09-0123A”.

4.3.2.5.5 Printing a CCR

CCRs can be viewed and printed after the originator signs the CCRs. However, any CCR printed before the CCB Chairperson approves it, will not have all of the electronic signatures populated. To print a CCR we start off with the Main Menu as shown in Figure 4.3.2-40.

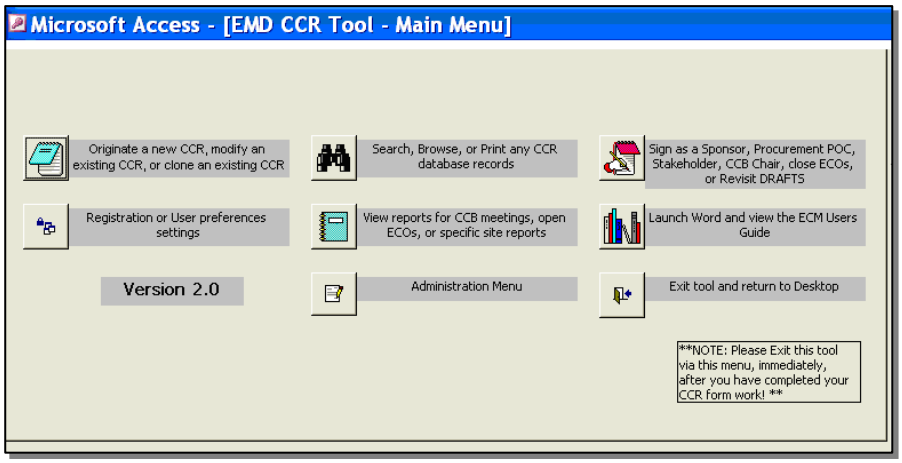


Figure 4.3.2-40. Main Menu (Printing a CCR)

Click the "Search, Browse, or Print any CCR database records" button and the CCR Search/Browse Menu is displayed as shown in Figure 4.3.2-41. There are three buttons on the Search/Browse Menu:

1) Search/Browse all CCRs button– enables one to see all of the CCRs in the database but does not show the Supplementary Procurement Information page of procurement type CCRs. The Supplementary Procurement Information page is for review by procurement officials only.

2) Search all procurement CCRs button–enables personnel that <u>are authorized to view "Procurement" type CCRs</u> to see all pages of the procurement CCRs. For everyone else, the "Search all procurement CCRs" button is gray (inactive).

3) Return to Main Menu button – this button returns you to the Main Menu.

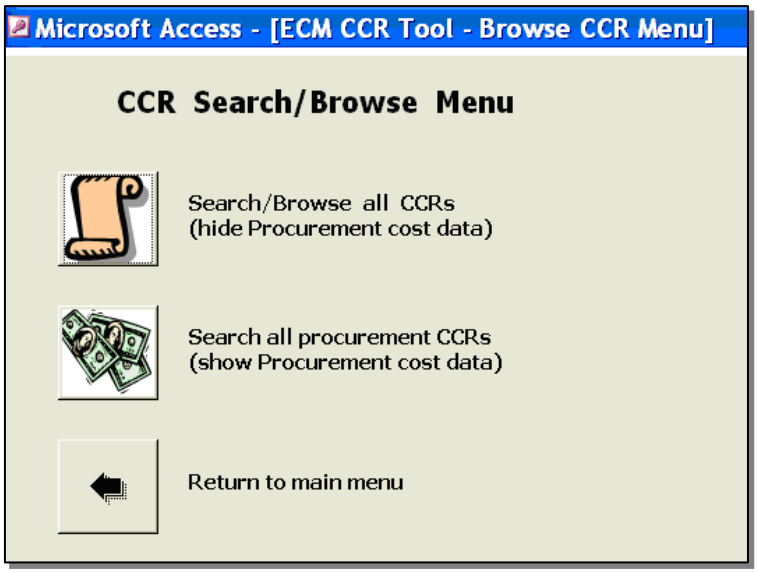


Figure 4.3.2-41. Browse CCR Menu

Since a procurement type CCR was used as the example in this guide, a procurement authorized login was used to log into the CCR tool. So the "Search all procurement CCRs" button is active. Click the "Search all procurement CCRs" button and the CCR Lookup Procurement form (Figure 4.3.2-42) is displayed. If the "Search/Browse all CCRs" button had been clicked a CCR Lookup form would have been displayed.

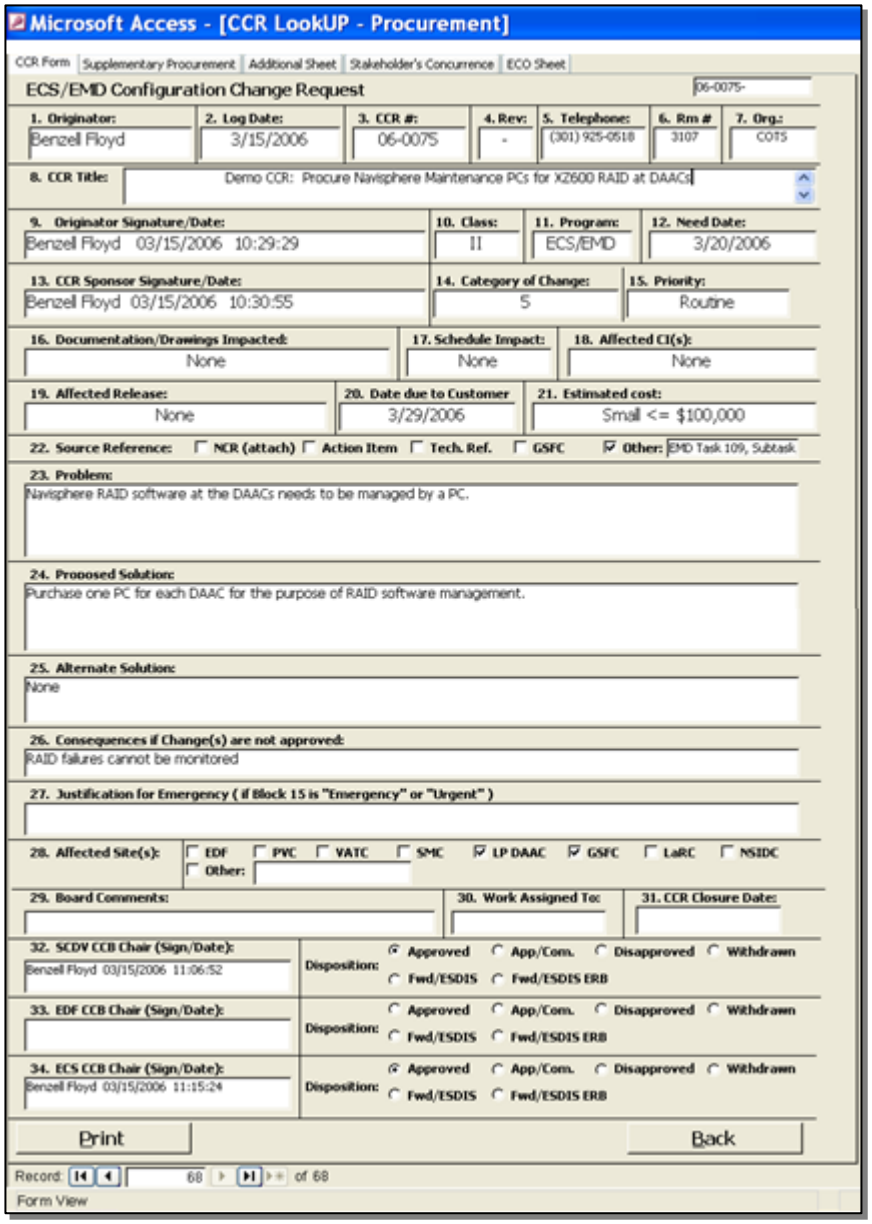


Figure 4.3.2-42. CCR Lookup Procurement Form

When the form is first displayed, the first CCR record in the database is displayed. Click the arrow at the bottom of the form to move to the desired CCR (in this case, it's CCR 06-0075. To print the CCR, click the "Print" button and the Office Assistant prompt shown in Figure 4.3.2-43 is displayed.

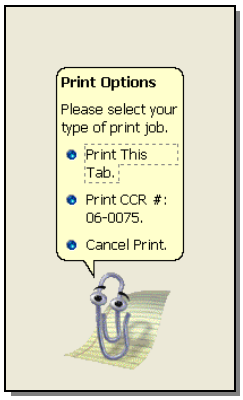


Figure 4.3.2-43. CCR Print Options.

The Office displays several print options. The options are defined as follow:

1) Print This Tab – print the tab/page (CCR Form, Supplementary Procurement, Additional Sheet, Stakeholder's Concurrence, or ECO Sheet) that you are currently on. Click this option and a copy of the tab/page is sent to your default printer.

2) Print CCR #: <CCR Number> - print the entire CCR. Click this option and a copy of the entire CCR is sent to your default printer.

3) Cancel Print – Terminate print options. Click this option, the Office Assistant is removed and the focus is placed back on the CCR form.

Click the option that is desired and then click the "Back" button at the bottom of the page to get back to the Main Menu.

4.3.2.6 CCR Coordination, Approvals

A CCR requires the concurrence/approval of several EMD entities before it can actually be implemented. After a CCR is signed by the CCR originator, it must then be concurred with by the Sponsor, Procurement POCs (for procurement type CCRs only), and Stakeholders. The CCR must be approved by the CCB(s) Chairperson. The CCR tool activity for each of these coordination entities will be discussed in this section.

4.3.2.6.1 CCR Sponsor Signature

The CCR Sponsor performs the first review of the CCR after the originator has completed the CCR and signed it. The CCR tool sends an email message to the perspective CCR Sponsors, in order to notify the Sponsors of a submitted CCR. This section covers the instruction of electronically signing as a Sponsor.

The perspective CCR sponsors will have received an email stating the CCR number that needs to be sponsored. Upon notification, the sponsor logs into the CCR tool and the Main Menu (Figure 4.3.2-44) is displayed.

To sign a CCR as a Sponsor, first click the button in the upper-right corner of the Main Menu.

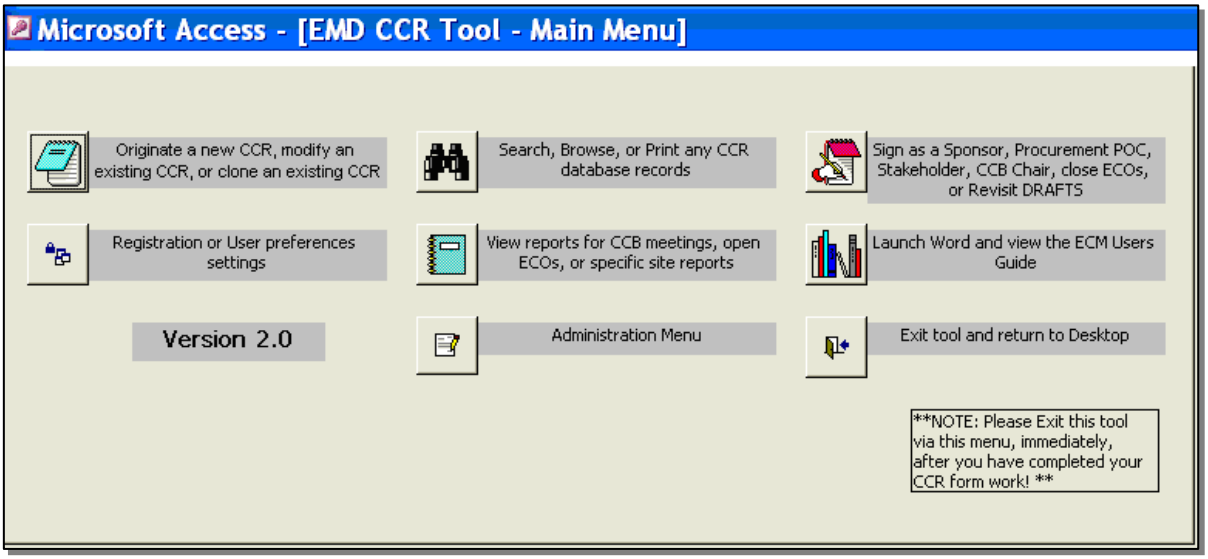


Figure 4.3.2-44. Main Menu

The My Work Menu (Figure 4.3.2-45) will be displayed next. On the My Work Menu, click the "Awaiting Sponsor's Sig."

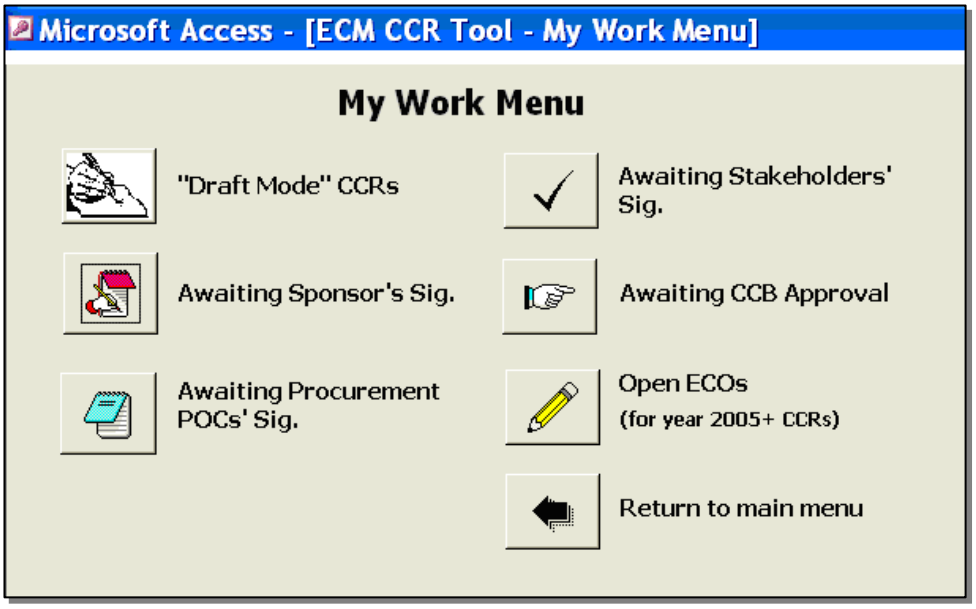


Figure 4.3.2-45. My Work Menu (Sponsor Sig.)

The My Work Menu – CCR Sponsor Signature Page (Figure 4.3.2-46) is displayed next. It will list all of the CCRs that are available for you to sponsor.

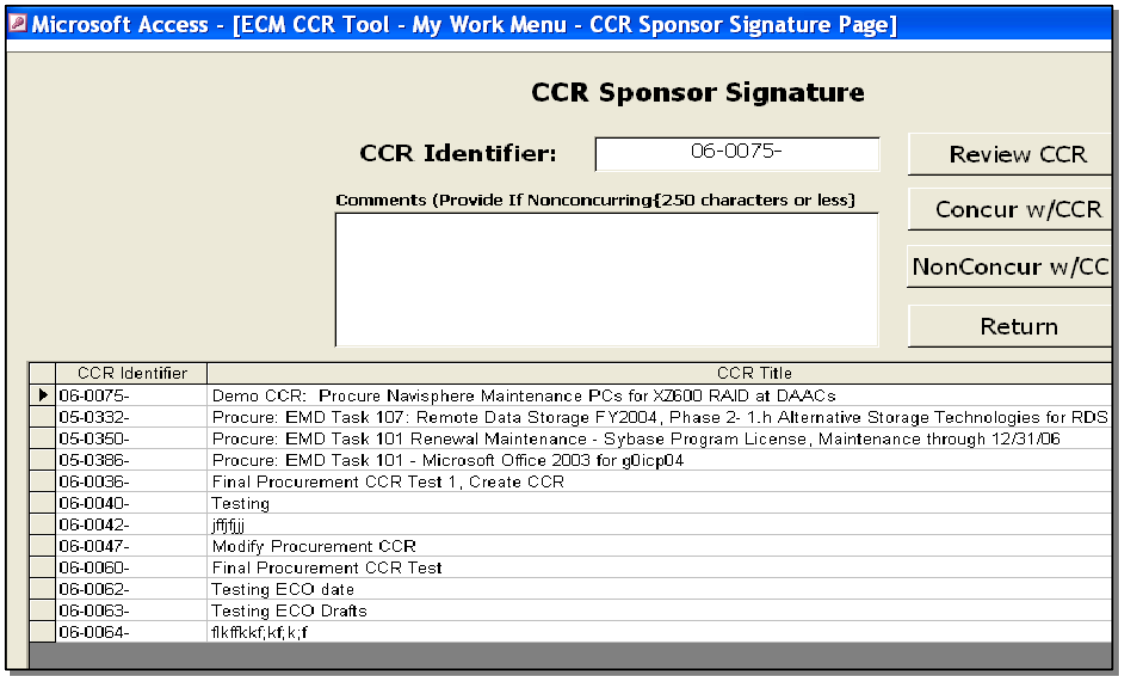


Figure 4.3.2-46. CCR Sponsor Signature Form

Click the desired CCR listed in the CCR Identifier column and the CCR identifier will be copied to the white space above the list of CCRs as shown above in Figure 4.3.2-46.

There are four possible actions that a Sponsor can take:

1) Review CCR- click the "Review CCR" button to review the contents of the CCR. All pages of the CCR will be available for review. If it is a procurement type CCR, then you can also review the BOM on the Supplementary Procurement Information page by clicking the "Display BOM" button on that page. Note, there is no Supplementary Procurement Information page in the non-procurement type CCR. Click the "Back" button on the Review CCR form to return to the Sponsor Signature form.

2) Concur w/CCR – click the "Concur w/CCR" button if you agree with the contents of the CCR. Once sponsor concurrence is obtained, a notification email message is sent to Procurement POCs (if this is a procurement type CCR) or to Stakeholders (if this is a non-procurement type CCR) for their review of the CCR, next. Refer to Section 4.3.2.6.1.1 for prompts and responses for this action.

3) NonConcur w/CCR – click the "NonConcur w/CCR" button if you disagree with the contents of the CCR. If you nonconcur, you have to provide a brief reason for

nonconcurring in the “Comments” box. The CCR tool will email the comments back to the originator and place the CCR in draft mode to enable the originator’s revisions. Refer to Section 4.3.2.6.1.1 for prompts and responses for this action.

4) Return – click the “Return” button if you want to return to the previous form, My Work Menu (Figure 4.3.2-45).

4.3.2.6.1.1 Concur w/CCR Action

If the “Concur w/CCR” button is clicked, the Office Assistant will respond as shown in Figure 4.3.2-47.

Figure 4.3.2-47. Confirmation of Sponsor’s Concurrence

Click “Yes” to the Confirmation of Sponsor’s Concurrence prompt and the Office Assistant will respond as shown in Figure 4.3.2-48

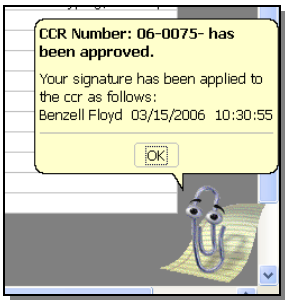


Figure 4.3.2-48. Sponsor Approval Response

Click OK to close the Confirmation Office Assistant and the CCR tool places the focus back on the CCR Sponsor Signature form (Figure 4.3.2-46)

Click “No” to the Confirmation of Sponsor’s Concurrence prompt the Office Assistant will respond as shown in Figure 4.3.2-49.

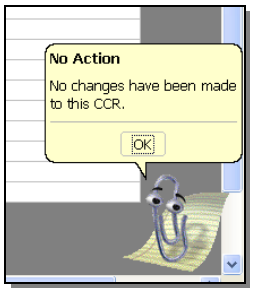


Figure 4.3.2-49. No Action Response

Click OK to close the No Action Office Assistant and the CCR tool places the focus back on the CCR Sponsor Signature form (Figure 4.3.2-46).

4.3.2.6.1.2 NonConcur w/CCR Action

For non concurrence actions, a brief comment must be entered into the "Comments" box then click the "Nonconcur w/CCR" button. The Office Assistant will respond as shown in Figure 4.3.2-50.

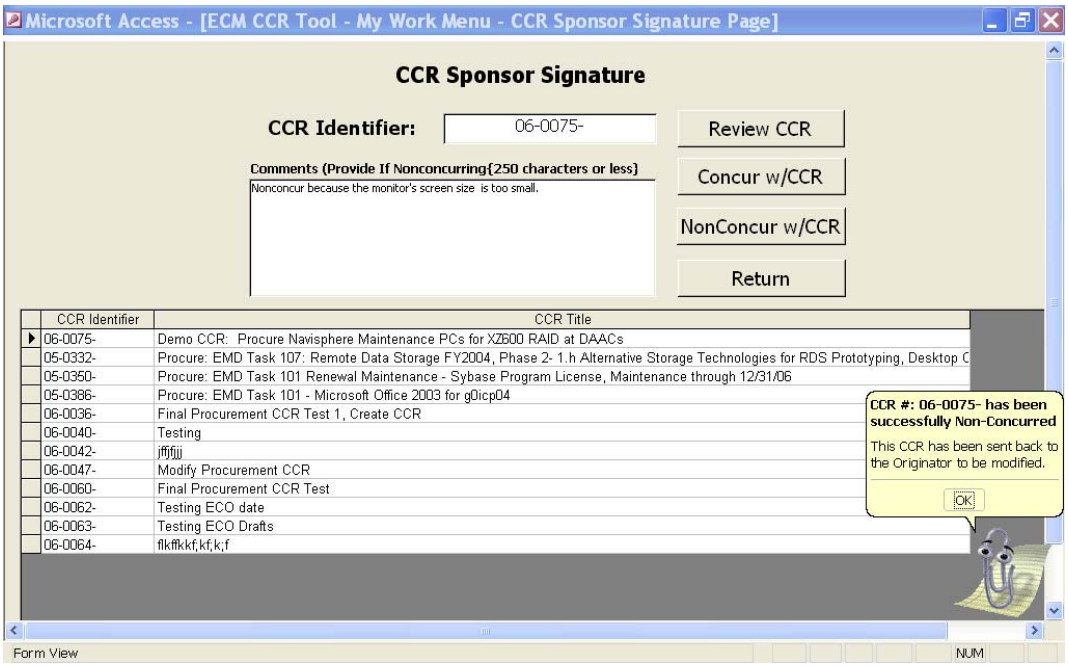


Figure 4.3.2-50. Sponsor NonConcur

Click OK to close the Office Assistant and the CCR tool places the focus back on the CCR Sponsor Signature form (Figure 4.3.2-51). The CCR has now been removed from the list and has been placed back in draft mode to enable originator revision.

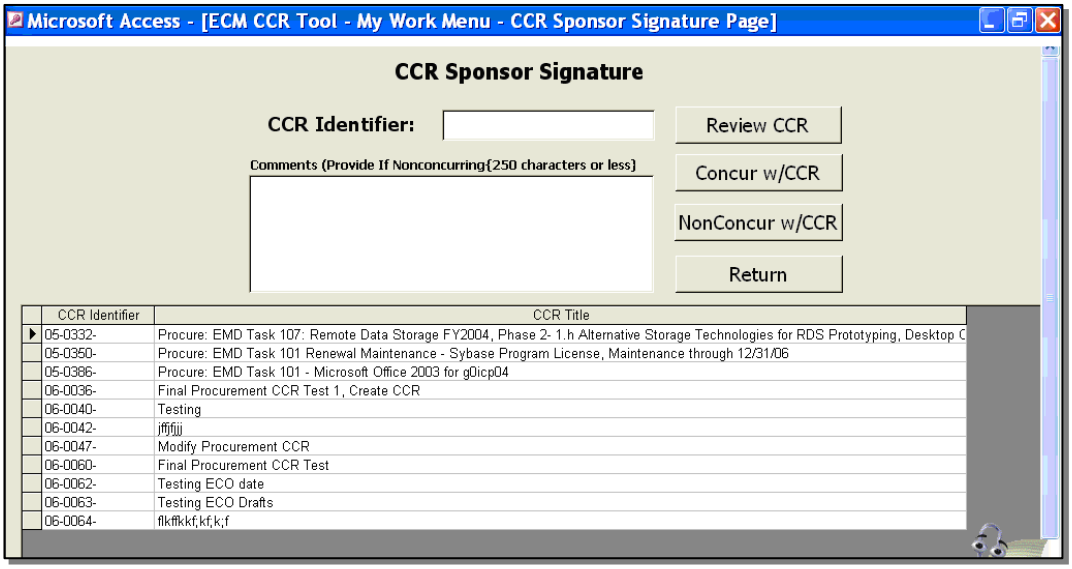


Figure 4.3.2-51. CCR Sponsor Signature Form

4.3.2.6.2 Procurement POCs Signatures

The Procurement POCs (WBS Manager, Task Lead, Sub Task Lead (if assigned), SCM Manager, and Procurement Section) reviews procurement type CCRs after the Sponsor signs the CCR. After the Sponsor signs the CCR, the CCR tool sends an email message to the Procurement POCs (for procurement CCRs only). This section covers the instruction of electronically signing as a Procurement POC.

The perspective Procurement POCs will have concurrently received an email stating the CCR number that needs to be reviewed and concurred. Upon notification, the Procurement POC logs into the CCR tool and the Main Menu (Figure 4.3.2-52) is displayed.

To sign a CCR as a Procurement POC, first click the button in the upper right corner of the Main Menu and labeled “Sign as Sponsor, Procurement POC - - - -“

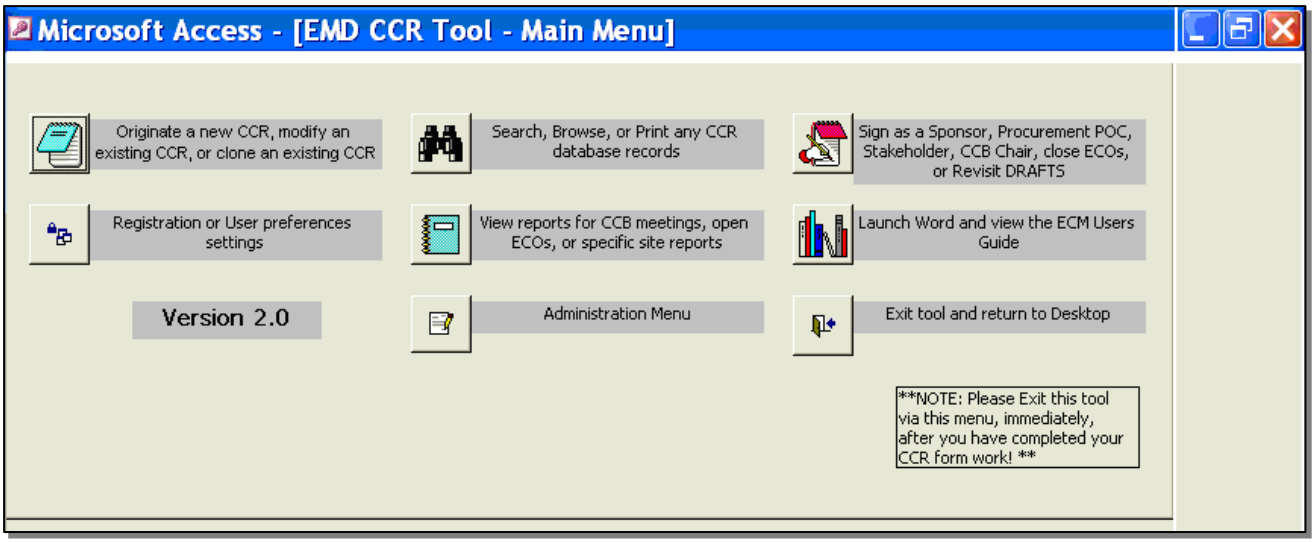


Figure 4.3.2-52. Main Menu

The CCR tool will display the My Work Menu as shown in Figure 4.3.2-53.

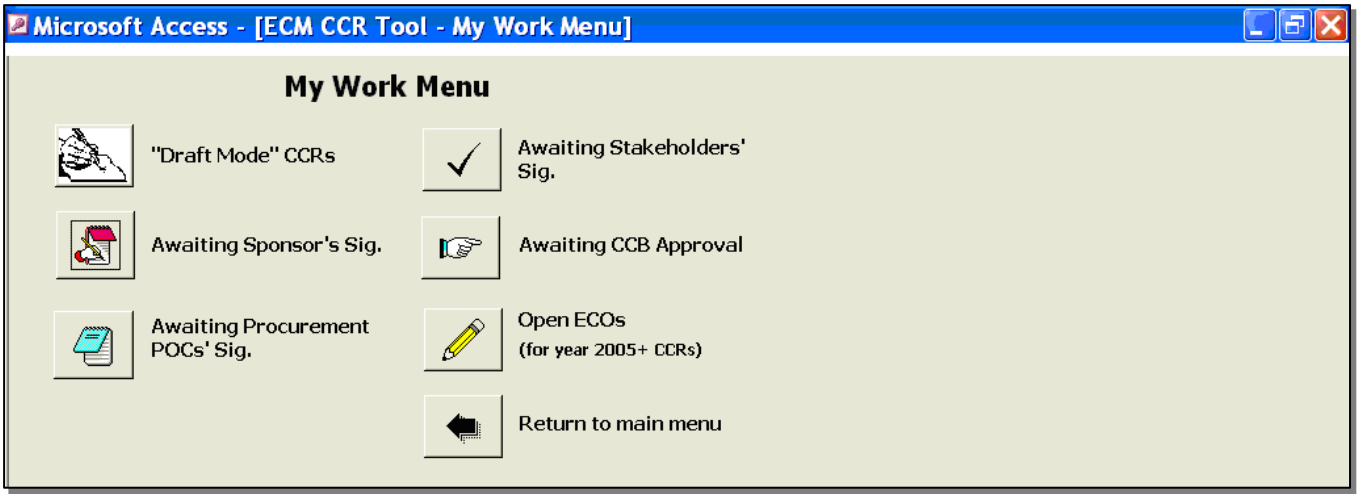


Figure 4.3.2-53. My Work Menu

Click the "Awaiting Procurement POCs' Sig." button and the My Work Procurement Menu is displayed as shown in Figure 4.3.2-54.

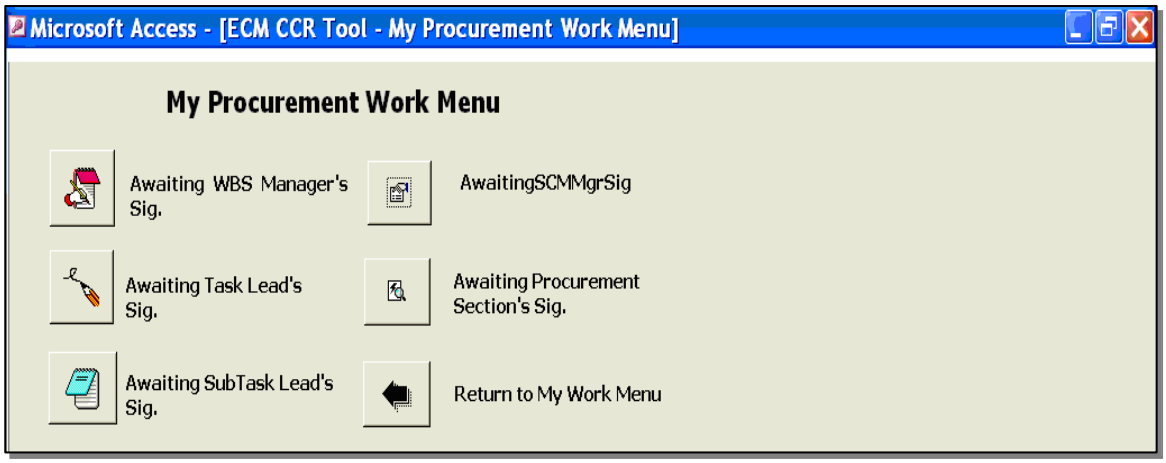


Figure 4.3.2-54. My Procurement Work Menu

On the My Procurement Work Menu click the button for the role that you play in the CCR approval process. In this example, the WBS Manager role is being used for demonstration purposes. The procedure is the same for all Procurement POCs. In this example the "Awaiting WBS Manager's Sig. was clicked and the CCR tool displayed the Procurement CCR – WBS Manager Signature form as shown in Figure 4.3.2-55.

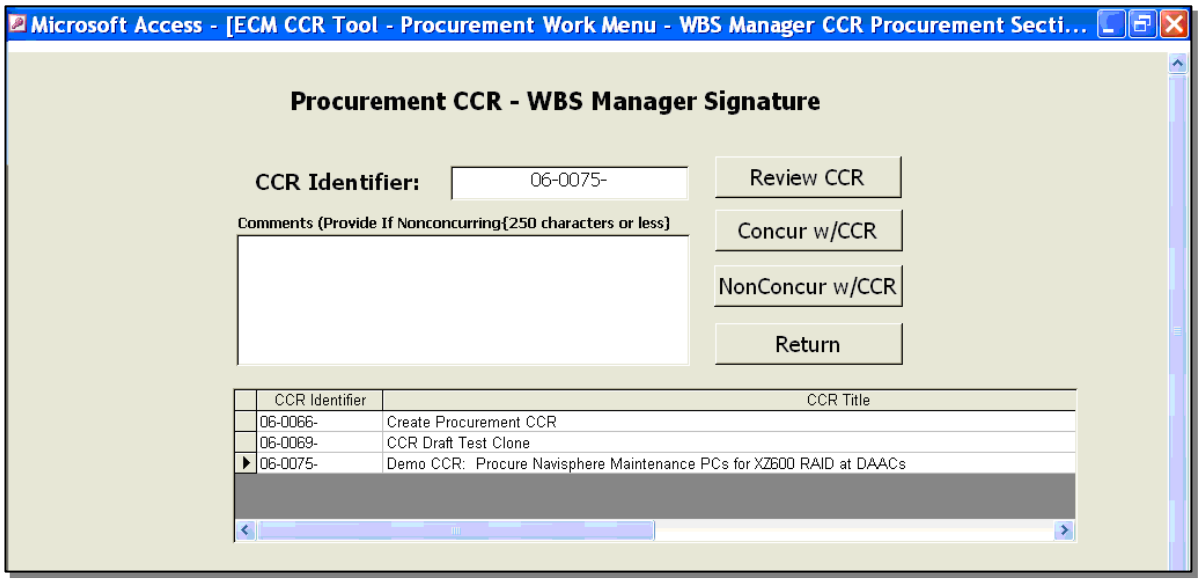


Figure 4.3.2-55. Procurement CCR – WBS Manager Signature form

Click the CCR identifier in the CCR Identifier column and the CCR tool places the CCR identifier in the CCR Identifier's box above the list.

There are four possible actions that a Procurement POC can perform:

1) Review CCR- click the “Review CCR” button to review the contents of the CCR. All pages of the CCR will be available for review. Access to the CCR’s BOM is set up on the Supplementary Procurement Information page. Click the “Display BOM” button on that page and the BOM will be displayed. Click the “Back” button on the Review CCR form to return to the Procurement POC’s Signature form.

2) Concur w/CCR – click the “Concur w/CCR” button if you agree with the contents of the CCR. Once all Procurement POCs concurrences have been obtained, a notification email message is sent to Stakeholders for their review of the CCR, next. Refer to Section 4.3.2.6.4.1 for prompts and responses for this action.

3) NonConcur w/CCR – click the “NonConcur w/CCR” button if you disagree with the contents of the CCR. If you nonconcur, you have to provide a brief reason for nonconcurring in the “Comments” box. The CCR tool will remove all signatures obtained up to this point, will email the comments to the originator and other signers and place the CCR in draft mode to enable the originator’s revisions. Refer to Section 4.3.2.6.2.1 for prompts and responses for this action.

4) Return – click the “Return” button if you want to return to the previous form, My Procurement Work Menu (Figure 4.3.2-54).

4.3.2.6.2.1 Concur w/CCR Action

If the “Concur w/CCR” button is clicked, the Office Assistant will respond as shown in Figure 4.3.2-56.

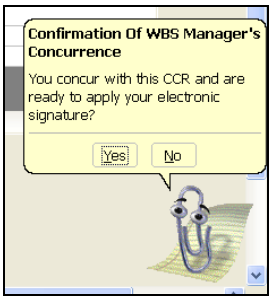


Figure 4.3.2-56. Confirmation of Procurement POC’s Concurrence

Click “Yes” to the Confirmation of Procurement POC’s Concurrence prompt and the Office Assistant will respond as shown in Figure 4.3.2-57. No action is performed if “No” is clicked.

Figure 4.3.2-57. Procurement POC Approval Response

Click OK to close the Office Assistant and the CCR tool places the focus back on the Procurement CCR Signature form (Figure 4.3.2-58).

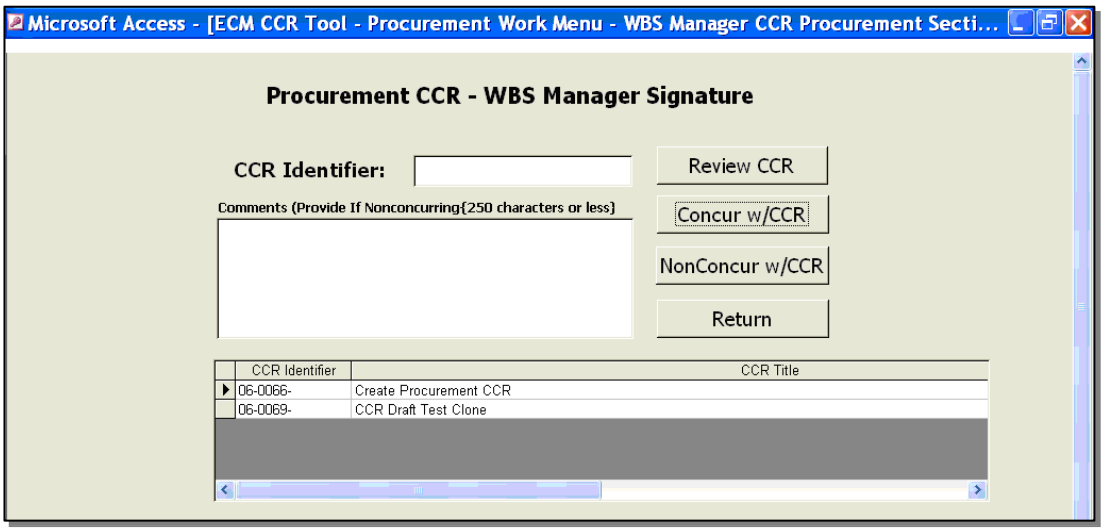


Figure 4.3.2-58. Procurement CCR Signature Form

4.3.2.6.2.2 NonConcur w/CCR Action

For Nonconcurrence actions, a brief comment must be entered into the "Comments" box then click the "Nonconcur w/CCR" button. The set of actions follows similarly to Section 4.3.2.6.1.2.

4.3.2.6.3 Stakeholder Signature

The Stakeholders are asked to review the CCR and sign, once a Sponsor has signed and also Procurement POCs have signed (if it's a procurement type CCR). The event of the Sponsor/Procurement POCs signing will cause the tool to email all of the perspective Stakeholders. This email list is comprised of all of the Authorized Signers based on the checked

boxes on the Stakeholder sheet. Each Office has at least two and up to five individuals who may review and sign the CCR as a Stakeholder. This section covers the instruction of electronically signing as a Stakeholder.

The perspective Stakeholder will have received an email stating the CCR number that needs to be reviewed and concurred. Upon notification, the Stakeholder logs into the CCR tool and the Main Menu (Figure 4.3.2-59) is displayed.

To sign a CCR as a Stakeholder, first click the button in the upper right corner of the Main Menu and labeled "Sign as Sponsor, Procurement POC, Stakeholder, - - - - -"

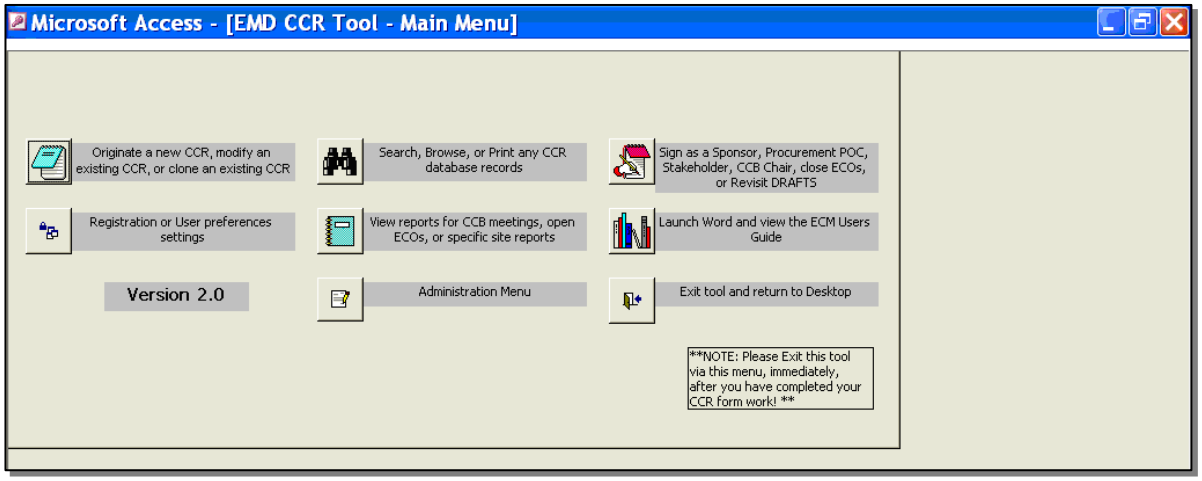


Figure 4.3.2-59. Main Menu

Upon clicking the aforementioned button, the CCR tool displays the My Work Menu as shown in Figure 4.3.2-60.

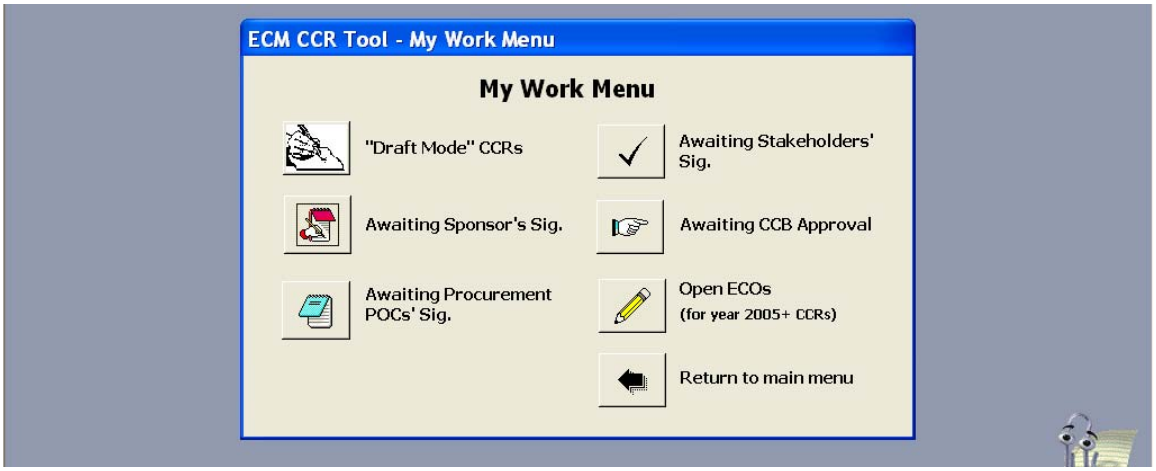


Figure 4.3.2-60. My Work Menu

Click the button, “Awaiting Stakeholders’ Sig.” and the My Work Menu – Stakeholder’s Selection Menu is displayed as shown in Figure 4.3.2-61.

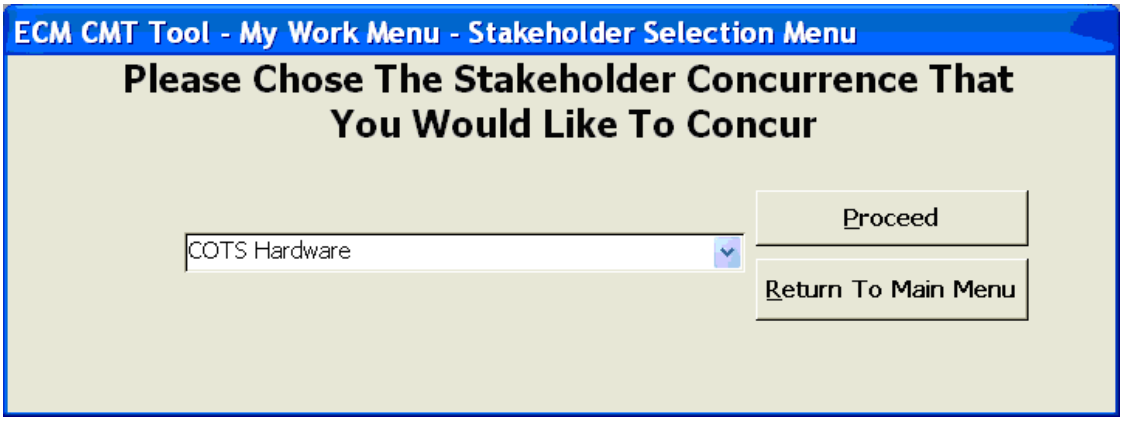


Figure 4.3.2-61. Stakeholder’s Selection Menu

Click the pull-down menu on the Stakeholder’s Selection Menu form and select the Stakeholder role that you are representing. In this example, the “COTS Hardware” Stakeholder was selected.

Click the Proceed button and the CCR tool displays the appropriate Stakeholder’s Concurrence Signature Page as shown in Figure 4.3.2-62. Click the CCR identifier in the CCR Identifier column and the CCR tool copies the identifier into the CCR Identifier box that is above the list.

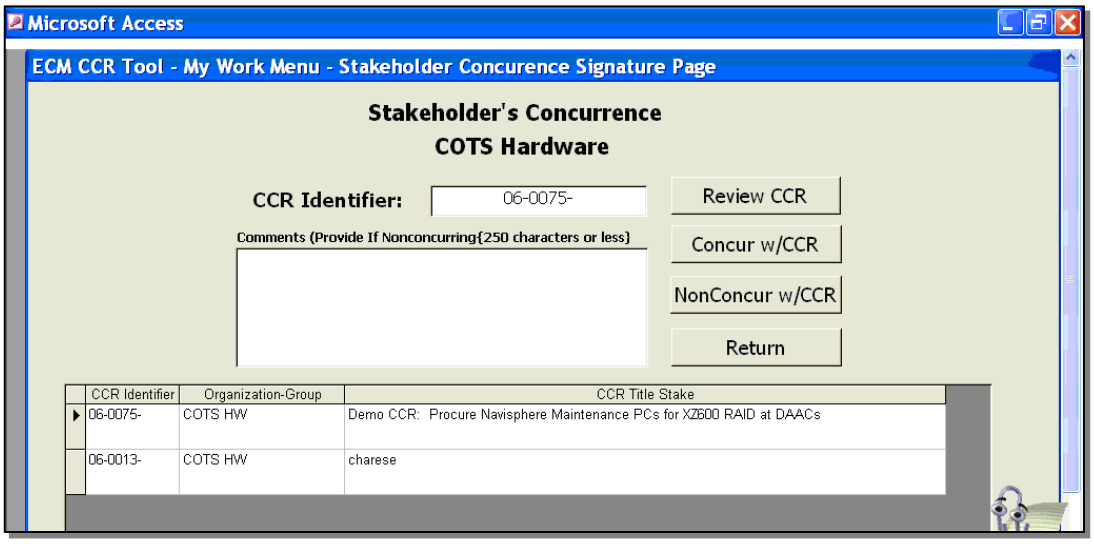


Figure 4.3.2-62. Stakeholder Concurrence Signature Page

There are four possible actions that a Stakeholder can perform:

1) Review CCR- click the “Review CCR” button to review the contents of the CCR. All pages of the CCR will be available for review. For a procurement type CCR only, access to the CCR’s BOM is set up on the Supplementary Procurement Information page. Click the “Display BOM” button on that page and the BOM will be displayed. Click the “Back” button on the Review CCR form to return to the Procurement POC’s Signature form.

2) Concur w/CCR – click the “Concur w/CCR” button if you agree with the contents of the CCR. Once all Stakeholders concurrences have been obtained, a notification email message is sent to the CCB Chairpersons for their review of the CCR, next. Refer to Section 4.3.2.6.4.1 for prompts and responses for this action.

3) NonConcur w/CCR – click the “NonConcur w/CCR” button if you disagree with the contents of the CCR. If you nonconcur, you have to provide a brief reason for nonconcurring in the “Comments” box. The CCR tool will remove all signatures obtained up to this point, will email the comments to the originator and other signers and place the CCR in draft mode to enable the originator’s revisions. Refer to Section 4.3.2.6.2.2 for prompts and responses for this action.

4) Return – click the “Return” button if you want to return to the previous form, My Stakeholder Selection Menu (Figure 4.3.2-61).

4.3.2.6.3.1 Concur w/CCR Action

If the “Concur w/CCR” button is clicked, the Office Assistant will respond as shown in Figure 4.3.2-63. Click “Yes” to the Confirmation of Stakeholder’s Concurrence prompt and the Office Assistant will respond as shown in Figure 4.3.2-64. No action is performed if “No” is clicked.

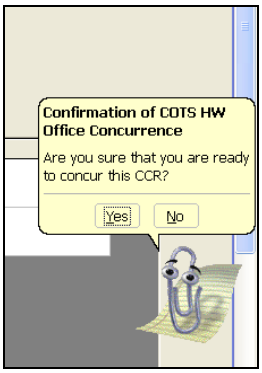


Figure 4.3.2-63. Confirmation of Concurrence Prompt

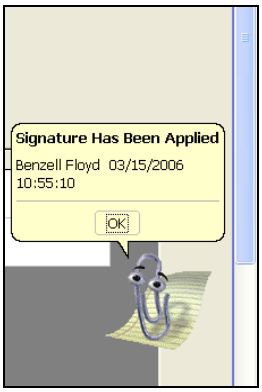


Figure 4.3.2-64. Notification of Signature Applied

Click the OK button on the "Signature Has Been Applied" message. The message prompt is removed, the now concurred CCR is removed from the Stakeholder's Concurrence window as shown in Figure 4.3.2-65.

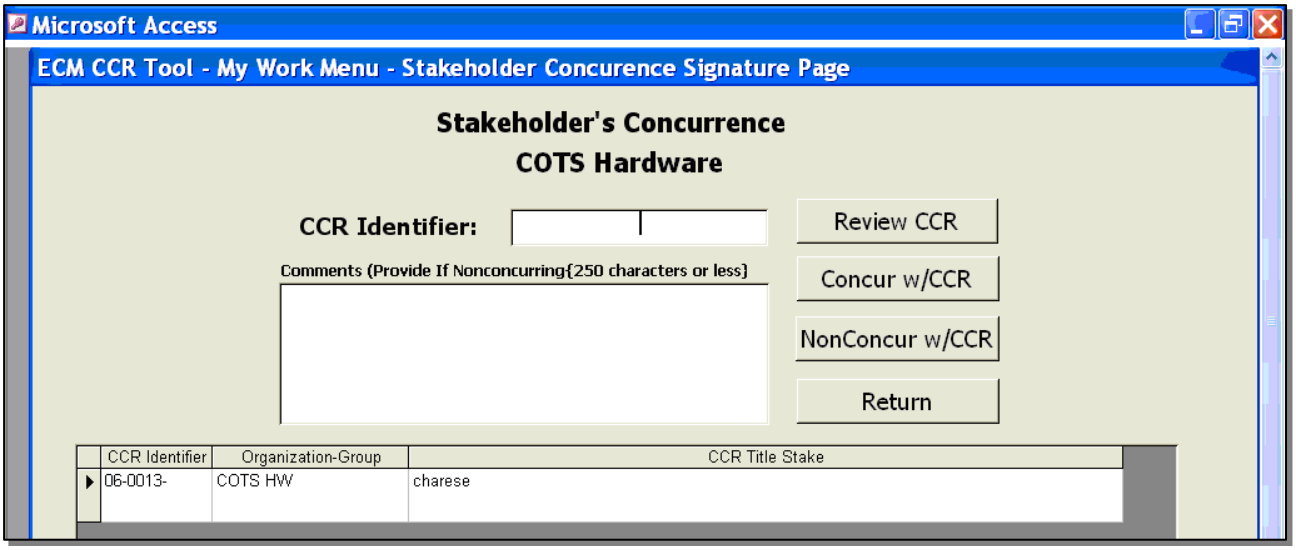


Figure 4.3.2-65. Stakeholder's Concurrence Window

Click the Return button to return to the Stakeholder's Selection window then click the "Return to Main Menu" button on the Selection window to get back to the Main Menu.

4.3.2.6.3.2 NonConcur w/CCR Action

For Nonconcurrence actions, a brief comment must be entered into the “Comments” box then click the “Nonconcur w/CCR” button. The subsequent steps and displayed forms will occur as in previous sections for non concurrences.

4.3.2.6.4 CCB Chairperson’s Approval

Once the Stakeholders have completed the Stakeholder sheet, an email is sent to the perspective CCB Chairperson(s), in order to notify the Chairpersons of a CCR that is ready for approval. The CCB Chairperson(s) perform the final review of the CCR.

There are three potential CCB Chairs that may need to approve a CCR: EDF CCB Chairperson, SCDV CCR Chairperson, and the ECS CCB Chairperson. CCB approval criteria included within the CCR tool’s code and the contents of the CCR enables the tool to determine which CCB Chair should be required to approve a CCR. This section covers the instruction of electronically signing as a CCB Chairperson. To sign as a CCB Chairperson, first click the button in the upper right corner of the Main Menu (Figure 4.3.2-66) and labeled as “Sign as a Sponsor, Procurement POC, Stakeholder, CCB Chair - - -“.

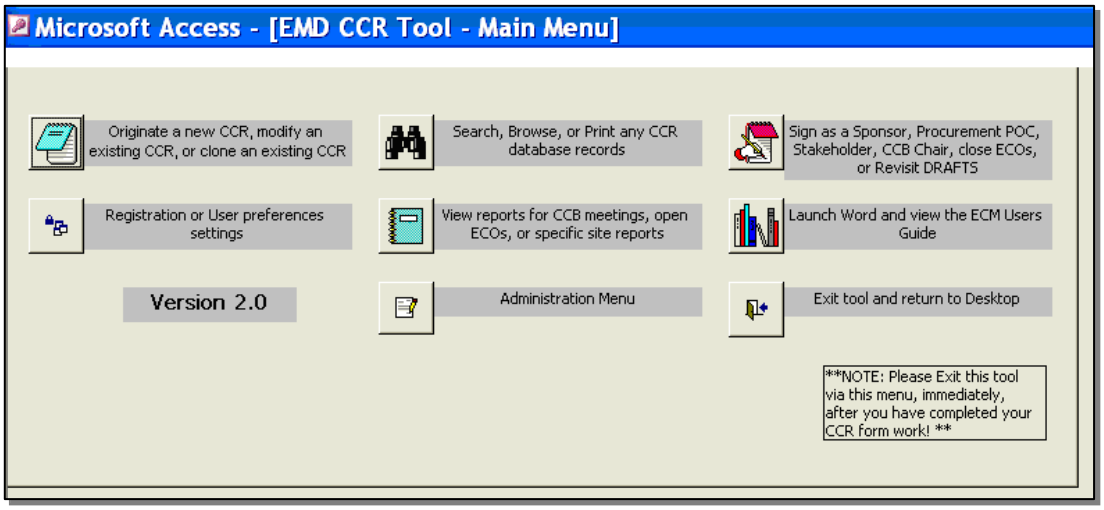


Figure 4.3.2-66. Main Menu

Upon clicking the aforementioned button, the “My Work Menu” (Figure 4.3.2-67) is displayed.

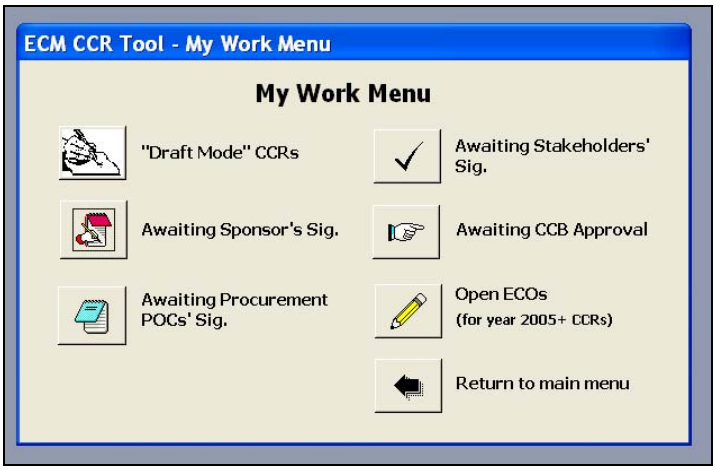


Figure 4.3.2-67. My Work Menu

Click the "Awaiting CCB Approval" button on the My Work Menu and the My CCB Chair Signature Menu (Figure 4.3.2-68) is displayed.

Figure 4.3.2-68. My CCB Chair Signature Menu

Note, that there is a button for each of the CCB Chairs on the My CCB Chair Signature Menu. Click the button for the CCB Chair that you represent. In this example, the "Awaiting SCDV CCB Chair Signature" button was clicked. The CCR tool responds by displaying the SCDV CCB Chair Signature window as shown in Figure 4.3.2-69.

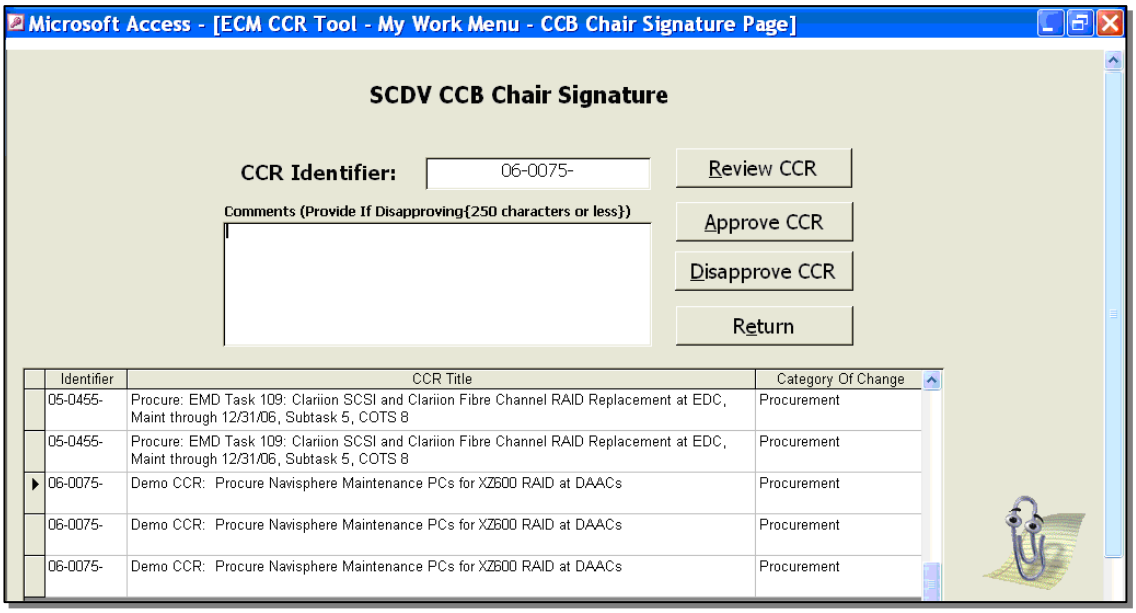


Figure 4.3-2-69. SCDV CCB Chair Signature

On the <CCB Chair> CCB Chair Signature window, click the desired CCR's identifier in the Identifier column and the CCR tool copies the identifier into the CCR Identifier box as shown in Figure 4.3.2-69.

There are four possible actions that a CCB Chairperson can perform:

1) Review CCR- click the "Review CCR" button to review the contents of the CCR. All pages of the CCR will be available for review. Access to the CCR's BOM is set up on the Supplementary Procurement Information page. Click the "Display BOM" button on that page and the BOM will be displayed. Click the "Back" button on the Review CCR form to return to the CCB Chair's Signature form.

2) Approve CCR – click the "Approve CCR" button if you agree with the contents of the CCR. Once all CCB Chairs (if more than one is required) have approved the CCR, Approved box is checked on the CCR Form page of the CCR; a notification email message is sent to all parties to let them know that the CCR has been approved. The ECO assignees are notified of their ECO tasks. Refer to Section 4.3.2.6.4.1 for prompts and responses for this action.

3) Disapprove CCR – click the "Disapprove CCR" button if you disagree with the contents of the CCR. If you disapprove, you have to provide a brief reason for disapproving the CCR in the "Comments" box. The CCR tool check the Disapprove box on the CCR Form page of the CCR; a notification email message is sent to all parties to let them know that the CCR has been disapproved. Refer to Section 4.3.2.6.2 for prompts and responses for this action.

4) Return – click the “Return” button if you want to return to the previous form, My CCB Chair Signature Menu, Figure 4.3.2-68.

4.3.2.6.4.1 Approve CCR Action

If the “Approve CCR” button is clicked, the Office Assistant will respond as shown in Figure 4.3.2-70.

Figure 4.3.2-70. Confirmation of CCR Approval

Click “Yes”, the CCR is approved and is removed from the list of CCRs; the message prompt is removed. Click “No” and no action is performed.

Click the “Return” button to return to the previous menu, My CCB Chair Signature Menu (Figure 4.3.2-71).

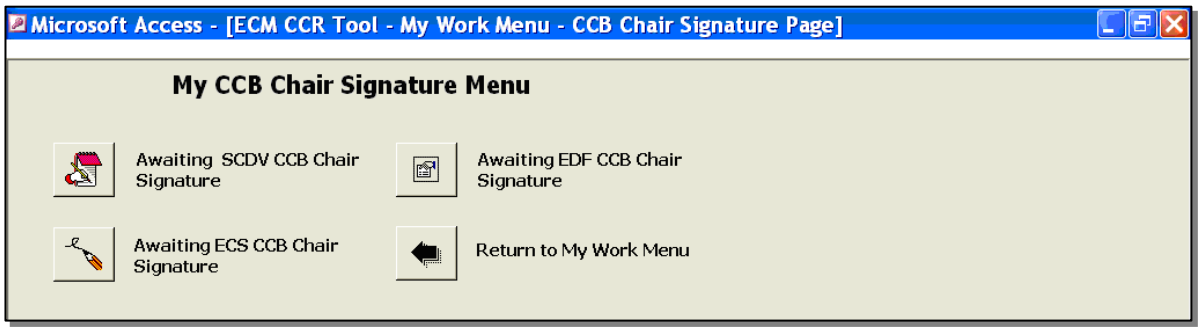


Figure 4.3.2-71. My CCB Chair Signature Menu

Click the “Return to My Work Menu” button on the “My CCB Chair Signature Menu to get back to the My Work Menu. Then click the “Return to main menu” button on the My Work Menu to get back to the Main Menu. The front page of a CCB Approved CCR is shown in Figure 4.3.2-72.

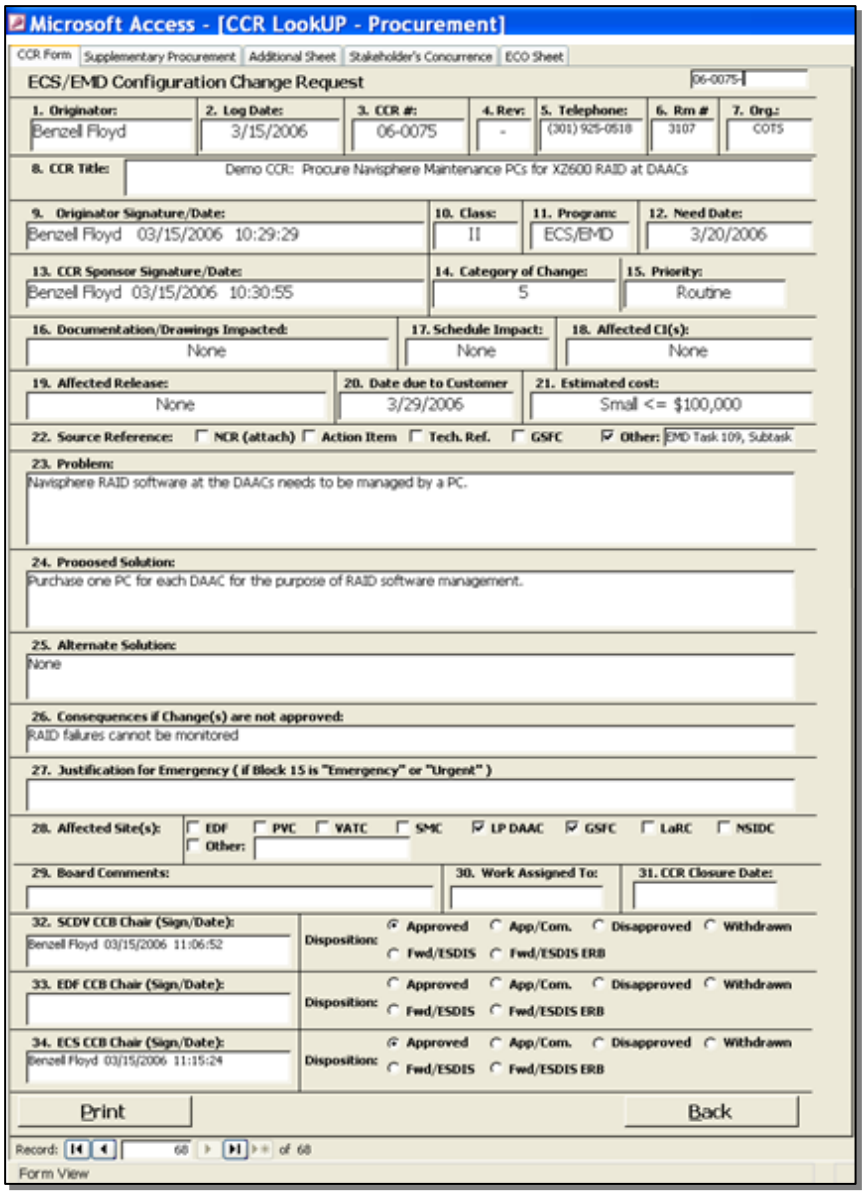


Figure 4.3.2-72. Approved CCR

4.3.2.6.4.2 Disapprove CCR Action

For a Disapprove CCR action, a brief comment must be entered into the "Comments" box then click the "Disapprove CCR" button. The Office Assistant will respond as shown in Figure 4.3.2-73.

Figure 4.3.2-73. Confirmation of Disapproval Prompt

Click the "Yes" button. The CCR is disapproved and the Office Assistant will respond as shown in Figure 4.3.2-74. Click the "No" button and no action will be taken.

Figure 4.3.2-74. Confirmation of a CCB Chair's Disapproval

Click OK on the disapproval message. The "Disapprove" box on the CCR Form page of the CCR will be checked. No further action will be taken on the disapproved CCR. Click the "Return" button on the <CCB Chair> CCB Chair Signature window and the CCR tool will take you back to the My CCB Chair Signature Menu. Click the "Return to My Work Menu" button on the My CCB Chair Signature Menu and the CCR tool will take you back to the My Work Menu. Click the "Return to main menu" button on the My Work Menu to get back to the Main Menu.

4.3.2.7 ECO Assignee Close ECO

Once the CCR is approved, the Engineering Change Orders (ECOs) can be worked. The ECOs comprise the work of the CCR. Once a CCB Chairperson has approved a CCR and signed, an email is sent to the ECO Assignees, in order to notify them that the CCR has been approved and that the work of the CCR needs to be performed. When the ECO has been completed, the ECO Assignee should close the ECO. This section covers the instructions for electronically closing an ECO.

The ECO Assigned logs into the CCR tool and the Main Menu (Figure 4.3.2-75) is displayed.

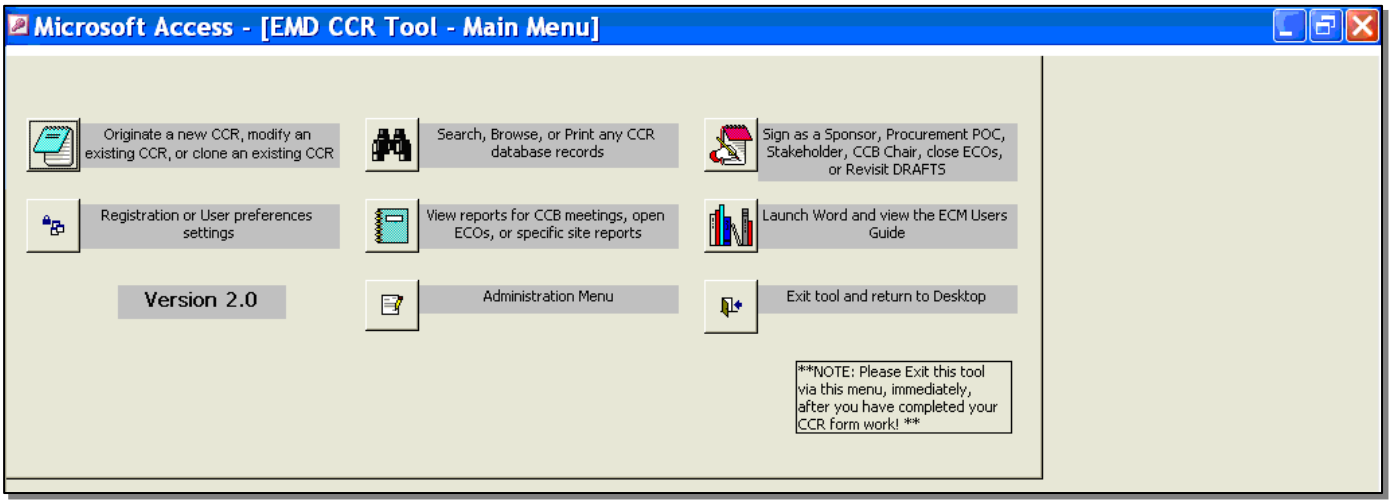


Figure 4.3.2-75. Main Menu

Click the "Sign as a Sponsor, Procurement POC, Stakeholder, CCB Chair, close ECOs - - -" button in the upper right corner. Upon clicking this button, the "My Work Menu" (Figure 4.3.2-76) is displayed.

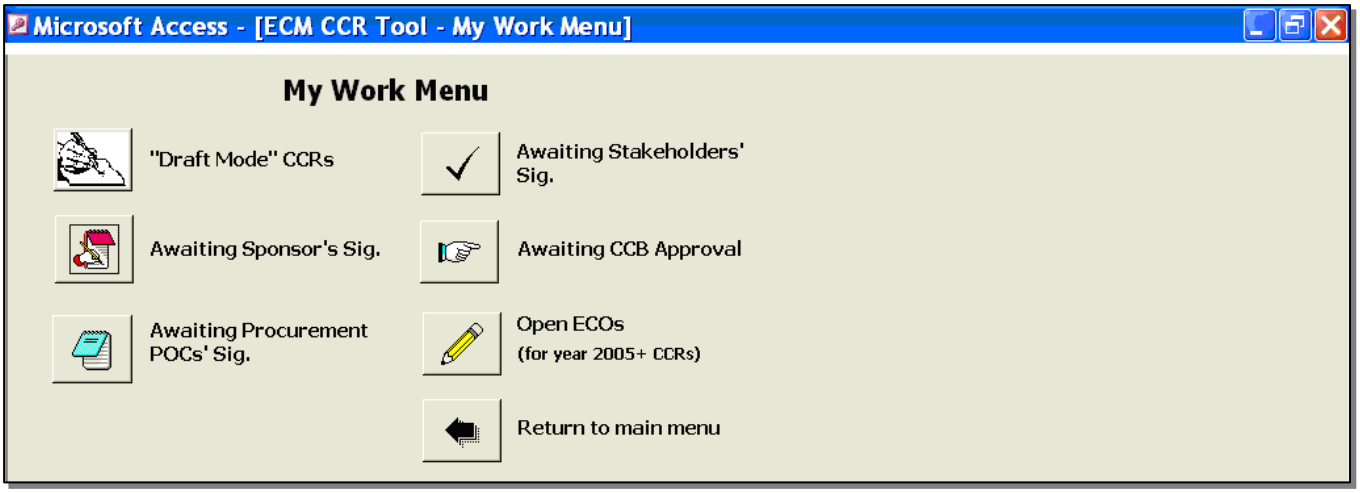


Figure 4.3.2-76. My Work Menu

Click the "Open ECOs" button on the My Work Menu and the frmMyWorkOpenECO form (Figure 4.3.2-77) is displayed. All of the current user's open ECOs are displayed on the form.

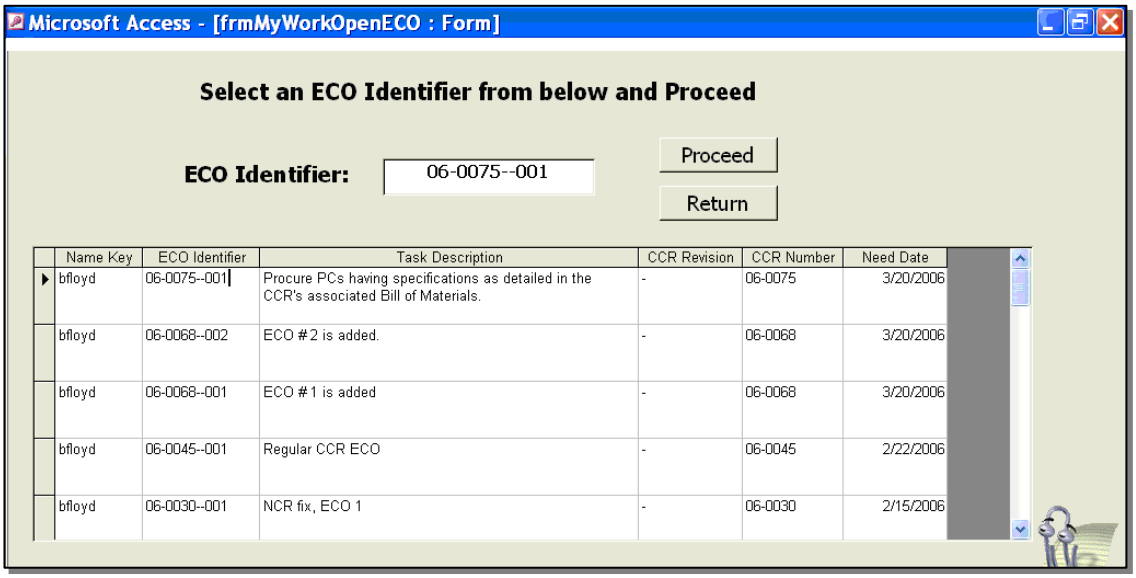


Figure 4.3.2-77. List of Open ECOs

Click the ECO identifier of the ECO (to be closed) in the ECO Identifier column and the CCR tool will copy the identifier into ECO Identifier box above the list. Click the "Proceed" button and the CCR tool displays the Office Assistant message as shown in Figure 4.3.2-78.

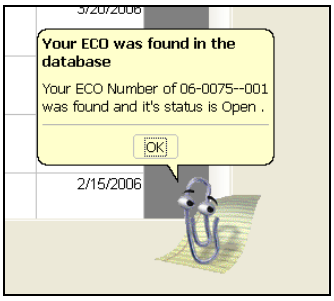


Figure 4.3.2-78. Confirmation For Finding Open ECO

Click the OK button on the Office Assistant and the CCR tool displays the next Office Assistant message as shown in Figure 4.3.2-79.

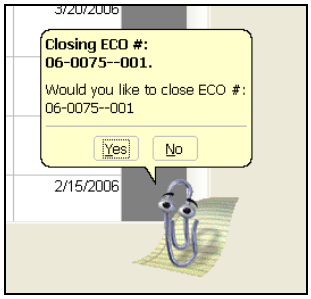


Figure 4.3.2-79. Closing ECO Message Prompt

Note, there are two possible responses, “Yes” and “No.” Section 4.3.2.8 (below) covers what happens if “Yes” is selected. Section 4.3.2.9 covers what happens if “No” is selected.

4.3.2.8 ECO Assignee Close ECO

Click “Yes” and the CCR tool responds with the Office Assistant message shown in Figure 4.3.2-80. At this point, the select ECO has been closed and the close date is been entered.

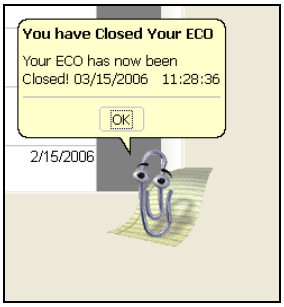


Figure 4.3.2-80. Confirmation of Closed ECO

The ECO is no longer listed in the list of ECOs (see Figure 4.3.2-81).

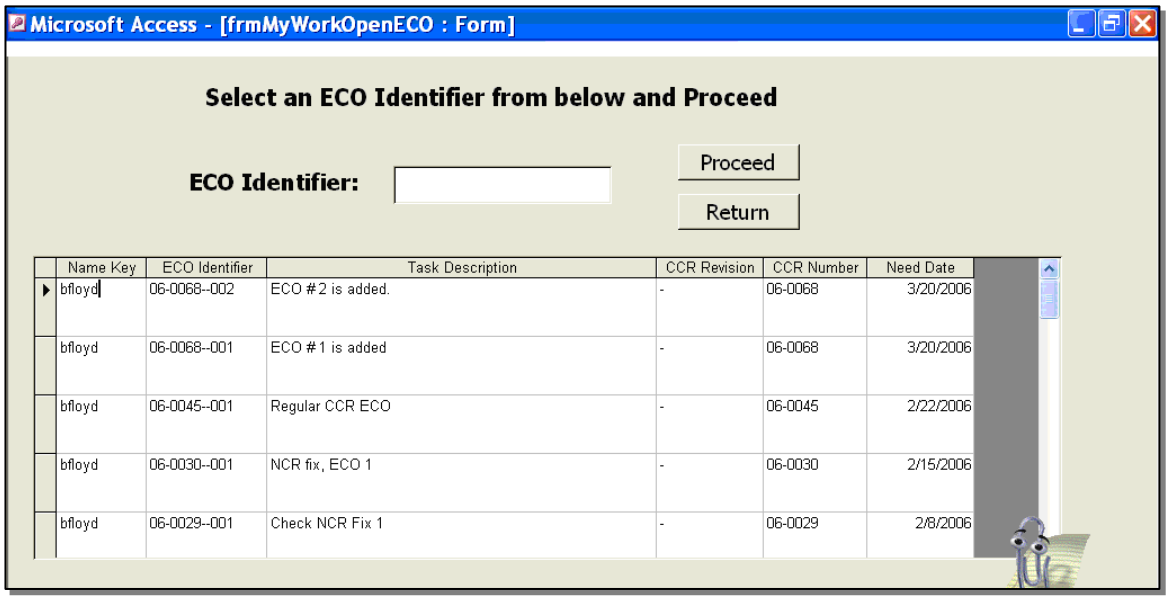


Figure 4.3.2-81. List of Remaining ECOs

Click the "Return" button to return to previous menu and then the "Return" buttons on the following menus to get back to the Main Menu.

4.3.2.9 No Response to Close ECO

If "No" is clicked, the CCR tool responds with the Office Assistant message shown in Figure 4.3.2-82. Click "OK" on the message prompt. The Office Assistant message is removed and no

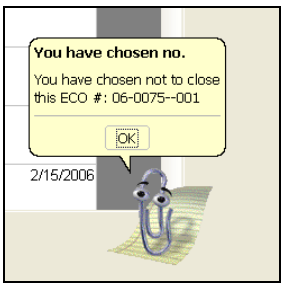


Figure 4.3.2-82. Choose Not To Close ECO Response

action is performed on the ECO. Figure 4.3.2-80 is displayed. At this point, either an ECO identifier can be selected again or the "Return" button can be used to get back to previous forms and eventually to the Main Menu.

4.3.2.10 Searching the CCR Database

The Microsoft® Access Main Menu provides excellent search capabilities in conjunction with the EEB CCR Tool's tables. Select the binoculars icon within the Tool main menu (top right) to search across all CCRs that are in the Access database (the text to the right of the binoculars is **Search across entire CCR database for any information**.). Any CCR field may be searched, within the set of CCR form tabs: *CCR Form*, *Additional Sheet*, *Stakeholder's* Concurrence, or *ECO Sheet*.

It is quite useful to search the database for any information about all CCRs. Microsoft® Access provides the functions for performing searches. It is easiest to show by example.

To obtain a particular CCR that is already in the database, perform the following steps:

1) Select the "Search across entire CCR database for any information." button on the EEB CCR Tool main menu. The button has a set of binoculars as an icon.

2) The tool will then launch the CCR form for the cover sheet for CCR 05-0001, which is the first CCR record carried within the tool. Each field can be searched for any character string, and, multiple field searches are also possible. To select CCR 05-0108, set the mouse cursor to the left of the 05-0001 text. The mouse wheel, when moved, will allow incremental movement across the database, but to get right to the CCR of interest, continue with steps below. Note that all of the CCR data can be readily viewed across all four Tabs mentioned above. Refer to Figure 4.3.2-83 on the next page.

3) In the Microsoft® Access menu bar at the very top of the window, note the three filter icons: Filter by Selection, Filter by Form, and Apply Filter. Positioning the mouse cursor on a Filter icon will cause some text from Access to appear to indicate the icon function. Three filter icons, which look like funnels, are present in the Access main menu bar once the binoculars button within the Access application is selected.

4) In the first Search example, the CCR 05-0108 will be obtained. After placing the mouse cursor in the CCR Form field "**3. CCR #:**", select the Filter icon in the Access main menu bar that has the form next to the Filter icon (Filter by Form). Ensure that all of the fields are blank (use the delete key to blank any that are not), then place the mouse cursor in the "**3. CCR #:**" text box.

5) Next, type in the CCR of interest, in this case, 05-0108. Then select the Filter icon in the main menu bar. CCR 05-0108 will then be displayed. To return to the Main Menu, select the "Return to main menu" button on the bottom of the CCR page.

6) Similarly, and text can be searched within any of the CCR fields.

7) Next a search will be performed for all of the AMASS CCRs.

8) Select the binoculars in the Main Menu form.

9) Place the mouse cursor in the "**8. CCR Title:**" field, then select the Filter by Form icon on the Access main menu bar.

10) Delete any fields, then place the mouse cursor in the **8. CCR Title** text box. Enter the text *AMASS*. The wild card asterisks indicate that any text may exists before and after the AMASS string in any CCR Titles.

11) Select the Filter icon. Note that 5 records are returned. This is indicated at the bottom of the form, by the text "Record 1 of 5 (Filtered)". The mouse thumbwheel can then be used to view each of the 5 returned AMASS CCRs.

12) Notice that the text searches are case insensitive. In this case, both strings AMASS and Amass provide hits.
13) All of the CCR tool form fields can be similarly searched.

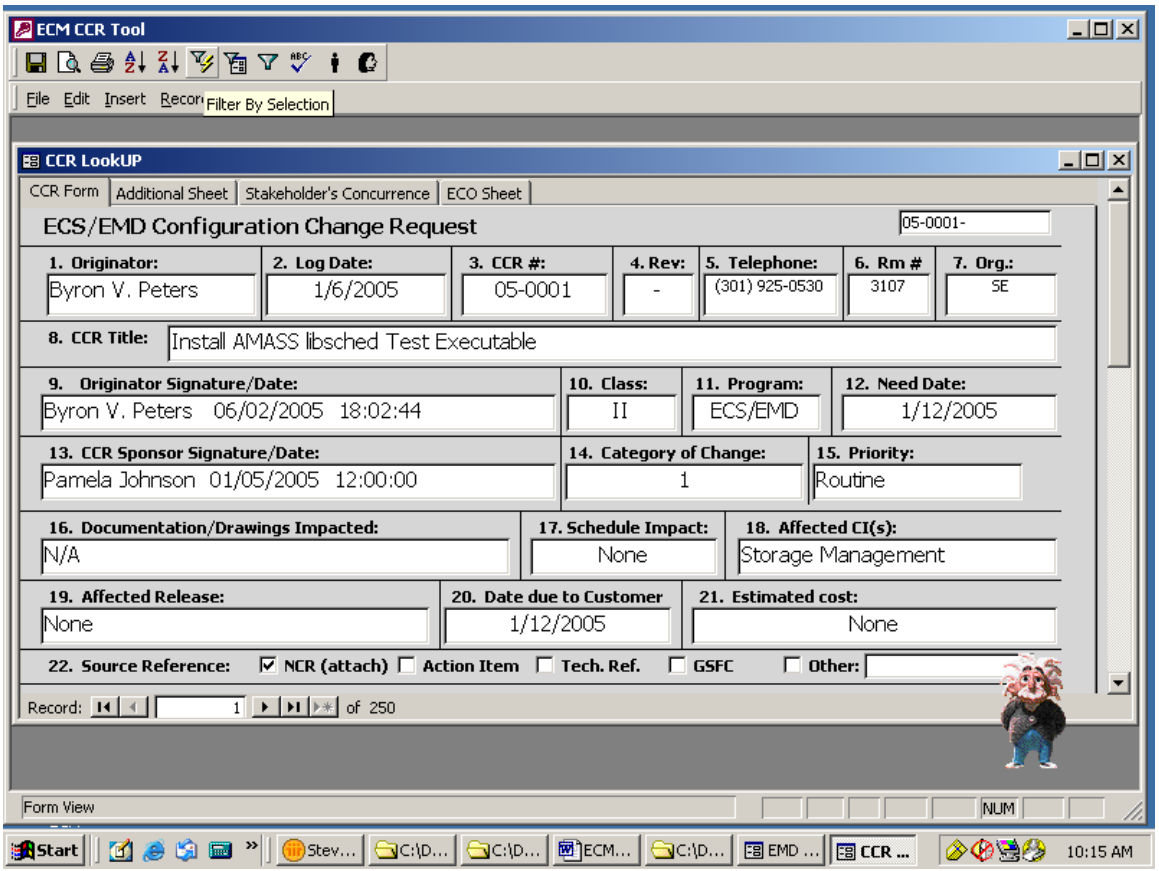


Figure 4.3.2-83. CCR Form Showing Tabs and Filter Controls

4.3.2.11 CCR Reports

Several CCR Reports can be produced by the CCR tool. To get to the Reporting capability, click the "View reports for CCB meetings, open ECOs, or specific site reports" button on the Main Menu. Below is a brief description of these reports.

4.3.2.11.1 New CCRs

The CCRs are those that are in the CCR database that have not been approved, are not Procurement type CCRs, and are not Draft CCRs. Selecting this button will provide options to Submit, Preview, or Cancel. Typically, Preview is selected just to see the list of new CCRs. A date field allows an Agenda Date to be selected. Currently, these Agenda Dates fall on Thursdays to support the SCDV CCB.

The Cancel button, when selected, simply returns the User back to the **CCB Agenda CCR Reports** menu.

4.3.2.11.2 Deferred CCRs

These CCRs have been presented to the CCB at least one time, but have been deferred for some reason. Typically, more time is needed to enable the CCR to continue.

4.3.2.11.3 Approved Out of Board CCRs

Most CCRs do not need to be presented at a CCB meeting, and can be approved out of board. An example is a Custom Code type CCR, which is generally approved the same day that it is written. This report function will show these CCRs. The period of time reflected in the report is from the **Begin Date** to the **End Date**, which can be varied according to the User's needs.

4.3.2.11.4 SCDV/DAAC CCB Open ECOs

Engineering Change Orders represent the work of the CCR. Once the CCR is approved, all of its associated ECOs become valid. ECO assignees should try to close the ECOs to the Due Date specified. These reports provide visibility to all approved CCRs' ECOs.

Open ECOs can pertain to the DAACs or Riverdale. This button, when selected, provides the User a choice to select either **Riverdale** or **DAAC**. Also an Agenda date can be entered. This

date is used to determine the differences in the ECO due dates with the current date (Agenda date).

4.3.2.12 CCR Tool Problem Reporting

Anyone may create a new Trouble Ticket (TT) to document a problem with the tool. Use Seapine's TestTrack Pro tool to create a new TT. Before writing and submitting a new TT, do the following:

1) Review the ECM CCR Tool User's Guide and determine if you are executing the CCR tool properly. If not, follow the instructions in the guide.

2) Contact the CCR Tool Admin and ask for assistance.

3) Review the existing TTs and determine if your issue has already been reported. This is necessary to avoid duplicating an existing TT.

4.3.3 IBM® Rational® ClearCase® Baseline Manager (BLM)

ClearCase BLM is a custom application specifically designed to serve as an efficient configuration management tool to manage the ECS Baseline. It generates and maintains records that describe what comprises baselined operational system configurations for the DAACs, ECHO, VATC, PVC, and the EDF2 hosts at the ECS Development Facility (EDF). These records identify baselined versions of hardware and software items as well as their assembly structures and interdependencies. ClearCase BLM keeps chronological histories of baseline changes and traceability of items to predecessor versions and system releases. In addition, the tool provides visibility to CCR approved baseline changes, as well as references to associated Release Notes documents.

ClearCase BLM does this by maintaining a set of ClearCase version-controlled elements along with scripts and internal information about how they relate. Control item records represent physical resources such as COTS software and host names assembled to form operational systems, as well as logical artifacts such as baselines and other configuration items. They are designated to relate system entities directly to discrete responsibilities and actions associated with configuration management of the system. ClearCase BLM's catalog of control items is called the /ecs/cm/CIDs directory record set. The ClearCase BLM tool is an enhanced ClearCase GUI that uses the power of the ClearCase code management system to manage the GUI scripts, records, and scripts used to manage the baseline. Baseline records can only be changed with approved CCRs.

The most significant relationship maintained among control items is product structure. Product structure is the term for the ClearCase BLM data constructs that define the ingredients – or bill of material -- for a site. Product structures have corresponding CCR approval dates that establish the baseline change effectivity dates, and they reference CCRs numbers, as well as Release Notes.

ClearCase BLM is installed only at the EDF in Riverdale, MD, where it is used by CM personnel to manage baseline data about resources deployed to all external ECS sites, including the DAACs, ECHO, as well as the three internal ECS sites, the PVC, VATC, and the EDF2 string (Evolution). The ECS Baseline Information System (EBIS) is available to the Riverdale staff at URL http://pete/baseline/. Also, each site has an EBIS that is served locally. These EBIS sites are served from LP DAAC e4iils01, ASDC l4iil01, and NSIDC n4iil01. Also, a site for ESDIS access is provided by ebis.gsfc.nasa.gov. Each DAAC site manages access to their EBIS file systems, while ESDIS site access is provided by firerule rules in Riverdale. In the course of baseline updates, the data is replicated from "pete" to the other 4 EBIS servers. Each site offers a consolidated view of baseline data system-wide, as well as site-specific views. ClearCase BLM generates specific baseline reports that can be viewed, printed, or saved in a file. These reports are automatically formulated, posted to "pete", and then replicated to the external servers.

4.3.3.1 Internal ClearCase BLM Data Constructs

The ECS baseline data for COTS S/W, COTS S/W patches, Operating Systems, O/S patches, data files, databases, ECS hosts and host functions, resides in ClearCase as "text_file" elements.

A default configuration specification is used to view the information, using the CM_MASTER view tag name.

A variety of files and methods hold this information, which are explained in detail below. Note that the architecture of the data design portion of ClearCase BLM minimizes the number of steps to update the baseline, by either implementing new CCRs or correcting previously entered CCR data.

There are 10 data constructs described below. One or more constructs is referenced by scripts in order to generate the specific Baseline Reports.

4.3.3.1.1 Control Item Identifiers

This describes the Control Item Identifiers (CIDs) for the ECS COTS S/W. The ClearCase directory that holds all of the CIDs is /ecs/cm/CIDs/. Within this directory are ClearCase text_file elements. Text_file elements are used because they can be directly edited, and they require the least amount space for storage.

Each CID is a Comma Separated Variable (CSV) formatted file, which means that each of the fields uses a comma (,) as a delimiter. This format was chosen since the files can be readily exported/imported with Microsoft Windows products, such as Excel. The record format for each CID is contained on one line, and consists of 16 items, described below:

1) ECS NAME - This is the name of the ECS COTS S/W, using a familiar nomenclature. The ECS NAME may contain 30 characters or less, with no embedded commas. Other restricted characters are: !, @, #, $, %, ^, &, *, ~, `, ?. These characters have special meaning in the UNIX Operating System.
2) COMMODITY CODE – A character used to convey the procurement nature of the COTS product. This field is 1 character, and can be a “P” to mean Purchased, and “F” to mean Freeware, an “S” to mean Shareware, or a “-“ to mean “unknown”. These four characters are the only characters known to the algorithms that reference this field.
3) RESP ORG – This is the Responsible Organization, or the group which has the most knowledge regarding the use and placement of the product. A maximum of 6 characters may be used to represent the RESP ORG item within each CID record. A “-“ indicates that the RESP ORG is unknown.
4) VARIANT – This item may use at most 10 characters, and is the host O/S that would have this COTS S/W installed. Current variants are “Solaris”, “Linux”, “Windows”, OpenBSD, MacOS, and “AIX”.
5) MFR/DEV NAME – This is the manufacturer or developer of the COTS S/W. A maximum of 30 characters can be used to represent the name of the manufacturer or developer. A “-“ indicates that the MFR/DEV NAME is unknown.
6) VERSION – This is the version of the COTS S/W. Specifically, the version nomenclature used by ClearCase BLM is the manufacturer nomenclature. The manufacturer nomenclature may contain “minor” version information that must be

represented in the baseline data for accurate tracking and identification. A maximum of 21 characters can be used to represent the VERSION.

7) PRINCIPAL DIRECTORY – A maximum of 50 characters conveys the installation location. Nearly all COTS S/W resides in multiple sub directories. To keep the installation location reasonable, the highest sub directory is represented. All of the COTS S/W must reside at the PRINCIPAL DIRECTORY or lower.
8) CONTROL ITEM ID – A Control Item Identifier is a 9 character string which uniquely identifies a record with the /ecs/cm/CIDs ClearCase BLM directory. The first character is always a "b", and is always followed by an 8 character integer. The storage of this value in the record, which is also the file name within the /ecs/cm/CIDs directory, provided redundancy. All CIDs range from b00084000 through b00086000, with CIDs above b00085000 being dedicated for ECHO.
9) COMMENT – In order to provide further information, a maximum of 60 characters may be used. Commas may not be used, as well as the character set described in the ECS NAME field in 1).
10) CRITICAL ITY – Each COTS S/W is either Critical or Not Critical. A Critical COTS S/W product is required in order that the custom software may operate on the installed host. The CRITICALITY is either "YES", "NO", or "-" for unknown. This field must be equal to or less than 3 characters in length.
11) ITEM SUBCLASS – A maximum of 7 characters may represent the item subclass. Typical subclasses are "program" or "OS", and describe a major category in which the COTS S/W belongs. Nearly all CIDs are either "program" or "OS" (Operating System). A "-" indicates that the ITEM SUBCLASS is unknown.
12) REF CODE – A REF CODE may be at most 1 character, and is a Reference Code. A "-" indicates that the Reference Code is unknown.
13) CSCI – Computer Software Component Identification – A CIDs CSCI may be at most 5 characters. A "-" indicates that the CSCI is unknown.
14) RELEASE NOTES – Usually, but not always, a COTS S/W product uses a Software Release Notes document to provide installation instruction, installation hosts, and a variety of other pieces of information. The format of this record may use a maximum of 16 characters. A typical Release Notes field looks like "914-TDA-349". A "914-TDA-xxx" is used if the Release Notes is not applicable.
15) CCR – Configuration Change Request. As any baseline change requires a CCR, it is useful to contain this number in the CID record. A CCR may contain up to 7 characters, but usually 6 characters are sufficient. A CCR looks like "09-0123". Revision A to CCR "09-0123" would be "09-0123A".
16) EFFECTIVITY DATE – For the ClearCase BLM tool, the effectivity date is the CCR approval date. This date signals that the change request is approved. The EFFECTIVITY DATE contains 8 characters, and is of the format mm/dd/yy, e.g., "03/20/09".

4.3.3.1.2 Current Hosts List

The Current Hosts list contains all of the ECS baseline hosts. The ClearCase path is "/ecs/cm/host_data/current_hosts". The UNIX file date for this file is the timestamp to indicate when the file was last changed.

There are as many lines to the file as there are current hosts. There are four fields within each record. Column 1 is the ECS host name. Column 2 is the ECS sub system to which the ECS host belongs. Column 3 is the CSCI for the ECS host, and column 4 is the ECS host major function.

1) ECS Host Name – This is the string returned from "uname –n" while logged onto the ECS host. Host name formats are 7 letters, generally. The first letter designates the ECS site, "e" for EDC, or LP DAAC, "c" for ECHO, "l" for LaRC, or ASDC, "n" for NSIDC, "p" for PVC, "t" or VATC, and "f" for EDF2. Also, the letters "c", "d", "f", and "i" designate the Riverdale Linux Evolution hosts. (e.g., "c4cbl01"). ECHO host names do not follow ECS naming conventions, and are alphabetic strings from between 3 and 10 characters.
2) ECS Host Subsystem – This is the ECS functional component. The sub system name is three letters followed by the word "Subsystem". The second column is always exactly 13 characters long, e.g "AST Subsystem".
3) CSCI – A specific set of up to 5 characters which identify the Computer Software Component Identification.
4) ECS Host Major Function – Each ECS host exists for a purpose. The purpose is stated in column 4 of this construct, and may contain a maximum of 30 characters.

4.3.3.1.3 Data List

There are two entities that are present in the reports, "data" and "databases". The Data List construct exists to provide the "data". This construct path is /ecs/cm/BLM/host_data/data, and is a Clearcase text_file element that is directly editable. It is a CSV formatted file.

Each record (line) within this file is comprised of 7 fields:

1) ECS Host Name – This is the name of the hosts, e.g., "e4eil01". The name can be a maximum of 10 characters.
2) Data Name – This is the data that is conveyed by the Construct. A typical data name is "Production data", or "Ingest files". The Data Name can have a maximum of 50 characters.
3) Data Version – This is the version of the Data Name. This can be at most 7 characters, and represents the major version of the data, such as "6A".
4) Data Construct Type – For this construct, the fourth field must always say "data".
5) Data CID – Data Control Item Identifier. This field has a CID format entry, and has to be exactly 9 characters in length.
6) Data CSCI – Computer Software Component Identification – A CSCI may be at most 5 characters.
7) Data Responsible Organization – The cognizant ECS organization for the data; the owner of the data. This field may be a maximum of 6 characters.

4.3.3.1.4 Databases List

There are two entities that are present in the reports, “data” and “databases”. The Databases List construct exists to provide the “databases.” This construct path is /ecs/cm/BLM/host_data/databases, and is a Clearcase text_file element that is directly editable. It is a CSV formatted file.

Each record (line) within this file is comprised of 8 fields:

1) ECS Host Name – This is the name of the hosts, e.g., “e4eil01”. The ECS Host Name can be a maximum of 10 characters.
2) Database Name – This is the data that is conveyed by the Construct. A Database Name example is “Remedy DB”. The Database Name can have a maximum of 50 characters.
3) Database Version – This is the version of the Database Name. This can be at most 7 characters, and represents the major version of the database, such as “7.22”.
4) Database Construct Type – For this construct, the fourth field must always say “database”.
5) Database CID – Database Control Item Identifier. This field has a CID format entry, and has to be exactly 9 characters in length.
6) Database Code – A single character, either blank, or the letter “I”.
7) Data CSCI – Computer Software Component Identification – A CSCI may be at most 5 characters.
8) Data Responsible Organization – The cognizant ECS organization for the database; the owner of the database. This field may be a maximum of 6 characters.

4.3.3.1.5 Hosts’ Functions List

In the ClearCase BLM 920-TDx-002 Hardware/Software Map reports, there may be a few lines, just after the host name, that describe more host attributes, or functions, such as ” FLEXnet License Server”, or “NIS Master Server”. This construct path is /ecs/cm/BLM/host_data/host_functions, and is a Clearcase text_file element that is directly editable. Each record consists of two column groupings.

Each record (line) within this file is comprised of the following:

1) ECS Host Name – This is the name of the host, e.g., “e4eil01”. The ECS host name can be a maximum of 10 characters. The ECS host name must begin in column 1.
2) Host Function – This is a text string with a maximum of 50 characters. This descriptive text provides information regarding host functionality. The Host Function text must begin in column 14, in order for the data to align correctly in the reports. Embedded commas are permitted in this construct.

Note that the spacing of the host name and the text appears in the record lines exactly as in the output 920-TDx-002 reports. No reformatting of the data is performed in the generation of the reports.

4.3.3.1.6 Control Item Identifier Type List

For the 910-TDA-003 report, another piece of information is required. This is the category to which the CID belongs. Examples of these CID functional groupings are: Compilers, Editing & Viewing, Operating Systems, and the like.

Each record of this file consists of two column groupings:

1) Functional Group Name – The first character of the string must be placed in column 1. The string length may be up to 38 characters.
2) CID – Control Item Identifier number. This number must exist with the /ecs/cm/CIDs directory, described above as Data Construct 1. The 9 character CID must begin in column 39.

4.3.3.1.7 Operating System Patch Sets

Patch_sets are described in this section. These are sets of information, residing in the directory /ecs/cm/BLM/patch_sets/. There are about 20 patch sets that are named according to their function. A patch set name may be up to 30 characters in length. An example Patch Nomenclature name is "RedHat_5.2_core". Each line within a patch set (record) is comprised of 6 column groupings, and are described below:

1) Patch Nomenclature – This is a name of the patch set. The string must start in column 4, and may use up to column 27, for a total maximum character length of 24 characters.
2) Patch Description – A comment-like character string that adds information value and detail to the Patch Nomenclature. This data must start in column 29 and be complete by column 83 (or a maximum string length of 55 characters).
3) Patch reference – With each patch release, there is a related Release Notes Technical Document, e.g., 914-TDA-430, or a related Patch Technical Document, such as 911-TDA-022. This field begins in column 85 and is 16 characters in length (to column 101).
4) CCR – This is the CCR number which authorized the patch set's placement in the ECS baseline. Columns 107 through 114 house the CCR number.
5) Release Notes tech doc - With each patch release, there is a related Release Notes Technical Document, e.g., 914-TDA-430. This field begins in column 118 and is 16 characters in length (to column 133).
6) ECS Subsystem – Up to three characters long, this field relates the patch information to the cognizant sub system, such as "IDG".

Note that the column positions are critical; the generated 920-TDx-014 Patch Maps take these records and directly import them into the records with no reformatting.

With the introduction of the Linux Operating System, all RPMs (Package Manager) are now baselined. Please reference the new Technical Document 911-TDA-022, for example, to view the Red Hat Linux Release 5 update 2 method for patching the Operating System.

4.3.3.1.8 Configuration Change Request (CCR) Data

The ClearCase BLM Tool relates all change requests to the items changed, including an effectivity date. This date is the effective date for which the change pertains. CCR information is stored in Data Construct 8. This construct exists as directory /ecs/cm/CM. Under this directory are sub directories, one for each year for the CCRs. For the year 2009, the sub directory name is 2009_CCRs. So any 2009 year CCRs are found in the path:

/ecs/cm/CM/2009_CCRs/.

For each CCR, another sub directory exists, which consists of the last four digits of the CCR, or five digits if the CCR has been revised, like "0123A". The first two digits of the CCR represent the year. So for the example of the CCR 09-0123A, a directory /ecs/cm/CM/2009_CCRs/0123A/. exists. Data Construct 8 is probably the most important of all the Data Constructs, as it provides the relations of the CIDs to the ECS hosts. For each CCR sub directory, there are the following sub constructs:

1) "CID_map" file – This file, always named "CID_map", provides the relations of the Machine Impacted file(s) (MI) to the CIDs. It always has at least one line, but may contain more than one line, as a single CCR may relate more than one CID to a host set (MI) file. It has two columns. The first column is the name of an "MI" file, up to 20 characters in length.
2) "MI" file(s) – This is an abbreviation for the "Machines Impacted" file. The source of this information is derived from the CCR's Release Notes document (914-TDA-xxx). Within the Release Notes document is a section that describes ***which hosts*** should receive ***what COTS S/W***. Most CCRs have a CID_map file with only one MI and CID.
3) CCR pdf file – This file is the Portable Data Format (Adobe) CCR.

4.3.3.1.9 ClearCase BLM Sequencer

A single file, "/ecs/cm/BLM/scripts/Sequencer", controls which CCRs are applied to the baseline, and in what order. This editable yet executable file provides the mechanism for relating the application of CCRs, their MI files and CID_maps, to populate what is known as the "dartboard" area. The first record in this file applies the first CCR to a "null," or empty baseline. The last record applies the last CCR to the "dartboard". The format of each record of this file is:

1) Function Call – This is always the same string, "/ecs/cm/BLM/scripts/Implement_CCR". This function applies the first argument of the call, which is the CCR, to the "dartboard".
2) CCR – Configuration Change Request. A number that identifies a change to a baseline. It authorizes the application of a COTS S/W product to an ECS host or set of ECS hosts.
3) Comment 1 – This comment is the "function", or COTS S/W name, of the CCR.
4) Comment 2 – The CCR approval date (Effectivity Date)
5) Comment 3 – This is the Release Notes Tech Doc number, which is referred to in the CCR.

4.3.3.1.10 ClearCase BLM Dartboard

The ClearCase Derived Objects, located within the "/ecs/formal/BLM/dartboard" directory, comprise the Dartboard. This directory contains one file representing the collective assembly of all applicable COTS S/W products as authorized by approved CCRs for each ECS host. COTS S/W application is performed by using file concatenation. The first CCRs (earliest) show up first in these dartboard files. The last applied CCR shows up as the last record in these files.

Each dartboard file name is an ECS host, like "e4eil01".

The format of each line in a host dartboard file is as follows:

1) ECS host name – This is the ECS host name.
2) Authorizing CCR – This is the CCR from the Sequencer file.
3) BLM Tool user – This is an authorized User of the ClearCase BLM tool.
4) Timestamp – This is the time at which the CCR was applied to the file in the dartboard.
5) CID Echo – This is the entire contents of the CID record, as specified by the CCR's CID_map, MI files, and CID reference.

Note that Data Construct 10 is a ClearCase derived object, and is not "checked-in" like the first Data Constructs. The dartboard directory, in conjunction with the "/ecs/cm/BLM/host_data/current_hosts" file, is used to populate the 920-TDx-002 Hardware Software Map Technical Documents.

4.3.3.2 ClearCase BLM Graphical User Interface (GUI)

The ClearCase BLM tool makes use of an OSF Motif graphical user interface. This provides convenient drop down menus, and provides a convenient method for dynamically formulating the contents of the drop down menus. The ClearCase BLM tool has been ported to the Linux operating system. It may be launched on Linux host "c4cbl01." The GUI now uses "emacs" for certain text editing windows, rather than Solaris 8 "textedit."

4.3.3.2.1 ClearCase BLM "New CCR" GUI Drop Down Menu

Use the "New_CCR" ClearCase BLM Tool GUI to enter data associated with newly approved CCRs. The design of the tool and GUIs have been optimized to minimize the time needed to process approved CCRs. Refer to Figure 4.3.3-1 to view the New CCR drop down menu.

The first step is to enter the new CCR number. Syntax checking is performed to ensure that the entered CCR number is of the correct format. See Figures 4.3.3-2 and 4.3.3-3 for the New CCR Drop Down Menu and Entering a New CCR Number screens.

The next set of steps taken depends on the nature of the CCR. A COTS S/W CCR will only affect the 920-TDx-002 Maps for instance, while O/S patch changes will affect the 920-TDx-014 reports.

For COTS S/W changes, a new CID usually needs to be created. Use the "Construct new CID" menu item in the "New_CCR" main menu bar to construct the new CID. Scripts have been

written to assist this step. Usually and existing CID can be copied, and only minor adjustments made, such as the CCR approval date or Release Notes document number, and usually the COTS S/W version number. This CID is then checked in to the CIDs directory (/ecs/cm/CIDs), and is later referenced in the CID_map file for the new CCR. When a CID becomes obsolete, it is moved to the /ecs/cm/CIDs/OLD_CIDs/ directory and is removed from the /ecs/cm/CIDs/ directory. When the baseline is built later, each CID in the /ecs/cm/CIDs/ directory will have a corresponding entry in the 910-TDA-030 Where-Used Report.

Also, a Machines Impacted (MI) file will need to be created. This MI file and the new CID will be associated in the new CID_map file. Depending on the CCR, more than one MI file linking another new CID may be required. Perform these steps as needed, then check in the CCR as the last step. This step will check in the CID_map file, any new MI files, and finally the CCR itself.

The Sequencer, depicted in Figure 4.3.3-1 below, is then updated. This figure shows the last entries of the Sequencer. Usually the CCR is added to the end of the Sequencer. The entries are placed according to approval dates. Sometimes, earlier entries or CCR constructs may need to be removed, so that more than one version of a COTS product will not appear in the 920-TDx-002 reports. The Sequencer is internal to the tool and is not exported.

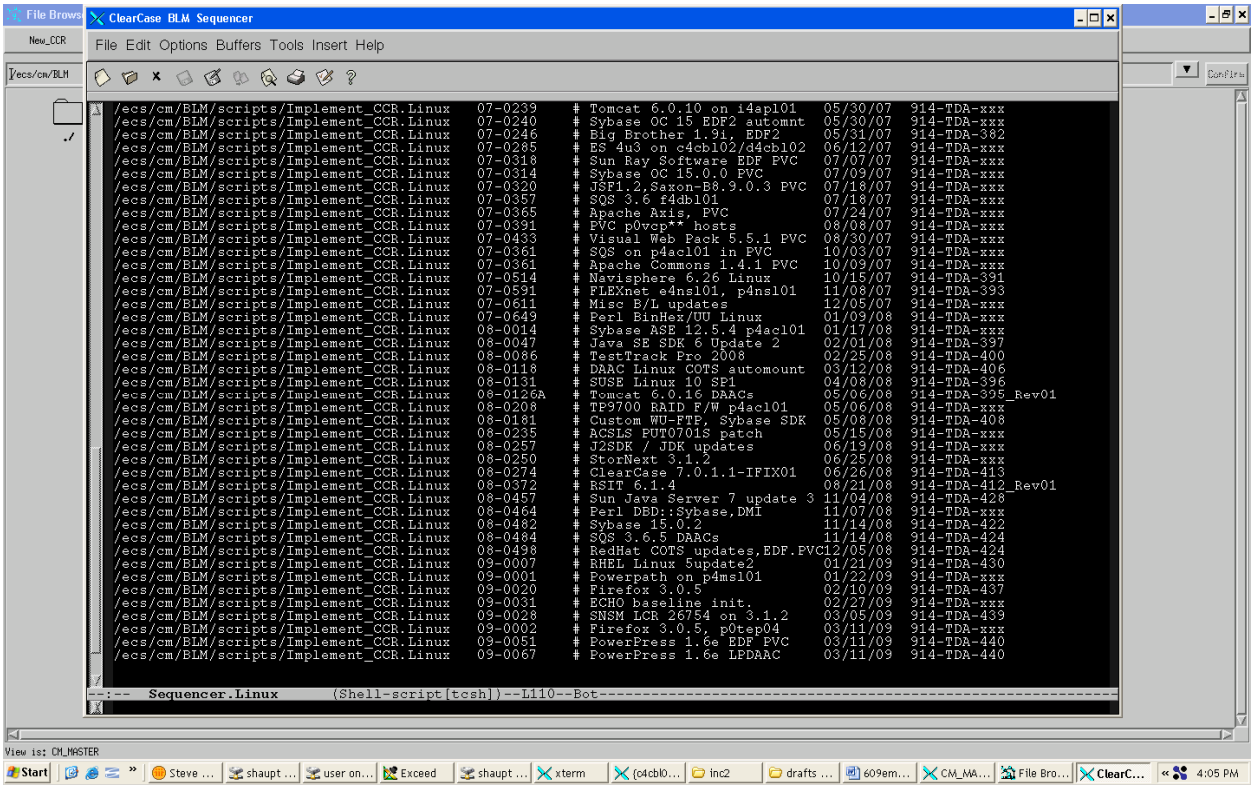


Figure 4.3.3-1. The ClearCase BLM Internal Sequencer

Other less frequently used data may need to be altered, and again this depends on the nature of the CCR. To remove an ECS host for example, select the “Update Current ECS Hosts” menu line item, and delete the ECS host. If a new CID is added to the database, its function must also be added using the “Update CID Functions” line item.

Selecting the “Build Baseline” line item will generate all of the ClearCase BLM reports, and selecting the “Promote Baseline” line item will place all of the reports in the proper directories on “pete”, “e4iil01”, “l4iil01”, “n4iil01”, and “ebis” for ESDIS

The “Build Baseline” function will generate all the new baseline technical documents and place them on the primary EBIS server for review. Each ClearCase BLM generated technical document has the normal Current and Previous directories. The Current directories hold the Current version and the Previous directories hold all of the previous versions. The new technical documents are placed in the QA_Check directories for review. This ensures that there is a step to ensure correctness before the Promote Baseline step. The “Build Baseline” step generally takes 15 minutes to complete.

The “Promote Baseline” function then moves the newly generated versions into the Current directories, from all of the QA_Check directories. Secure shell scripts are then executed to place the new files at the 4 remote sites, including LP DAAC, ASDC, NSIDC, and the EBIS server for ESDIS. The previously Current versions are moved to the Previous directories. The “Promote Baseline” step takes 6 minutes to complete.

See the Figure 4.3.3-2 below. The last two items, when selected, execute the “Build Baseline” and “Promote Baseline” steps. Timestamped log files are kept in the /ecs/cm/BLM/logs/ directory and should contain no errors.

Figure 4.3.3-3 and 4.3.3-4 show the screens for new CCRs. Figure 4.3.3-5 shows the View CIDs by Name Drop Down Sequence.

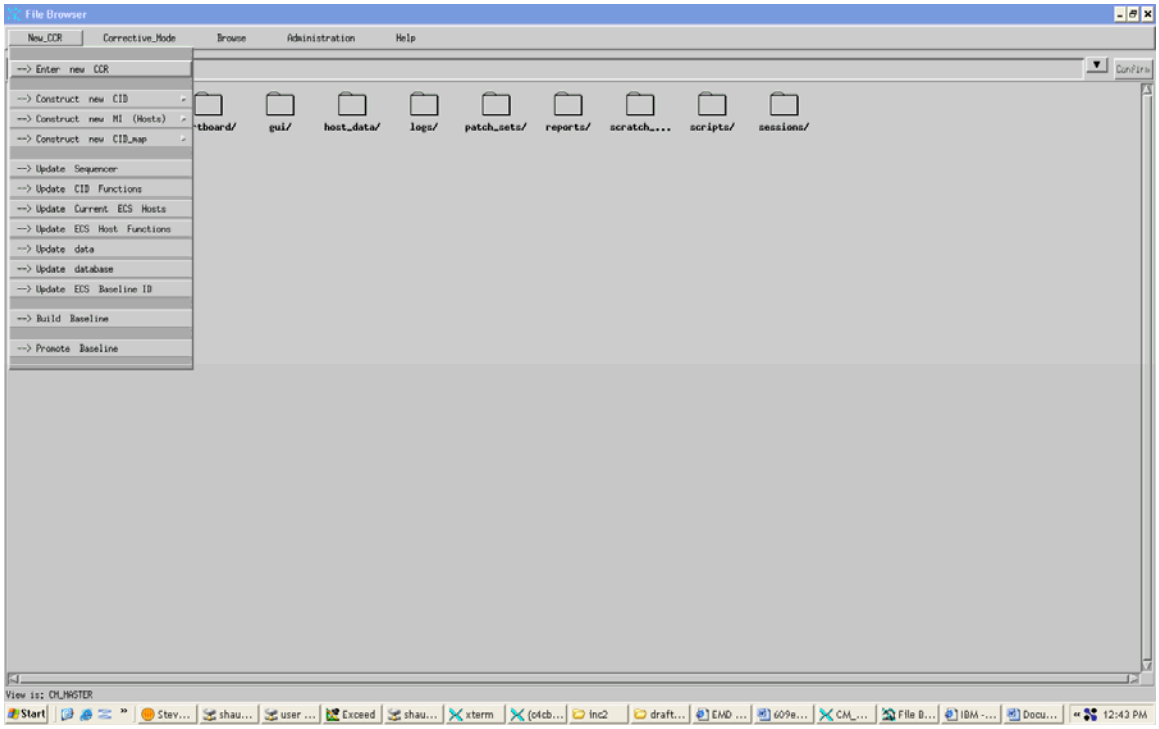


Figure 4.3.3-2. New CCR Drop Down Menu

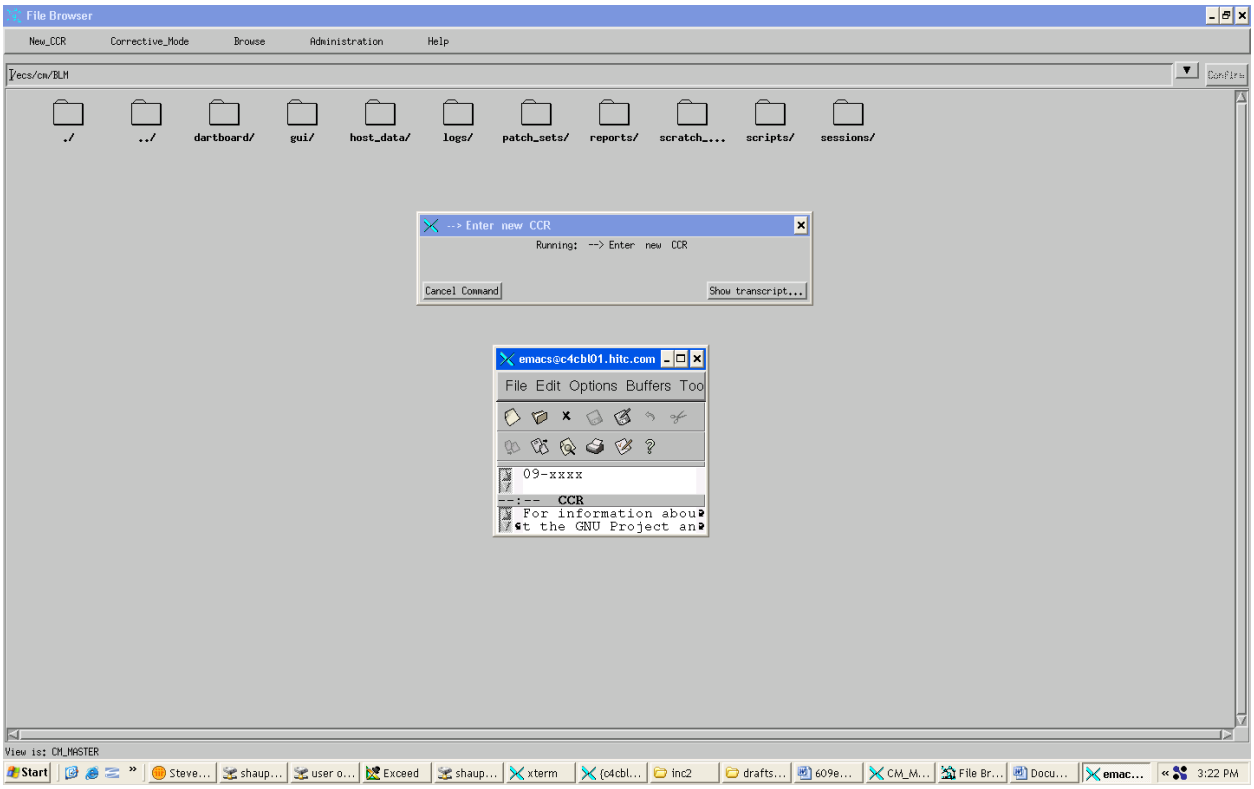


Figure 4.3.3-3. Entering a New CCR Number

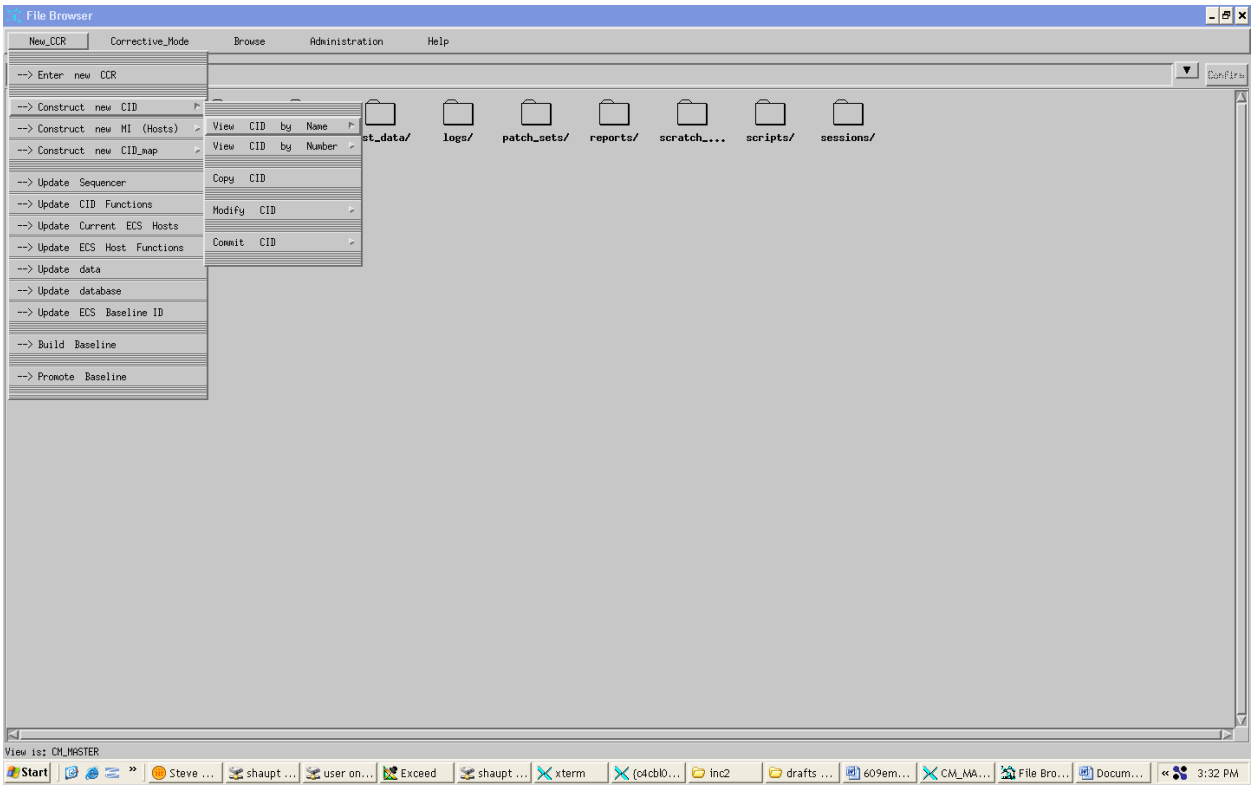


Figure 4.3.3-4. New CCR Drop Down with Construct New CID Selected

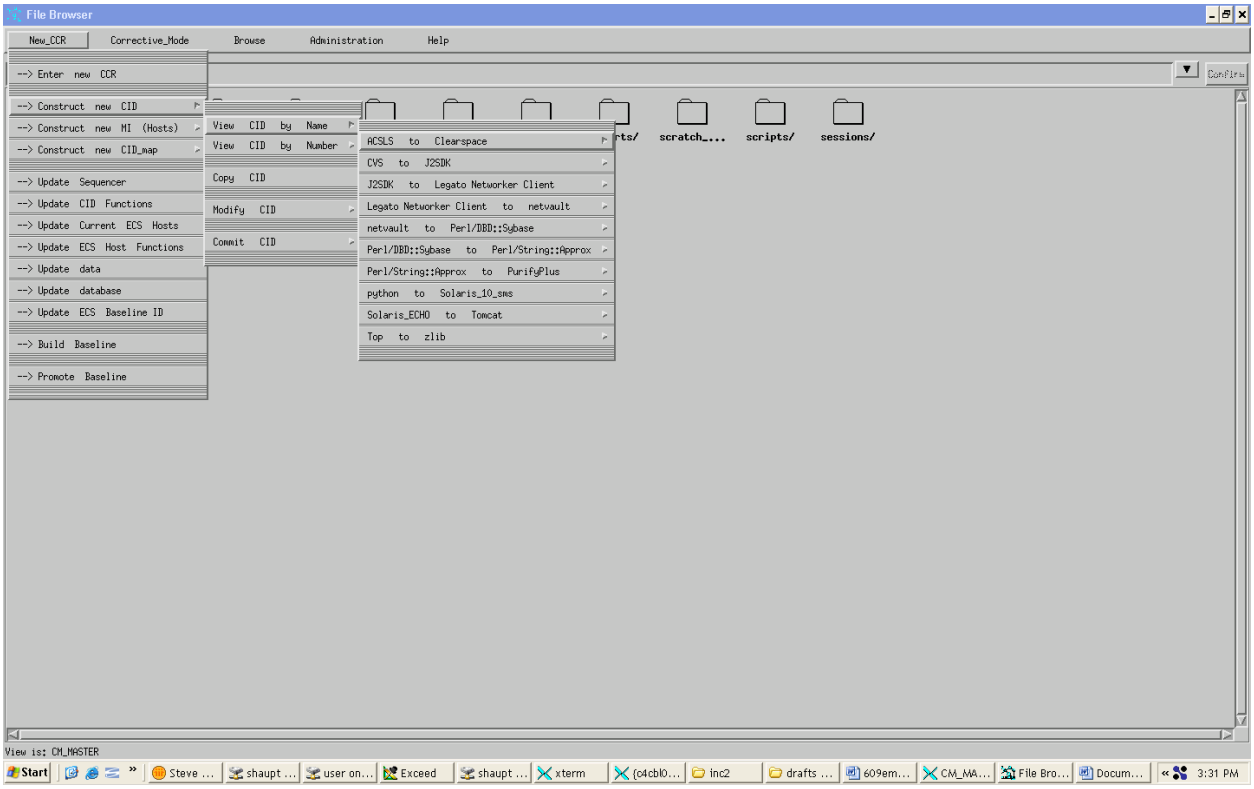


Figure 4.3.3-5. View CIDs by Name Drop Down Sequence

Visibility to the /ecs/cm/CIDs/ directory is by selecting “New_CCR” on the tool’s main menu bar, then “Construct new CID”, then “View CID by Name”. The next menu is generated at tool launch, and allows the user to view a CID. Figure 4.3.3-6 below shows the CIDs for the first group. Selecting a particular CID will then show the complete CID record. This assists in implementing new CCRs. For each CID, the menu shows the CID number, COTS software name, version, and installation path, which is a subset of the information contained in the CID record.

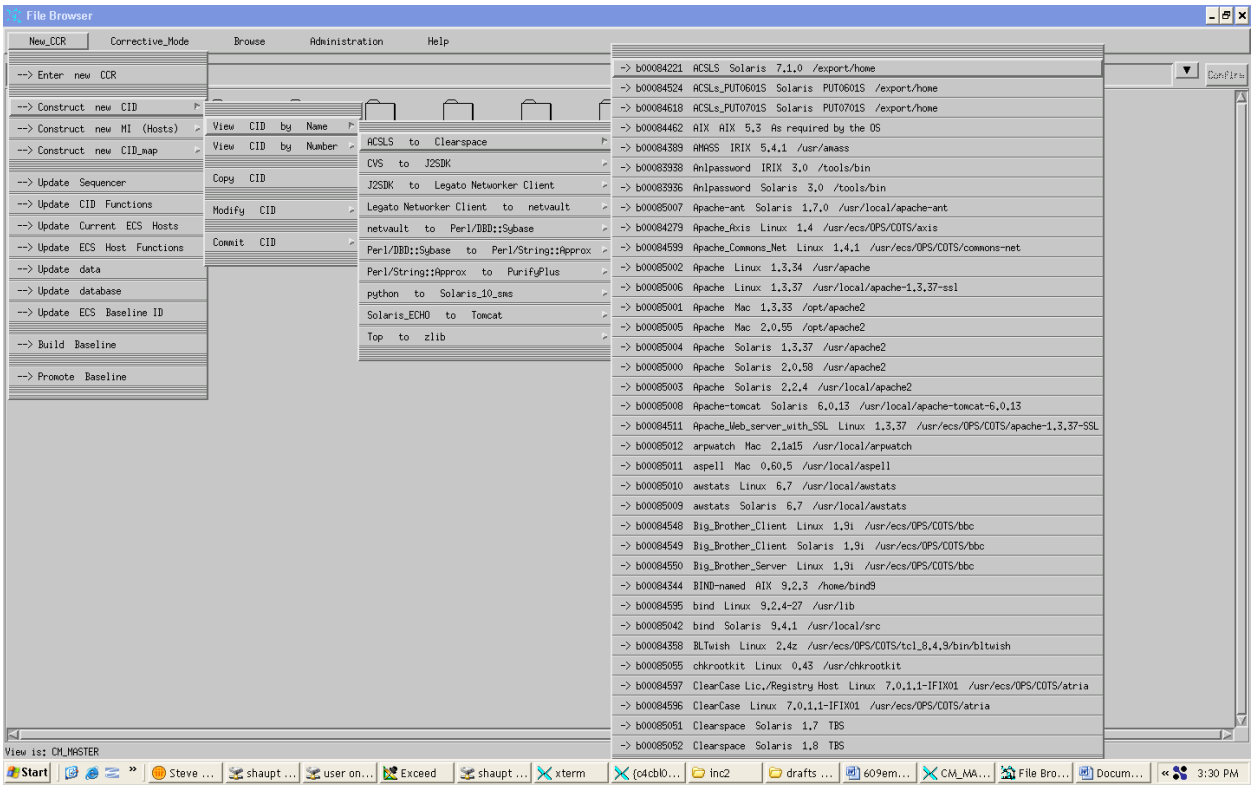


Figure 4.3.3-6. CID Selection Drop Down

4.3.3.2.2 ClearCase BLM "CORRECTIVE MODE" GUI Drop Down Menu

Figure 4.3.3-7 shows the ClearCase BLM Tool mode drop down that is used for correcting information that has already been entered for an approved CCR. The basic steps are:

1) Select an existing CCR number
2) Alter the data
3) Either COMMIT the changes, or CANCEL the changes
4) Build the baseline, incorporating the changed data, if COMMITed
5) Promote the baseline, after ensuring that the changes were made as intended by reviewing the QA_Check directories on the Riverdale EBIS.

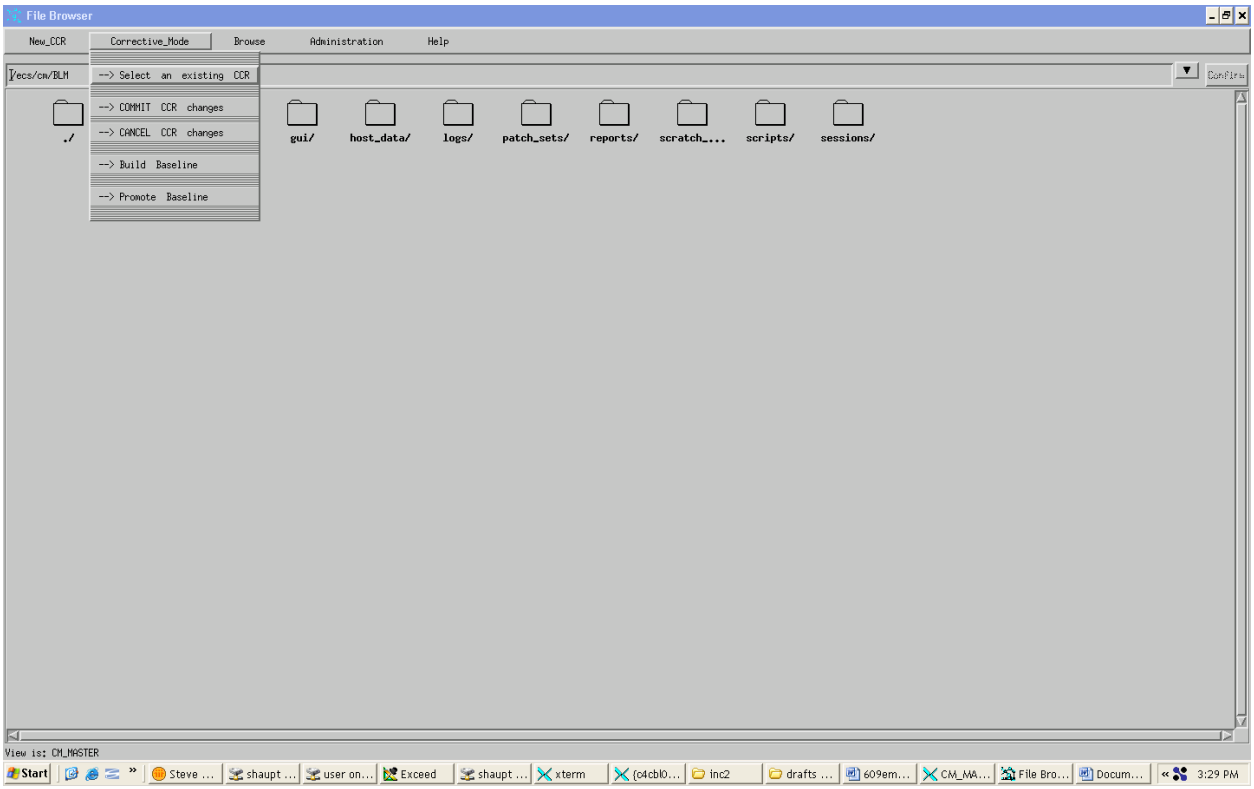


Figure 4.3.3-7. Corrective Mode Drop Down Menu

An error will be returned in the build baseline log file if the CCR does not exist in the ClearCase data structures.

The design intention of this mode was to allow corrections to data that had already been entered. In order to get the ECS baseline data perfected, it was necessary to allow controlled editing of historical files, including the CID_map, any Machines Impacted (MI) files, and any associated Control Item Identifier (CID) records.

Each approved CCR has only one CID_map. This correlates the MI files to the CID. Sometimes there are two variants (host types, like Linux and Sun) of COTS S/W which must be accounted. The CID_map would then have two lines, one MI file for Linux hosts (MI_Linux), and one MI file for Sun hosts (MI_Sun). There would also be two CIDs to account for the Linux and Sun variants. The CID_map would then relate the MI_Linux hosts to the Linux variant CID, and the MI_Sun hosts to the Sun variant CID.

The snapshot below in Figure 4.3.3-8 shows the File Browser for entering the CCR number.

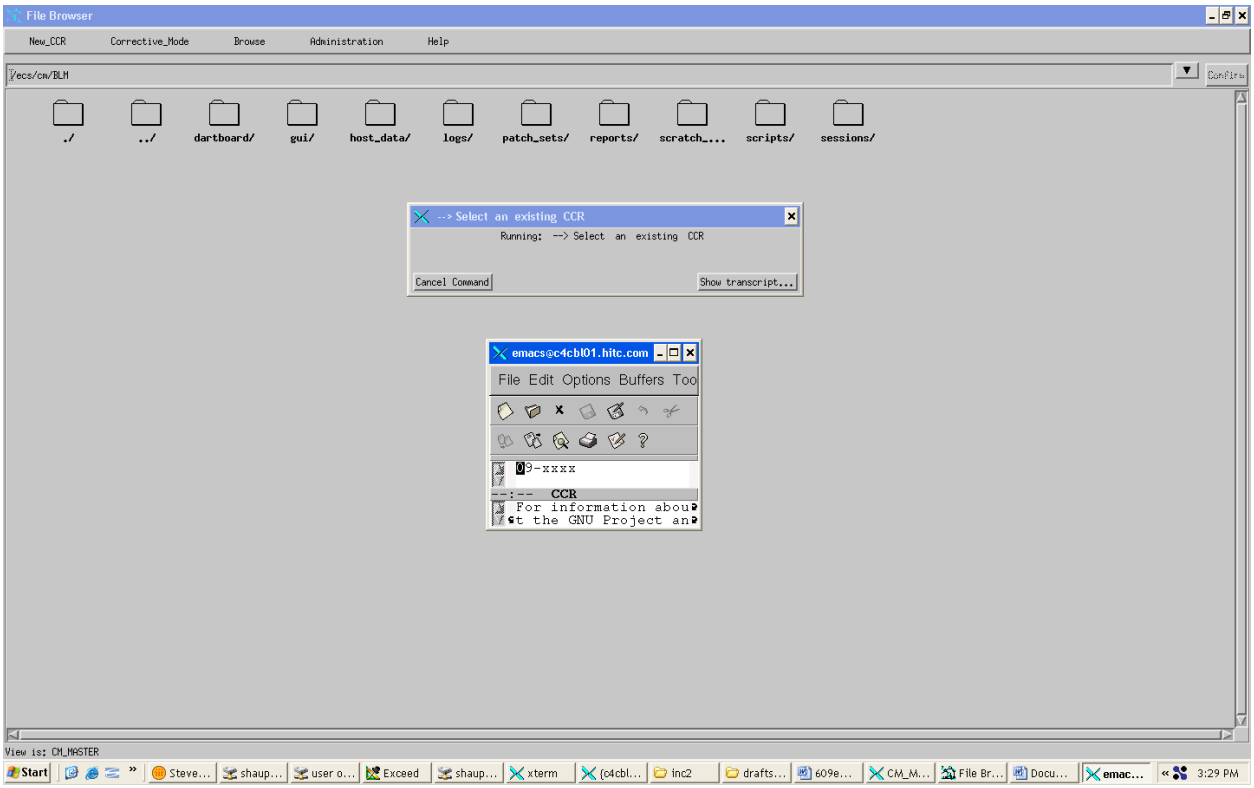


Figure 4.3.3-8. Enter Existing CCR Number Interface

The script will then determine the data structure for the entered CCR. The simplest structure will have one MI file and one CID_map file. The most complex CCR is an "automount" CCR, where there are many line items in the CID_map file, placing many COTS S/W products (CIDs) onto the hosts stated in the MI file(s).

Once the appropriate changes are made to the CID_map and MI files, return to the "Corrective Mode" Main Menu bar item, and select either "COMMIT CCR Changes", or "CANCEL CCR Changes." The scripts behind the File Browser GUI will perform the necessary ClearCase CheckIns or ClearCase UnCheckouts. A "COMMIT CCR Changes" selection will execute the ClearCase command "cleartool ci –nc CID_map MI" (check in the CID_map and MI files with

no comment) Also, each emacs window will close once the appropriate ClearCase commands have been executed. Checksums are performed on all of the text edit files once they were checked out of ClearCase. Once the COMMIT CCR Changes menu item is selected, all of the files are checksummed once again. If any files were edited, the checksums are different. A ClearCase CheckIn command is executed if the file has been changed (file has a different checksum), and a ClearCase UnCheckOut (cleartool unco –rm CID_map MI) command is executed if the file was not changed. (file has the same checksum).

Select "Build Baseline" from the drop down menu shown by selecting the "Corrective Mode" menu item. This functions exactly like the "New_CCR" "Build_Baseline" item.

Once the /QA_Check files look okay, select the "Promote Baseline" line item.

All changes are recorded within ClearCase history files, and there is also a ClearCase BLM Tool log file kept at /ecs/cm/BLM/logs for the Build sessions. More useful logs emitted from the scripts are at /ecs/cm/BLM/sessions/$DISPLAY/$TIMESTAMP/logs/ClearCase_commands

These logs show each of the ClearCase commands exercised for all of the script executions.

4.3.3.2.3 ClearCase BLM "BROWSE" GUI Drop Down Menu

This particular feature of the ClearCase BLM Tool was added late in the development of the tool. While using the tool, it became apparent that it would be useful to be able to "see" any of the data items tucked away in the tool's repository.

There are 8 different items that can be observed using the "Browse" selection as shown in Figure 4.3.3-9. Each selection has a unique number of attributes that can be viewed. Windows are launched so that the GUI user can "see" the different data.

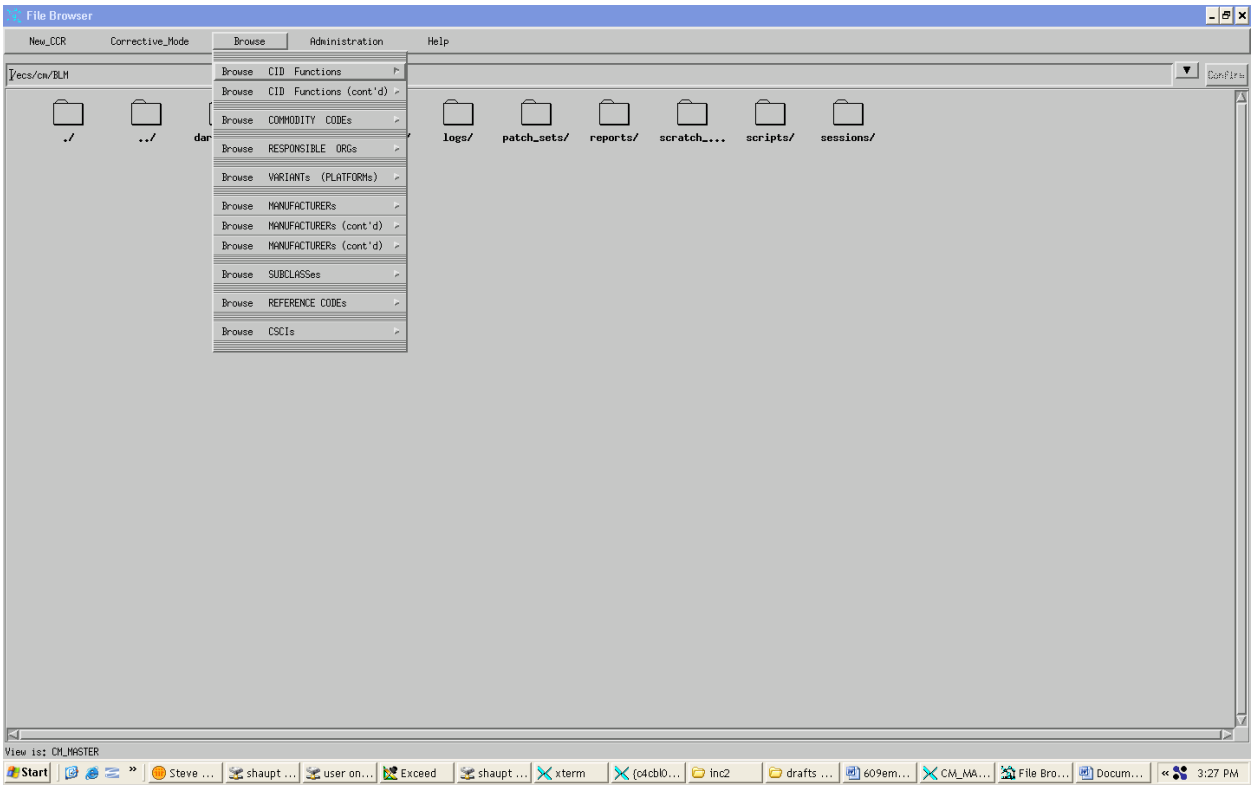


Figure 4.3.3-9. Browse Drop Down Menu

These drop down menus and data files are generated at the time that the GUI is launched, so it's important to remember that newly added records will not appear in these windows.

In the example below, a ClearCase BLM Tool user wants to know what variants (platforms) exist within the ECS baseline.

To determine this, select "Browse" from the File Browser main menu bar, then select "Browse VARIANTs" as shown in Figure 4.3.3-10.

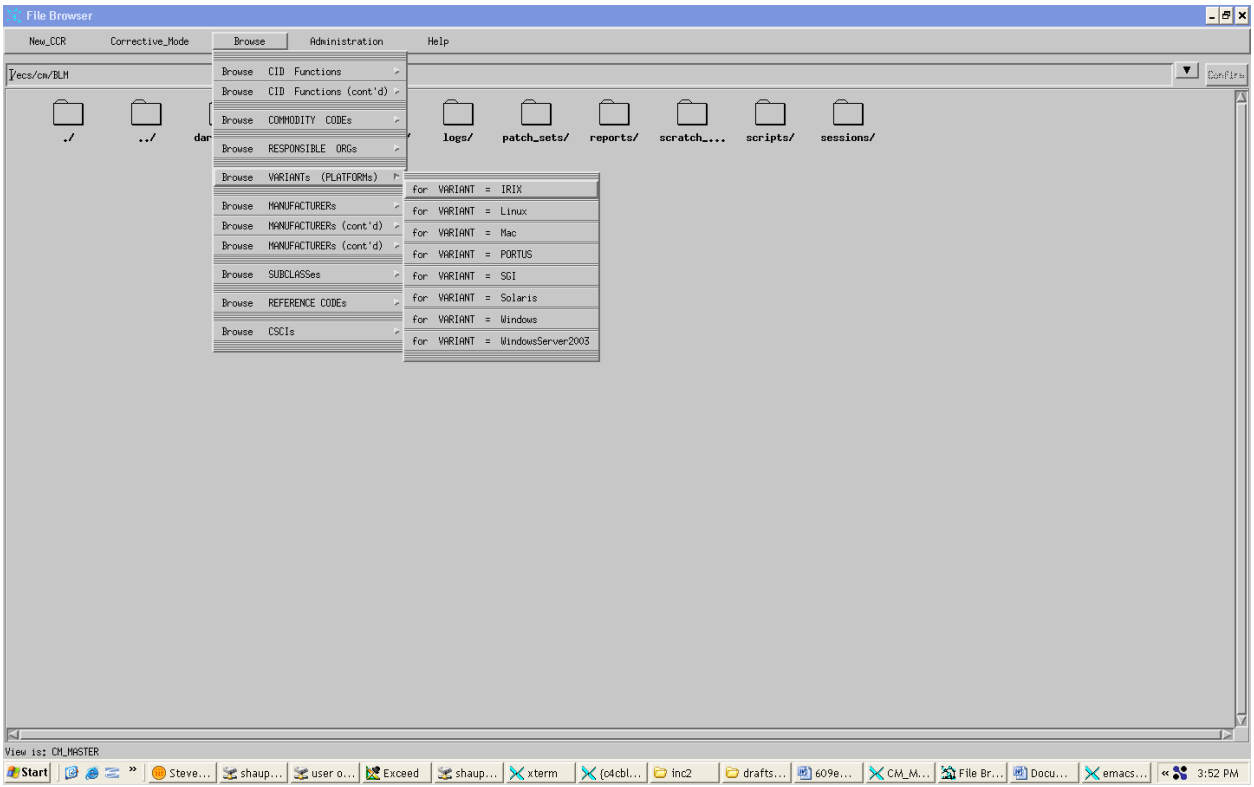


Figure 4.3.3-10. Browse Drop Down with VARIANTs Selected

Similarly, any of the “Browse” drop down menu items may be selected.

4.3.3.2.4 ClearCase BLM “ADMINISTRATION” GUI Drop Down Menu

The “Modify Users” line item under the “Administration” main menu bar enables one to add, modify, or remove a UNIX user. The ClearCase file which facilitates this function is /ecs/cm/BLM/scripts/authorized_DISPLAYs. Selecting the “Modify Users” line item initiates a text edit window session using the “authorized_DISPLAYs” file. The format of this file is as follows:

The first three lines of the file are comments that identify the file’s location.

The next items are constructs that enable the BLM tool to determine authorized users of the BLM tool, and also authorized terminals. Access control is performed at the time the tool is launched.

Each construct must contain at least one line for each BLM tool user. Users may launch the tool from more than one location and terminal, which requires more than one line for the construct. There may be up to five fields within each line. Each field must not have any embedded spaces;

spaces (blanks) are used to separate the fields. For readability, user constructs should be separated with blank lines.

The ***first*** *field* indicates the display nomenclature. For X terminals, this is the string representation of "ncdp10:0.0", for example. This has to be the same string that is known as the DISPLAY environment variable. For PCs, this field needs to be set to the correct IP address associated with the PC. Note that the tool may be used remotely using RSVPN.

The ***second*** *field* contains the physical location of the terminal. This should be either "home" for off site usage, or the room or cubical number at Riverdale that contains the terminal.

The ***third*** *field* is the UNIX user. The UNIX user must be known to the EDF. The UNIX user format usually consists of the first letter of the first name of the user, followed by up to a maximum of 7 letters of the user's last name, all lower case.

The ***fourth*** *field* indicates whether the terminal is a PC or is served differently.

The ***fifth*** *field* contains the IP address resolution of the first field, if the first field is not already an IP address.

TO ADD A USER:

Add a construct to the end of the file with the above fields completed. To determine the first field (DISPLAY) on a PC, run "winipcfg" from the "Start"/"Run" window. It will return the PC's IP address. To determine the first field (DISPLAY) on an X terminal, type "printenv DISPLAY". It will return the value of the DISPLAY environment variable. In other cases the display setting gets automatically set, such as RSVPN.

NOTE: A newly added user must also be added to the UNIX "ccs" group and UNIX "blm_tool" group. To determine whether a user is currently in the group, type "ypcat –k group | grep ccs" and "ypcat –k group | grep blm_tool". Being a member of the "ccs" group gives one write access to ClearCase BLM records within the ClearCase /ecs/cm VOB. Being a member of the "blm_tool" group allows one to execute the ClearCase BLM scripts which are referenced by the ClearCase BLM GUI. This provides another level of security for the tool.

TO MODIFY A USER:

Simply edit the "authorized_DISPLAYs" file to include the correct information.

TO REMOVE A USER:

Simply delete all of the lines within the "authorized_DISPLAYs" that contains the user's UNIX name.

Note that the tool needs to be launched again in order for any changes in the "authorized_DISPLAYs" file to take effect.

The following three snapshots show the screens that were just discussed:

Figure 4.3.3-11 shows the ClearCase BLM Main Menu. This section discusses "Administration," which is the fourth item on the Main Menu bar.

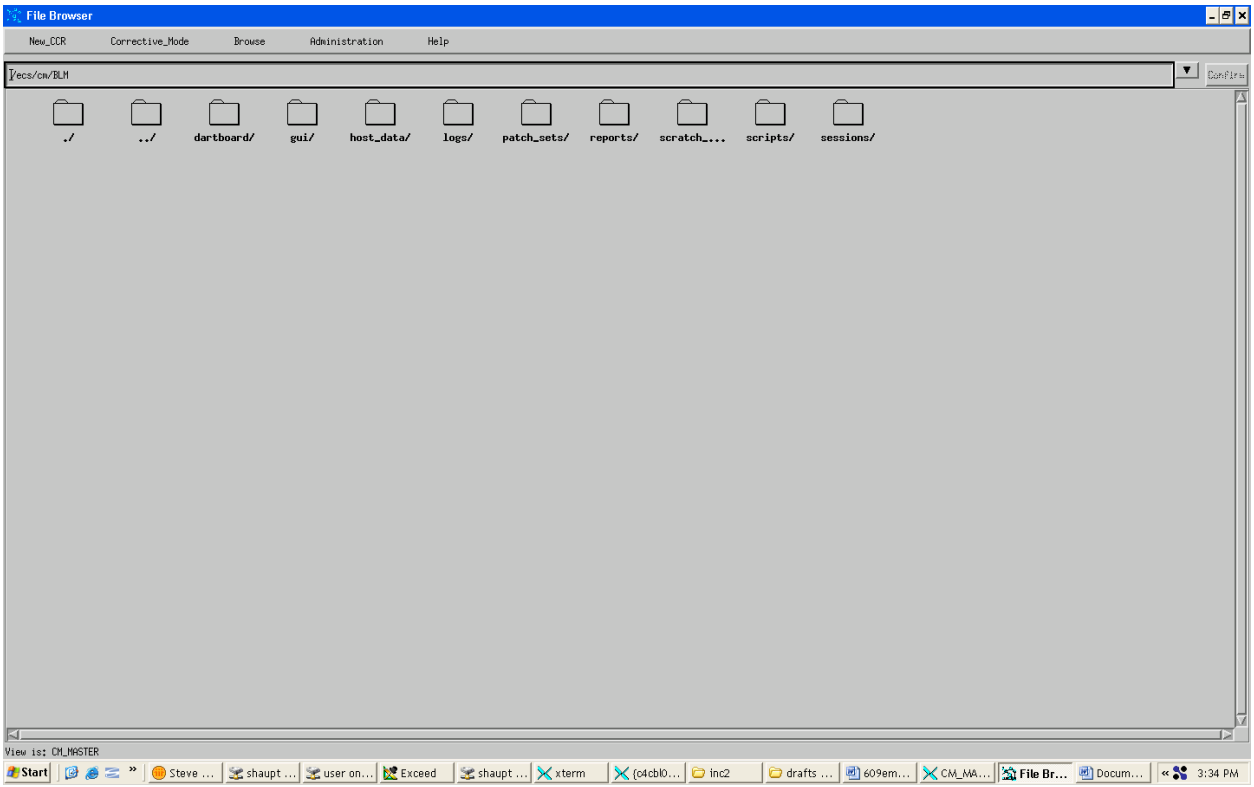


Figure 4.3.3-11. ClearCase BLM Main Menu

To modify a user, select “Modify Users” on the drop down menu, after selecting the “Administration” item on the main menu bar. This is shown in Figure 4.3.3-12 on the next page.

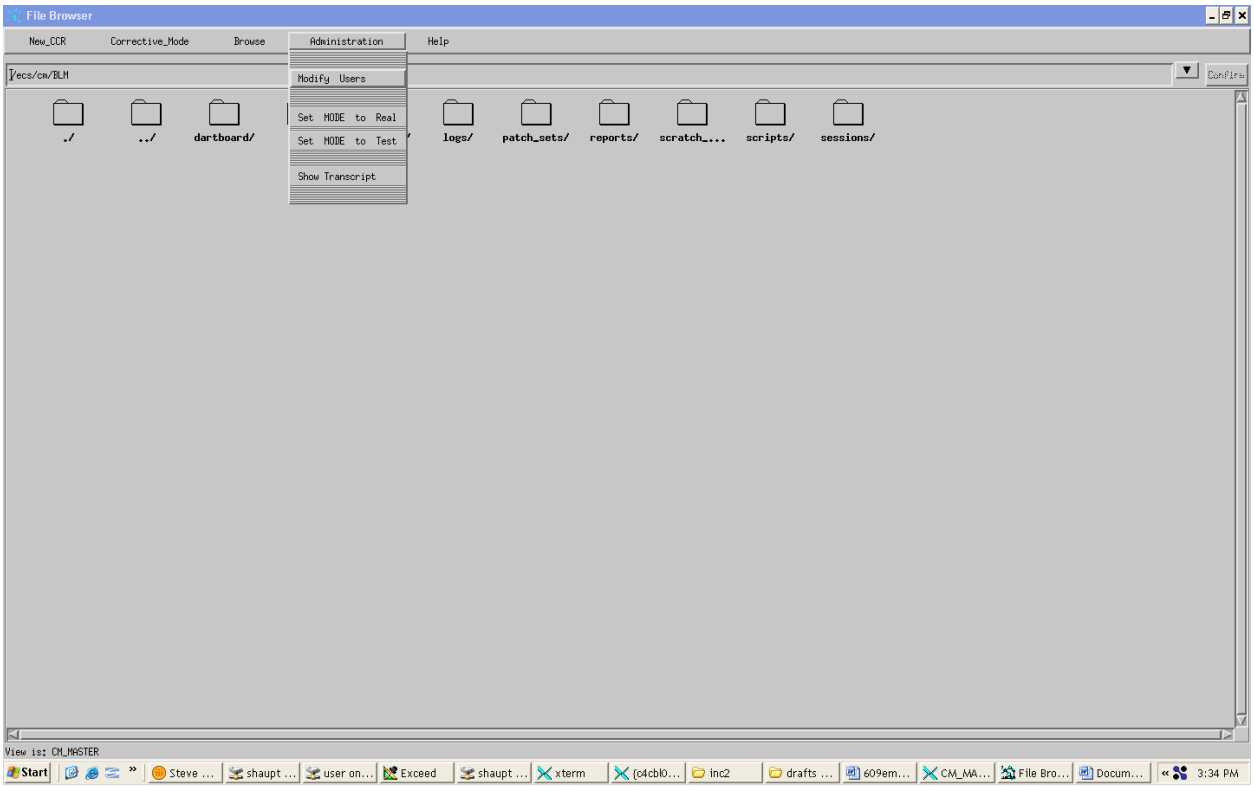


Figure 4.3.3-12. Administration Drop Down Menu

Selection of “Modify Users” will launch an emacs window. This is shown on the next page. The text edit window in Figure 4.3.3-13 shows the file that can be edited.

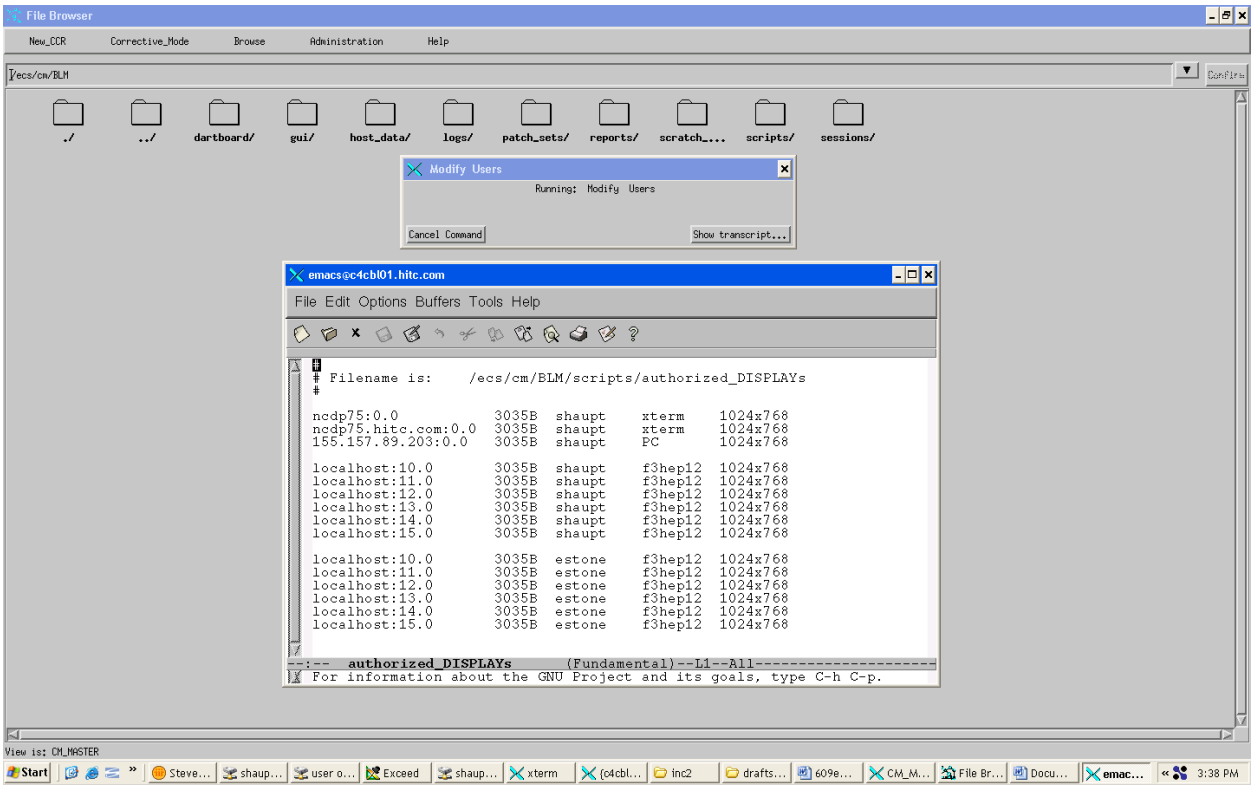


Figure 4.3.3-13. Administration Modify Users Screen

Follow earlier instructions for changing users or user information.

4.3.3.3 ClearCase BLM Reports

The reports that are generated using the ClearCase BLM tool are listed in Table 4.3.3-1.

Table 4.3.3-1. ClearCase BLM Reports

910-TDA-003	COTS S/W VERSION Baseline Report
910-TDA-005	SITE-HOST Map Report
910-TDA-023	CRITICAL COTS SOFTWARE LIST
910-TDA-030	COTS S/W Where-Used Reports
920-TDx-002	Site Hardware-Software Maps
920-TDx-014	Operating System Patch Maps

These reports are accessible at the URLs:

http://pete/baseline/	(for Riverdale use only, primary repository)
http://ebis.gsfc.nasa.gov:10160/baseline/	(ESDIS only)
http://e4iil01u.ecs.nasa.gov:10160/baseline/	(LPDAAC only) (aka EDC)
http://l4iil01u.ecs.nasa.gov:10160/baseline/	(ASDC only) (aka LaRC)
http://nn4iil02u.ecs.nasa.gov:10160/baseline/	(NSIDC only)

The design of the distributed EBIS servers and data ensures that EBIS information is secure. The 910-TDA-003 report shows all of the COTS S/W that is managed on the EMD program. The software is ordered by the software function, such as “Compilers”. Each record entry lists the ECS NAME, the Commodity Code, the Responsible Organization, the Variant, the Manufacturer, the Version, the Principal Directory, the authorizing CCR, and any comments that may be needed for clarification. The report is generated when the “Build Baseline” line item is selected in the **New_CCR** drop down menu.

The 910-TDA-005 report shows all of the ECS hosts that are managed on the EMD program. The format of the file is a matrix, with the columns containing all of a site’s hosts, with the rows showing the host names, in addition to Host Functions, Sub systems, and SRC CIs.

The 910-TDA-023 report shows COTS software products’ criticality. A critical COTS product is defined as software whose removal from the host would cause the system to not function with respect to ECS custom code. A critical COTS product is designated by a "YES" in the first column below. A "NO" indicates that the COTS software product is not critical to the performance of the system's functions.

The 910-TDA-030 report allows a user to see all of the COTS S/W, and each host that should have it. A table containing links provides this information. For each COTS product, a link will provide the complete CID record for the product, as well as a matrix showing all of the ECS hosts. Those hosts which should have the product installed have an arrow next to each host name. These Where-Used reports are also used to provide input with new CCRs to affect changes to the baseline. Changes to the CID record, such as a new version, or new hosts, can be recorded and submitted using a mark up of this printout. Links also provide ready access to the approved CCRs for each CID, as well as any Release Notes documents, should they apply (e.g., 914-TDA-340).

The 920-TDx-002 reports show the mapping of the COTS S/W to the managed ECS hosts. There are 7 reports, one for each site. Refer to Table 4.3.3-2.

Table 4.3.3-2. ClearCase BLM Hardware-Software Map Reports

920-TDE-002	LP DAAC (formerly known as EDC)
920-TDL-002	Langley DAAC
920-TDN-002	NSIDC DAAC
920-TDC-002	ECHO (at GSFC)
920-TDP-002	PVC (at Riverdale)
920-TDV-002	VATC (at Riverdale)
920-TDF-002	EDF2 (at Riverdale)

Each site report shows all of the COTS information for each host. The information that is shown for each host includes the host name, any host functions, specific COTS S/W that should be installed, each COTS S/W version and principle directory, the authorizing CCR, associated Release Notes document, and the effective date of the baseline change (CCR approval date).

These reports are subsequently used as a baseline reference for configuration audits.

The 920-TDx-014 reports show the mapping of the Operating System patches to the managed ECS hosts. There are 7 reports, one for each site. Refer to Table 4.3.3-3.

Table 4.3.3-3. ClearCase BLM Operating System Patch Map Reports

920-TDE-014	LP DAAC (formerly known as EDC)
920-TDL-014	ASDC (formerly known as LaRC DAAC)
920-TDN-014	NSIDC DAAC
920-TDC-014	ECHO (at GSFC)
920-TDP-014	PVC (at Riverdale)
920-TDV-014	VATC (at Riverdale)
920-TDF-014	EDF2 (at Riverdale)

Each site report shows all of the O/S patches for each host. The information that is shown for each host includes the host name, the O/S patch nomenclature, an O/S patch description, any related 911-TDA-xxx references, the authorizing CCR, associated Release Notes document, and the effective date of the baseline change (CCR approval date). A table at the beginning of each report shows the incorporation dates of the CCRs.

These reports are subsequently used as a baseline reference for configuration audits for Operating System patches.

EMD Baseline maintenance using the custom ClearCase® BLM tool averages 4 hours per month.

4.3.4 Remedy-ILM (Inventory, Logistics and Maintenance {ILM} Manager)

ILM helps the DAACs and the EDF maintain records that describe all inventory items, as well as their EIN structures, repair histories, and locations. The system keeps chronological histories (a record of the transactions) of installation, relocation, movement, shipment and archiving of inventory items. ILM is used by the Property Management, Maintenance, and Logistics teams to support management of the tangible property of NASA's EOSDIS project.

ILM is a customized application of the Remedy Action Request System (ARS). The customizations adapt the product to the ILS processes used for ECS. ILM takes into account how business rules and logistics concepts are applied on the ECS project. This document does not address these considerations in detail, but the following general introduction should help.

Each inventory item is identified by a unique Equipment Inventory Number (EIN). In the case of hardware items, an EIN corresponds to a silver sticker affixed to the item. Some of the items are shipped to sites and installed. Others such as consumables are issued but not installed. After a period, some items may be transferred to other locations or relocated for use with other parent machines. Items are archived when no longer needed or serviceable. For tracking and auditing purposes, inventory items – especially hardware – are allocated to ECS "parent" machines. These parent and child relationships are called an EIN structure. EIN structures have active and inactive dates that establish the timeframe during which the pairing is in effect.

Table 4.3.4-1 summarizes the operator functions that Remedy supports. The sections that follow present how to use Remedy features that were customized for ECS inventory, logistics, and maintenance management. For more information on Remedy's Action Request System, refer to the Remedy help manual.

Table 4.3.4-1. Common ECS Operator Functions Performed with ILM

Operating Function	GUI (Section)	Description	When and Why to Use
Property Management	ILM-EIN – 4.3.4.2.1 ILM-EIN Structure – 4.3.4.2.2 ILM-EINTransactions – 4.3.4.2.3 ILM-Transaction Log – 4.3.4.2.4 ILM-OEM Parts – 4.3.4.2.5 ILM-Vendor-MFR – 4.3.4.2.6 ILM-HwSw Code – 4.3.4.2.7 ILM-Status Codes– 4.3.4.2.8 ILM-Maint Contract – 4.3.4.2.9 ILM-Sites – 4.3.4.2.10 ILM-Inventory Location – 4.3.4.2.11	Maintain information about accountable property items, their product structures, and inter-relationships.	To maintain information that specifies the identity, source, location, transfer, relocation, and installation of procured inventory items.
Property Maintenance	ILM-MWO – 4.3.4.3.1 ILM-MWO Line Item – 4.3.4.3.2	Manage information for required maintenance repairs.	To predefine and monitor scheduled maintenance activities
License Management	ILM-License Products– 4.3.4.4.1 ILM-License Entitlement – 4.3.4.4.2 ILM-License – 4.3.4.4.3 ILM-License Mapping – 4.3.4.4.4 ILM-Additional Host – 4.3.4.4.5	Manage entitlements, licenses, and license allocations for licensed COTS software.	To track the receipt, movement, and consumption of software licenses and their associated rights-to-use.
System Administrator	ILM-System Parameters – 4.3.4.5 User – 4.3.4.6 Remedy Admin Tool – 4.3.4.7 Database – 4.3.4.8 Special Constraints – 4.3.4.9 Outputs – 4.3.4.10 Event and Error Messages – 4.3.4.11 Reports – 4.3.4.12	Manage AR System	To revise, add, or delete Remedy ILM related objects (forms, active links, filters, menus, etc.).

4.3.4.1 Quick Start Using Remedy-ILM

Operators use the PC_based Remedy User tool to access Remedy-ILM. They can login to Remedy User if they are registered in Remedy-ILM and are assigned an ILM-related role.

4.3.4.1.1 Invoking Remedy-ILM from a PC

To start Remedy User, you can do one of the following:

- Click Start →Programs →Action Request System →Remedy User
- Double-click on a Remedy User icon on your desktop, if one exists.

The Remedy User screen displays. Enter your user Id and password.

Once logged into Remedy User, you can open a form. To view a list of all available forms, select **File → Open,** or select the Open icon, the first icon in the toolbar. This displays the complete list of forms to which the operator have access (see Figure 4.3.4.1).

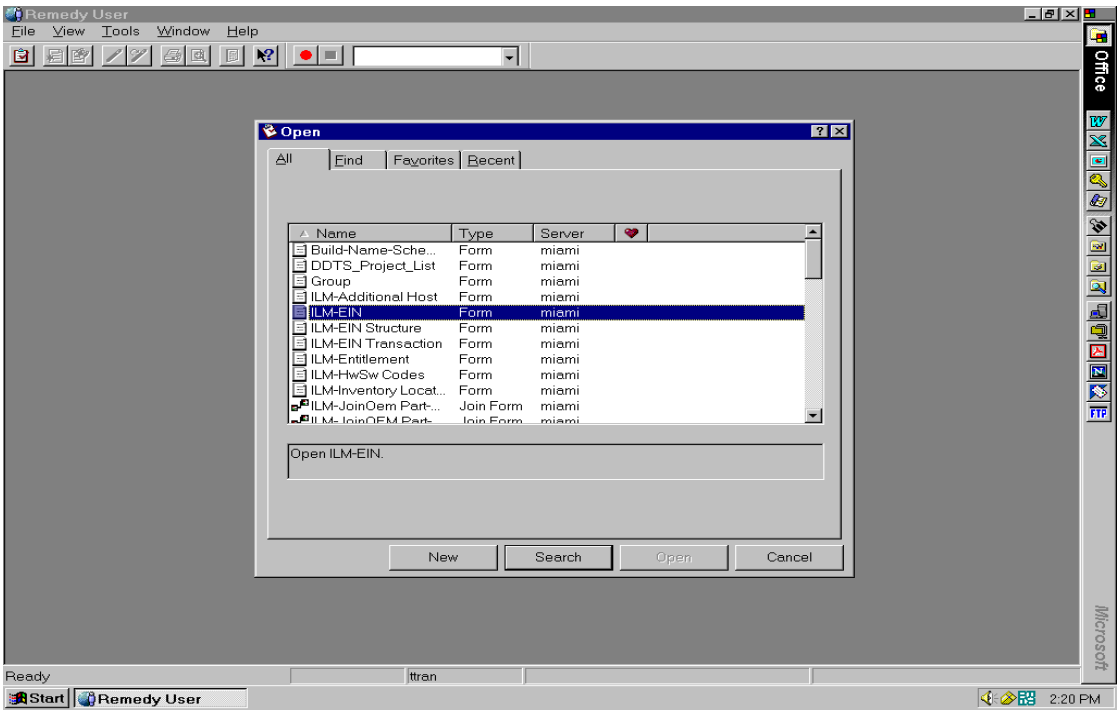


Figure 4.3.4-1. Open GUI

Every form has a specific layout and content. Every form initially opens in one of two modes:

- **New** – to create a new record
- **Search** – to search for an existing record

4.3.4.1.2 ILM-Roles

The following are the ILM-related roles that Remedy is deployed pre-configured to support:

- ILMadmin - full privileges to all operator and system administrator functions within ILM;
- ILMproperty - all ILM property privileges only;
- ILMmaint - maintenance management data update privileges for central ILS managers;
- ILMdaacAdmin - full privileges to all operator and system administrator functions within ILM for a site's local maintenance coordinator;
- ILMdaacMaint - maintenance management data update privileges for a site's local maintenance coordinator;
- ILMquery - ILM data query privileges only;
- ILMlicuser - license management data update privileges for software license administrators;

The following sections discuss all of ILM's forms in more detail.

4.3.4.2 Property Management

Remedy provides the M&O staffs at the EDF and the DAACs the capability to maintain inventory records, including EIN structures. Property Administrators can submit new records, modify existing ones, and perform transactions that capture installation, relocation, movement, shipment and archive activities. These transactions are logged for historical purposes. The following forms provide the mechanism to perform the aforementioned tasks:

- ILM-EIN – is designed to create, modify, and view all inventory items and their assemblies.
- ILM-EIN Structure – is designed for viewing the structure of a machine.
- ILM-EIN Transactions – provides Property Administrator the capability to perform the following EIN transactions: Installation, Relocation, Movement, Shipment, and Archive.
- ILM-OEM Parts – records manufacturers' or vendor's part numbers and other parts information.
- ILM-Vendor-MFR – records vendors and manufacturers information
- ILM-HwSw Code- records inventory items type
- ILM-Status – records inventory status
- ILM-Maint Contract – maintains maintenance contracts information
- ILM-Transaction Log – Logs all the transactions performed on inventory items.

The following sections describe each of these forms in more detail.

4.3.4.2.1 ILM-EIN GUI

The ILM-EIN form (Figures 4.3.4-2 to 4.3.4-7) is used for creating, viewing or modifying all EMD inventory items's records. In addition, this form allows the Property Administrator to create and modify EIN structures via the Parent EIN field. Other ILM groups may view and perform reports on this form.

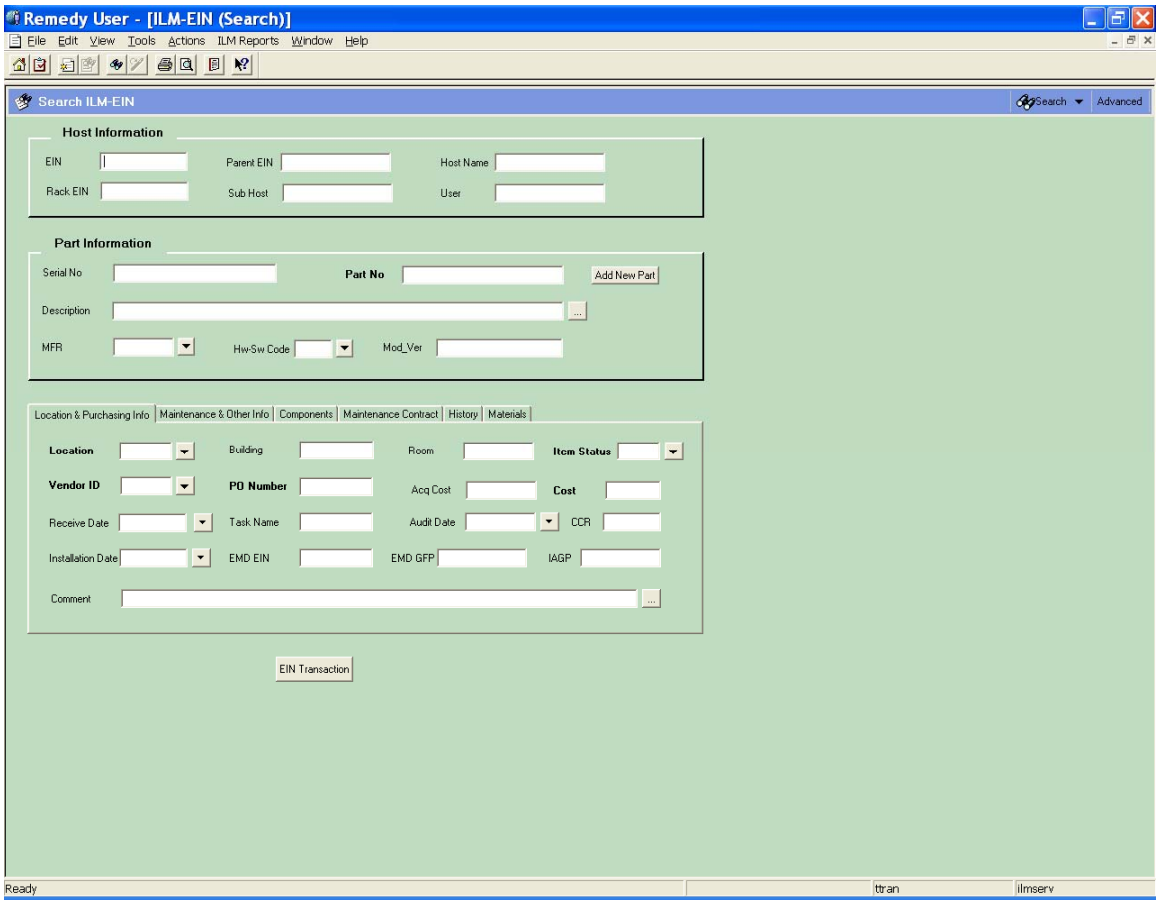


Figure 4.3.4-2. ILM-EIN (Part Info and Location & Purchasing Info) GUI

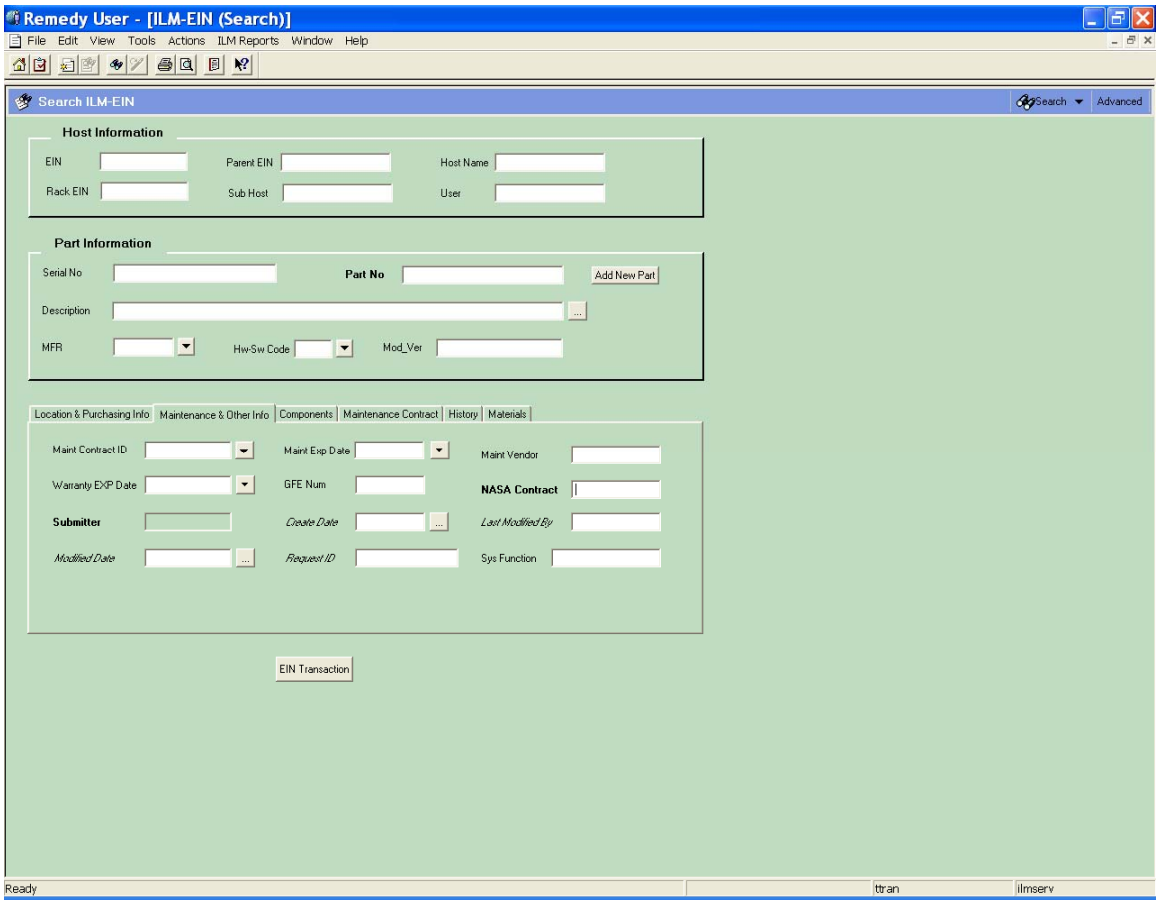


Figure 4.3.4-3. ILM-EIN (Maintenance & Other Info.) GUI

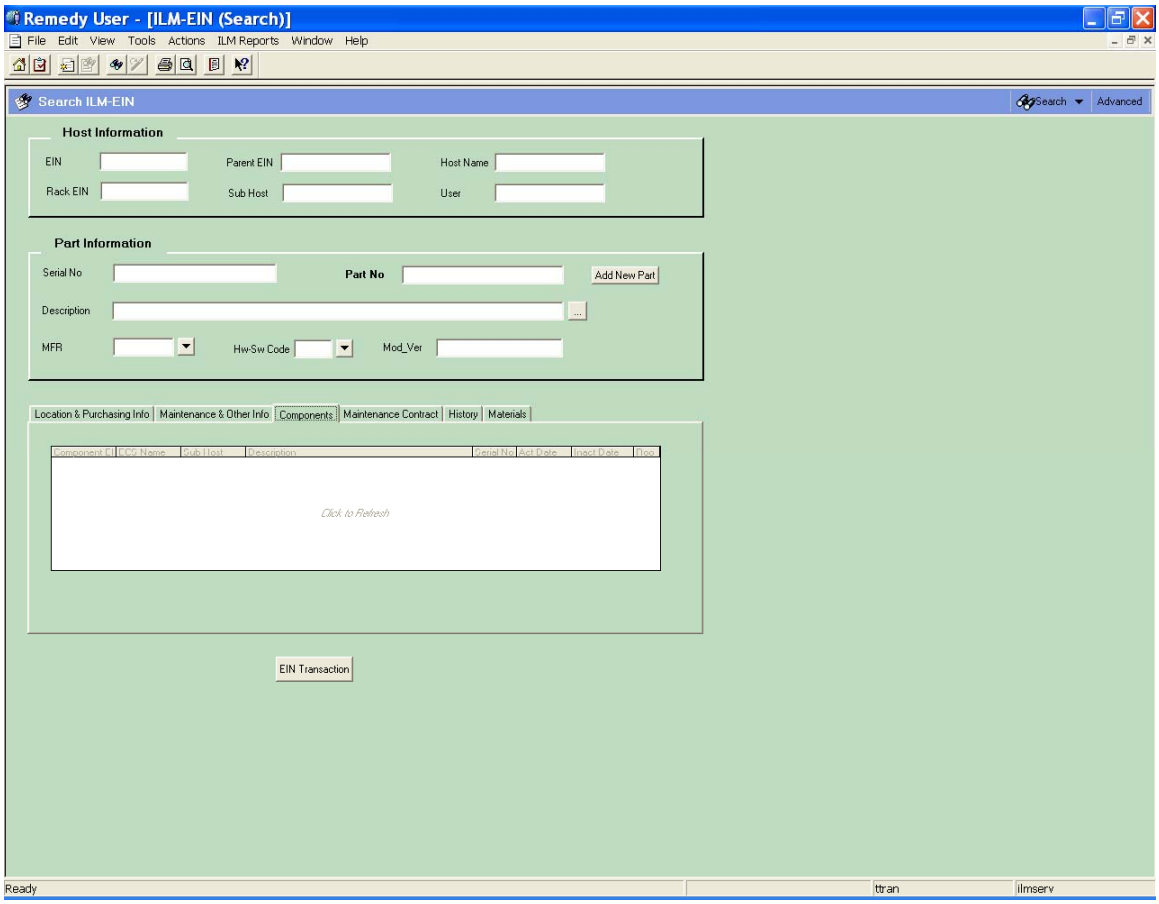


Figure 4.3.4-4. ILM-EIN (Components) GUI

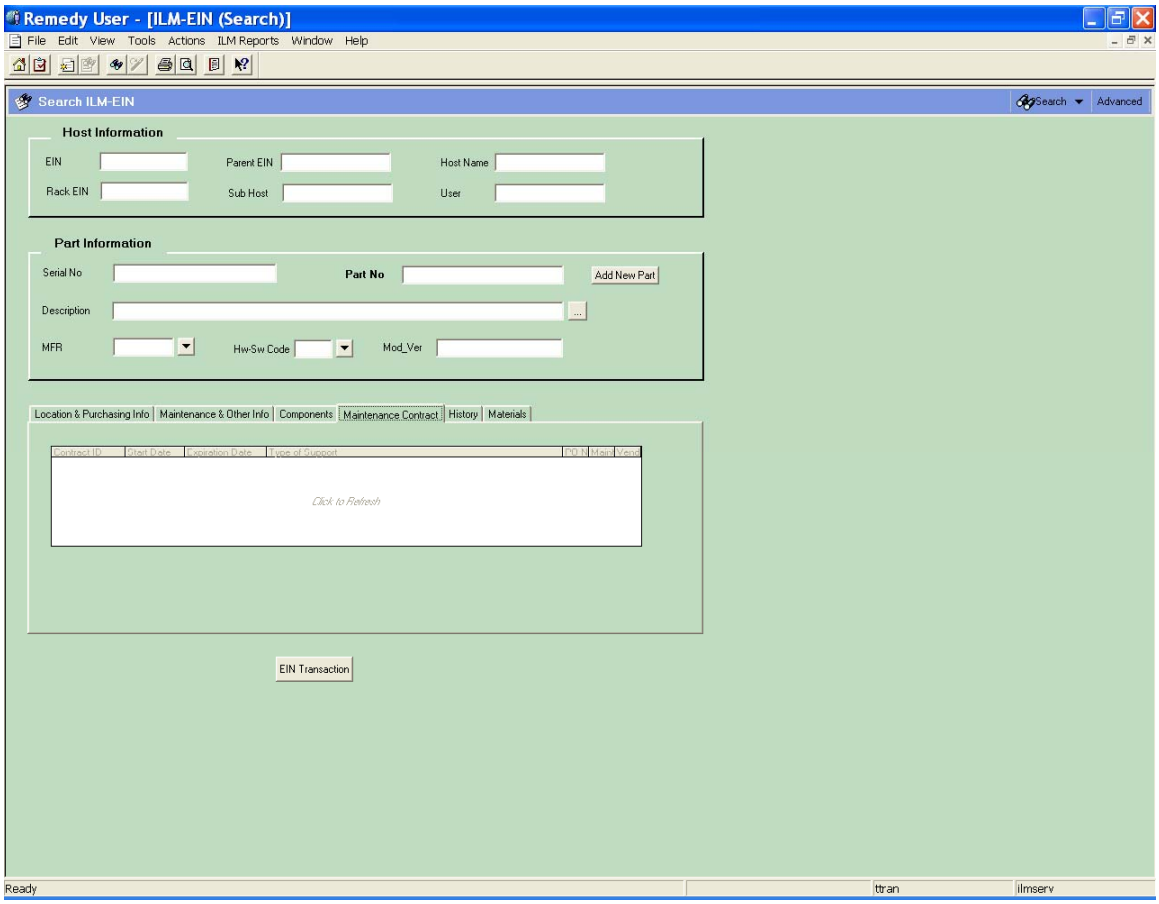


Figure 4.3.4-5. ILM-EIN (Maintenance Contract) GUI

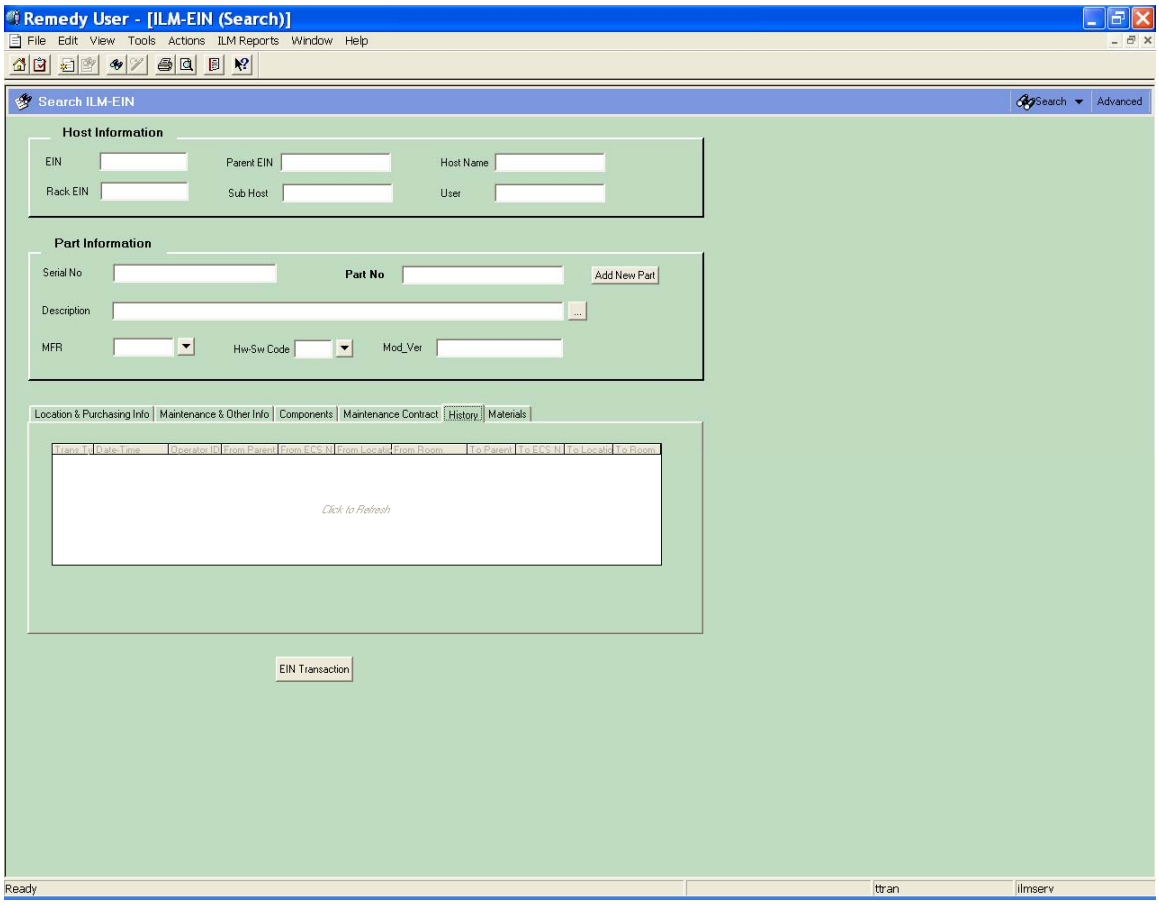


Figure 4.3.4-6. ILM-EIN (History) GUI

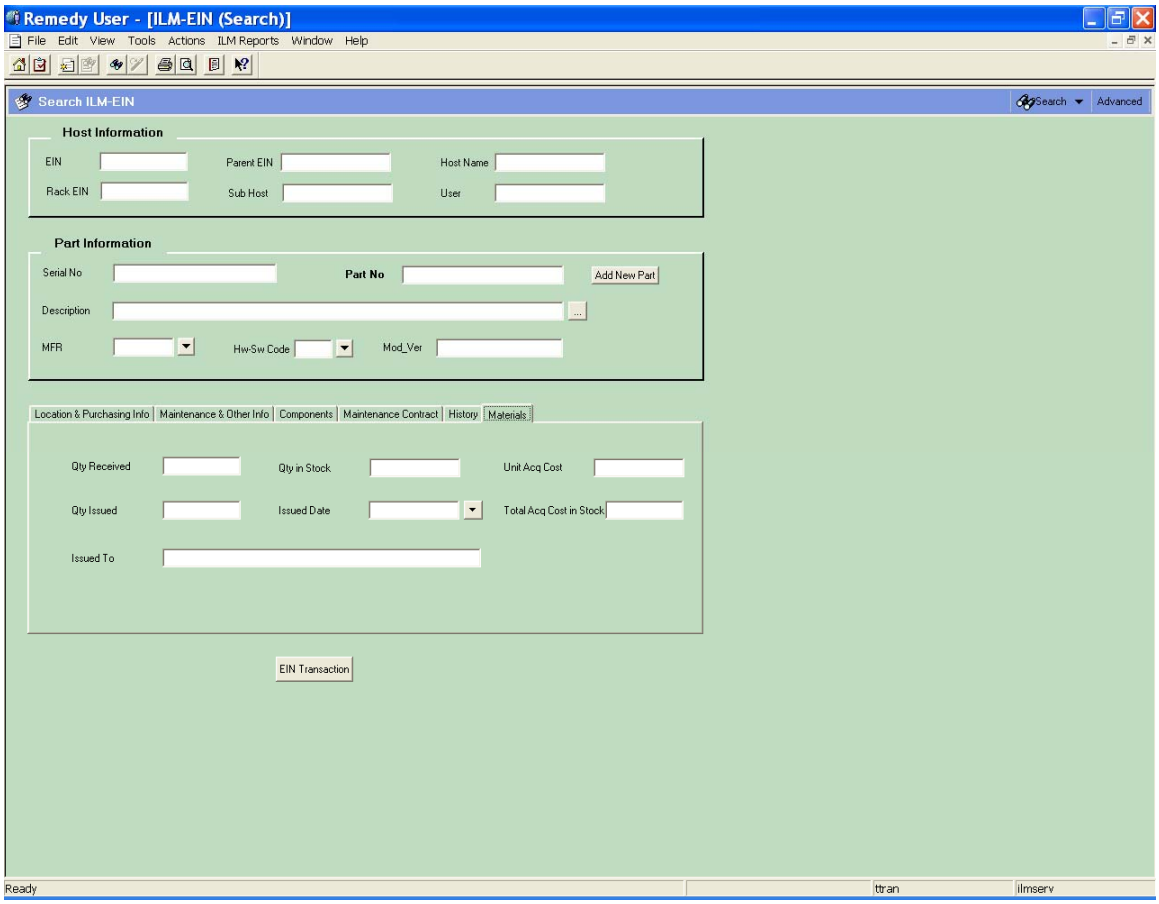


Figure 4.3.4-7. ILM-EIN (Materials) GUI

Table 4.3.4-2 describes the fields on the ILM-EIN form.

Table 4.3.4-2. ILM-EIN Form Field Descriptions (1 of 3)

Field Name	Data Type	Size	Entry	Description
Host Information	n/a	n/a	Page	Contains the following fields about the EIN item: EIN, Parent EIN, Host Name, Rack EIN, Sub Host and User.
EIN	Char	20	optional	Identifier for an inventory item.
Parent EIN	Char	20	optional	EIN of the host of which this item is a component.
Host Name	Char	30	optional	Name of the machine with which the item is associated.
Rack EIN	Char	20	optional	The EIN number of the rack the equipment is installed.
Sub Host	Char	30	optional	Sub host is use to identify individual hosts within a main host. For example: Communication Rack, Rack will have 1 name installed. Items in the rack can each have a different name, this name is put into the sub host field.
User	Char	30	optional	User's name the equipment assigned to.
Part Information	n/a	n/a	Page	Contains the following fields about the EIN item: Serial No, Part No, Description, MFR, Hw-Sw code & Mod_Ver
Serial No	Char	30	optional	Manufacturer's serial number of the item.
Part No	Char	34	optional	Manufacturer's or vendor's part number.
Description	Char	80	optional	Manufacturer's or vendor's description for the item.
MFR	Char	6	optional	Code used for the manufacturer.
Hw-Sw Code	Char	2	optional	Code for classifying inventory items by type.
Mod-Ver	Char	24	optional	Model or version of the item.
Location & Purchasing Info.	n/a	n/a	Page	Contains the following fields about the EIN item: Location, Building, Room, Item Status, Vendor ID, PO Number, Cost, Quantity, Receive Date, Installation date, and Audit Date.
Location	Char	6	optional	Identifier that designates an inventory location.
Building	Char	6	optional	Identifier for the building where the item can be found.
Room	Char	15	optional	Identifier for the room where the item can be found.
Item Status	Char	1	Optional, default R.	Code that designates the status of the item. The following values are set when processing transactions: R = Received; SP = Spare Equipment; I = Installed; X = Archived;
Vendor ID	Char	6	required	Code for the Vendor from whom the item was purchased.
PO Number	Char	10	Required	Identifier of the purchase order against which the item was received.
Acq Cost	Decimal	10.2	optional	Acquisition Cost is the original purchase, construction or development cost, which includes all costs incurred to bring the property to a form and location suitable for its intended use and net of (less) any purchase discounts.

Table 4.3.4-2. ILM-EIN Form Field Descriptions (2 of 3)

Field Name	Data Type	Size	Entry	Description
Cost	Decimal	10.2	optional	Purchase cost of the item.
Receive Date	Char	n/a	optional	Date item was received from vendor.
Task Name	Char	10	optional	Name of the task order under the EMD contract that the item was originally purchased for.
Audit Date	Date	n/a	optional	Date the item was physically inventoried last.
CCR	Char	10	optional	Approved CCR number that requested the purchasing of the item.
Installation Date	Date	n/a	optional	Date the item was installed. The system sets the value during EIN Installation processing.
EMD EIN	Char	20	optional	Previous contract EIN number that was replaced by the current EIN number.
EMD GFP	Char	30	optional	Government Furnished Property (GFP) from the previous contract (EMD) under a particular government transfer document, i.e 20-4 form.
IAGP	Char	30	optional	Installation- Accountable Property, shall be made available to the Contractor on a no-charge basis for use in performance of this contract. This property shall be utilized only within the physical confines of the NASA installation that provided the property. The Government retains accountability for, and title to, the property, and the Contractor assumes user responsibilities.
Comment	Char	120	optional	Miscellaneous information specific to the item.
Maintenance & Other Info.	n/a	n/a	Page	Contains the following fields about the EIN item: Maint Contract ID, Maint Exp Date, Maint Vendor, Warranty Exp Date, EMOSD ID, GFE Num, Comment, NASA Contract, Submitter, Create Date, Last Modified By, Modified Date, Request ID and Sys Function.
Maint Contract ID	Char	10	optional	Identifier for the Maintenance Contract under which the item is covered.
Maint Exp Date	Date	n/a	optional	Date the maintenance contract will expire. This field reflects the Expiration Date from the Maint Contract ID entered above.
Maint Vendor	Char	6	optional	Code for the vendor the maintenance contract were purchased from.
Warranty EXP Date	Date	n/a	optional	Date that the warranty expires.
GFE NUM	Char	8	optional	Identifier assigned by the Government to an item of government furnished equipment.
NASA Contract	Char	11	Optional, default NAS5-60000	Identifier designating the government contract used for this item. This information is automatically assigned and can not be changed.

Table 4.3.4-2. ILM-EIN Form Field Descriptions (3 of 3)

Field Name	Data Type	Size	Entry	Description
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The user last modified the record.
Modified Date	Date/Time	n/a	System-supplied	The last date/time the record was modified.
Request ID	Char	15	System-supplied	Provides record identifier.
Sys Function	Char	50	optional	System functionality.
Components	n/a	n/a	Page	Page for displaying the components of a parent EIN. It displays the Component EIN, ECS Name, Sub Host, Description, Serial No, Active Date, Inactive Date, and Room.
Maintenance Contract	n/a	n/a	Page	Page displays attributes of the maintenance contract, such as the Contract ID, Start Date, Expiration Date, Type of support, PO number, maintenance vendor, and vendor ID.
History	n/a	n/a	Page	Contains a listing of EIN transaction history for the EIN. This table displays the following fields describing the transactions: Trans Type, Date-Time, Operator ID, From Parent EIN, From ECS Name, From Location, From Room, To Parent EIN, To ECS Name, To Location, and To Room.
Materials	n/a	n/a	Page	Contains the following fields about the EIN item: Qty Received, Qty in Stock, Unit Acq Cost, Qty Issued, Issued Date, Total Acq Cost in Stock & Issued To.
Qty Received	Integer	4	optional	Number of items purchased on a particular purchase order.
Qty in Stock	Integer	4	optional	Number of items in stock.
Unit Acq Cost	Decimal	10.2	optional	The acquisition cost per unit.
Qty Issued	Integer	4	optional	The quantity issued.
Issued Date	Date	n/a	optional	The date the item(s) issued to end user.
Total Acq Cost in Stock	Decimal	10.2	optional	Total acquisition cost of for the remaining quantity in stock.
Issued To	Char	60	optional	Site, Host or a person name the material is issued to.

The following buttons are unique to this form:

- Add New Part – Activates the ILM-OEM Parts form. This allows the operator to add new parts or to search for existing parts.
- EIN Transaction – brings up the ILM-EIN Transaction form.

4.3.4.2.2 ILM-EIN Structure GUI

The ILM-EIN Structure form (Figure 4.3.4-8) is designed to allow an Administrator to repair EIN structure records. Other ILM groups may view EIN Structure via the ILM-EIN form discussed in the previous section. To make changes to EIN Structures, always use the ILM-EIN Transaction form that is discussed in Section 4.3.4.2.3.

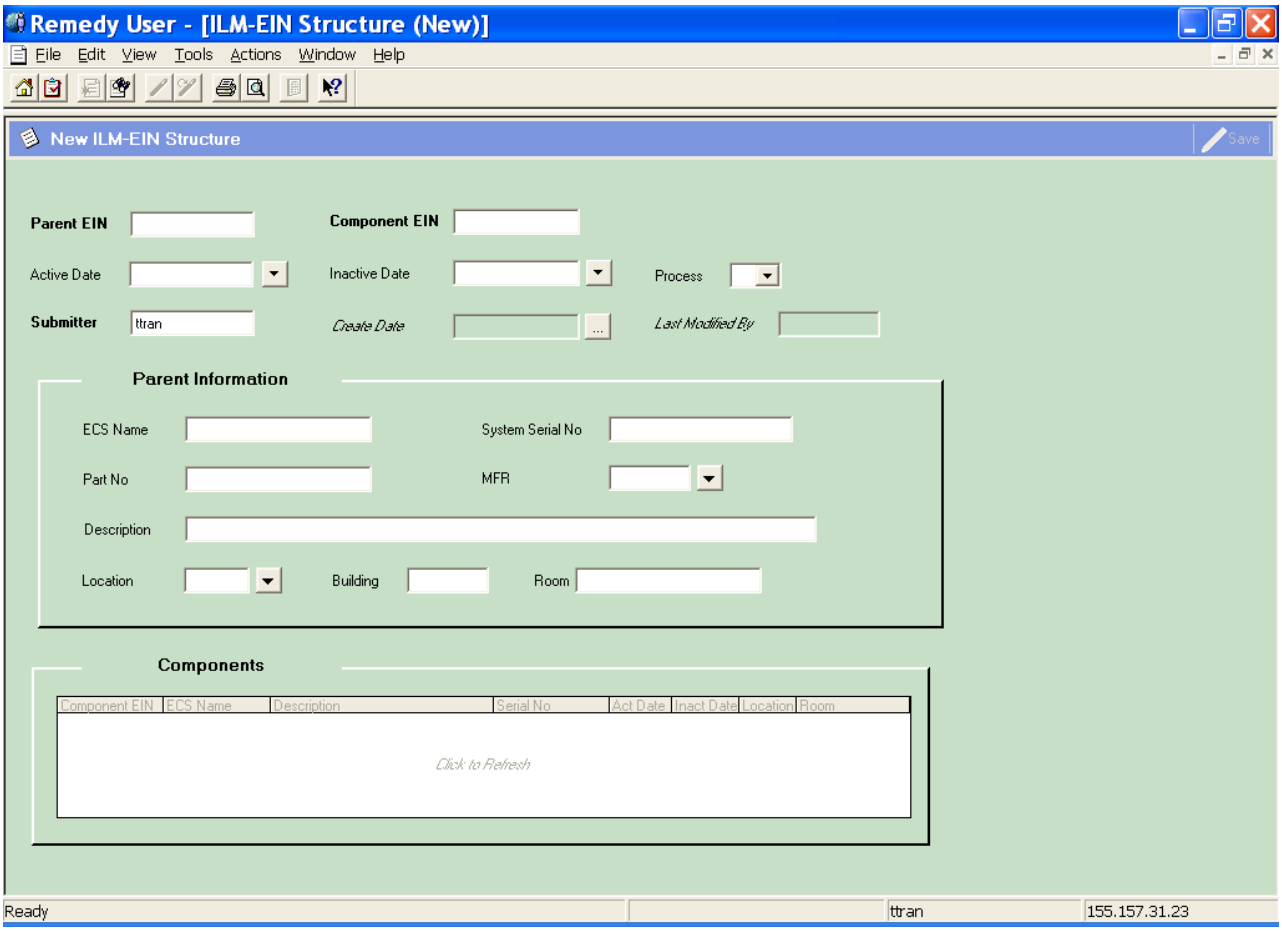


Figure 4.3.4-8. ILM-EIN Structure GUI

Table 4.3.4-3 contains descriptions of the ILM-EIN Structure form's fields.

Table 4.3.4-3. ILM-EIN Structure Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Parent EIN	Char	20	Required	EIN for the parent item in an EIN structure.
Component EIN	Char	20	Required	Identifier for an EIN controlled inventory item.
Active Date	Date	n/a	Required	Date the item was added to the parent structure
Inactive Date	Date	n/a	Optional	Date the component is no longer assigned to the Parent EIN.
Process	Char	1	Optional	Identifier for Component EIN to be processed by EIN transactions
Submitter	Char	30	Required	User ID of user who submitted the record.
Create Date	Date/Time	n/a	System-supplied	Indicates date that the record was created.
Last Modified By	Char	30	System-supplied	Indicates the user who last modified the record.
ECS Name	Char	30	System-supplied	Name of the machine with which the item is associated. This field reflects the ECS Name of the Parent EIN entered above.
System Serial No	Char	30	system-supplied	Serial number of the item. This field reflects the serial no of the Parent EIN entered above.
Part No	Char	34	optional	Manufacturer's or vendor's number for the part.
MFR	Char	6	system-supplied	Code for the manufacturer of the item. This field reflects the MFR of the Parent EIN entered above.
Description	Char	60	system-supplied	Manufacturer's or vendor's description for the item. This field reflects the Description of the Parent EIN entered above.
Location	Char	6	system-supplied	Identifier that designates an inventory location. This field reflects the location of the Parent EIN entered above.
Building	Char	6	system-supplied	The building where the item can be found.
Room	Char	15	system-supplied	The room where the item can be found. This field reflects the room of the Parent EIN entered above.
Components	Table field	n/a	system-supplied	Field for displaying the components of a parent EIN.

4.3.4.2.3 ILM-EIN Transaction GUI

The ILM-EIN Transaction form (Figures 4.3.4-9 to 4.3.4-11) enables the operator to perform the following EIN transactions for inventory items: Installation, Relocation, Return to Stock, Movement, Shipment, and Archive. The operator may select the type of transaction from the drop down list on the Transaction Type field as displayed below. Depending on the type of transaction the operator selects, Remedy will perform inventory updates accordingly. In addition, this form has three tabs: Install/Move/Ship/RTS, Relocate, and Archive. Each tab

contains different information. For instance, Install/Move/Ship/RTS tab contains fields that are applicable to EIN Installation, EIN Movement, EIN Shipment, and Return To Stock. Relocate tab displays fields for EIN Relocation. Archive tab displays field for EIN Archive. The operator can specify components to be processed by pressing the "Select Components to Process" button. Remedy then transfers the operator to the ILM-Process Component form to complete the transaction. Figures 4.3.4.9 to 4.3.4-11 display fields for each tab and Table 4.3.4-4 provides the fields definitions for this form.

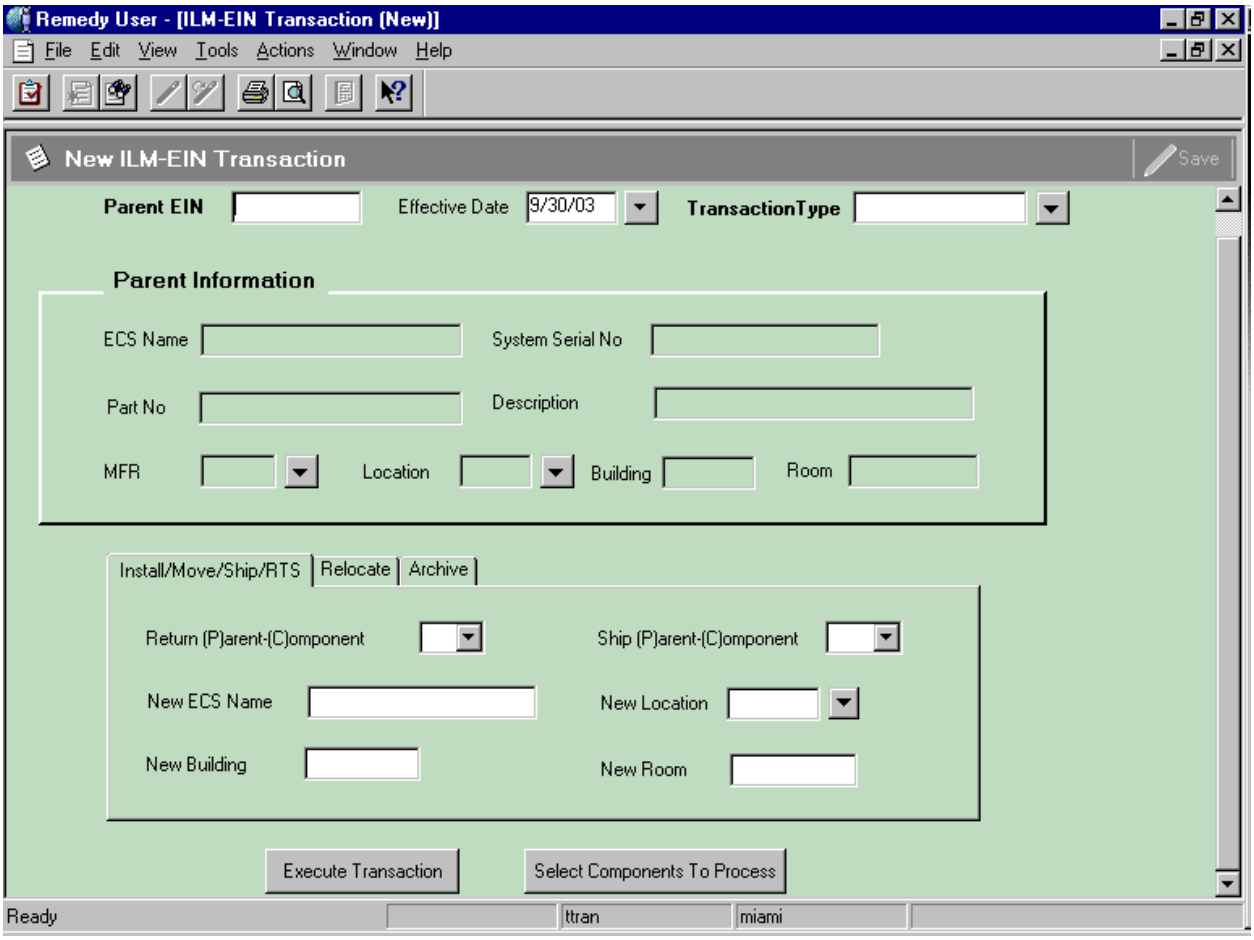


Figure 4.3.4-9. ILM-EIN Transaction (Install/Move/Ship/RTS) GUI

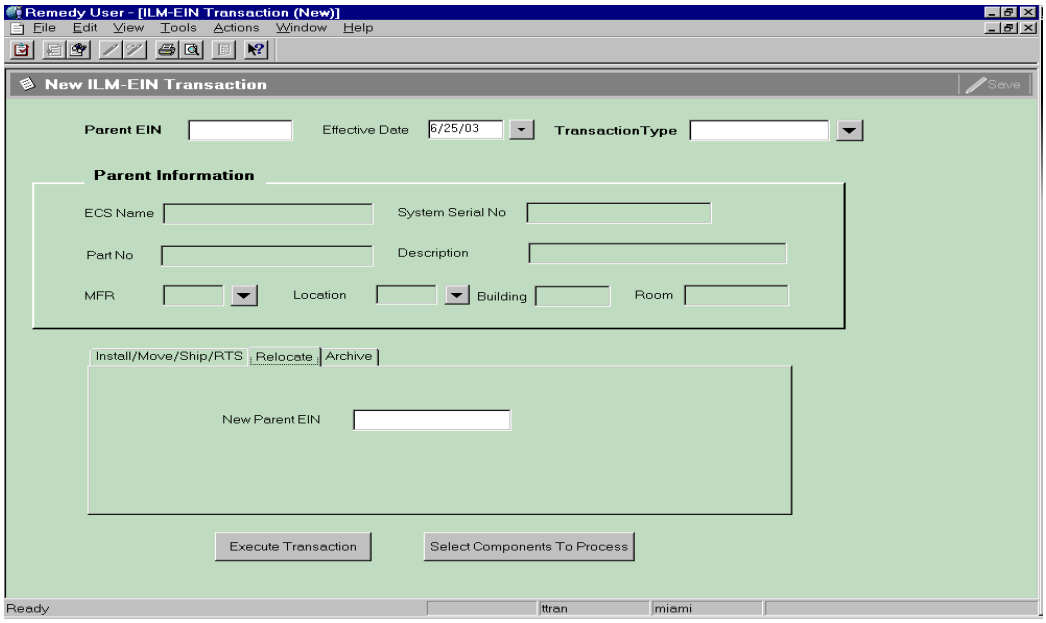


Figure 4.3.4-10. ILM-EIN Transaction (Relocation) GUI

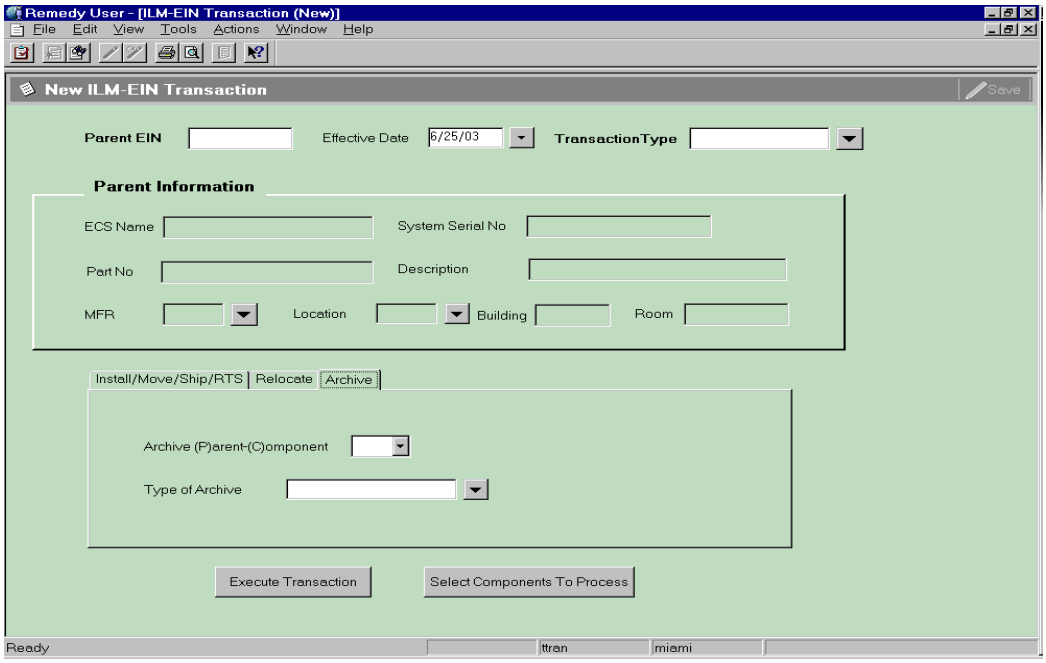


Figure 4.3.4-11. ILM-EIN Transaction (Archive) GUI

Table 4.3.4-4 provides the fields definitions for the ILM-EIN Transaction form.

Table 4.3.4-4. ILM-EIN Transaction Form Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Parent EIN	Char	20	required	EIN for the parent item in an EIN structure.
Effective Date	Date		Optional	The date the transaction is in effect.
Transaction Type	Char	15	Required	Type of transaction performs on the Parent EIN such as Installation, relocation, movement, shipment, and archive.
ECS Name	Char	30	System-supplied	Name of the machine with which the item is associated. This field reflects the ECS Name of the Parent EIN entered above.
System Serial No	Char	30	system-supplied	Serial number of the item. This field reflects the serial no of the Parent EIN entered above.
Part No	Char	34	system-supplied	Manufacturer's or vendor's part number. This field reflects the Part No of the Parent EIN entered above.
Description	Char	60	system-supplied	Manufacturer's or vendor's description for the item. This field reflects the Description of the Parent EIN entered above.
MFR	Char	6	system-supplied	Code for the manufacturer of the item. This field reflects the MFR of the Parent EIN entered above.
Location	Char	6	system-supplied	Identifier that designates an inventory location. This field reflects the location of the Parent EIN entered above.
Building	Char	6	system-supplied	The building where the item can be found.
Room	Char	15	system-supplied	The room where the item can be found. This field reflects the room of the Parent EIN entered above.
Install/Move/Ship/ RTS	Page	n/a	n/a	This page contains the following fields to perform the EIN Installation, Movement, Shipment, and Return to Stock: Return (P)arent-(C)omponent, Ship (P)arent-(C)omponent, New ECS Name, New Location, New Building, and New Room.
Return (P)arent-(C)omponent	Char	1	Optional, P or C	Identify whether the operator will return Parent and all of the components or return subset of components.
Ship (P)arent-(C)omponent	Char	1	Optional, P or C	Identify whether the operator will ship Parent and all of the components or ship subset of components.
New ECS Name	Char	30	Optional	New ECS Name for the Parent EIN.
New Location	Char	6	Optional	New Location where the item will be at.
New Building	Char	6	Optional	New Building where the item will be.
New Room	Char	15	Optional	New room where the item will be located.

Table 4.3.4-4. ILM-EIN Transaction Form Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Relocate	Page	n/a	n/a	This page contains the New Parent EIN field for user to perform EIN relocation.
New Parent EIN	Char	20	Optional	New Parent EIN to which the item(s) will be associated with.
Archive	Page	n/a	n/a	This page contains the following fields to perform EIN archive: Archive (P)arent-(C)omponent and Type of Archive.
Archive (P)arent-(C)omponent	Char	1	Optional, P or C	Identify whether the operator will archive the Parent as well as all the active components or archive a subset of components.
Type of Archive	Char	6	Optional, X,TV,G, RG	Define the type of archive the item(s). Return to Vendor – X,Trade in to vendor - TV Transferred to government - G Government Relieved Accountability - RG

- Pressing the Execute Transaction button will cause the processing of the transaction and the updating of the inventory items in accordance with the type of transaction the operator selected.
- Pressing the "Select Components To Process" button will bring up the ILM-Process Component form. This button is visible only when the transaction is associated with components.

4.3.4.2.3.1 ILM-Join-Process Component GUI

The ILM-Join-Process Component form (Figure 4.3.4-12) displays all the active components for the Parent EIN entered in the ILM-EIN Transaction form and lets the operator specify component to undergo an EIN transaction. This form can be accessed through the "Select Components To Process" button on the bottom of the ILM-EIN Transaction form. However, this button is only visible when the transaction is being performed on components only. For example, the "Select Components To Process" button becomes visible when the user selects to return components (Return (P)arent-(C)omponent) to stock, or relocate components to a new EIN Structure, or archive selected components.

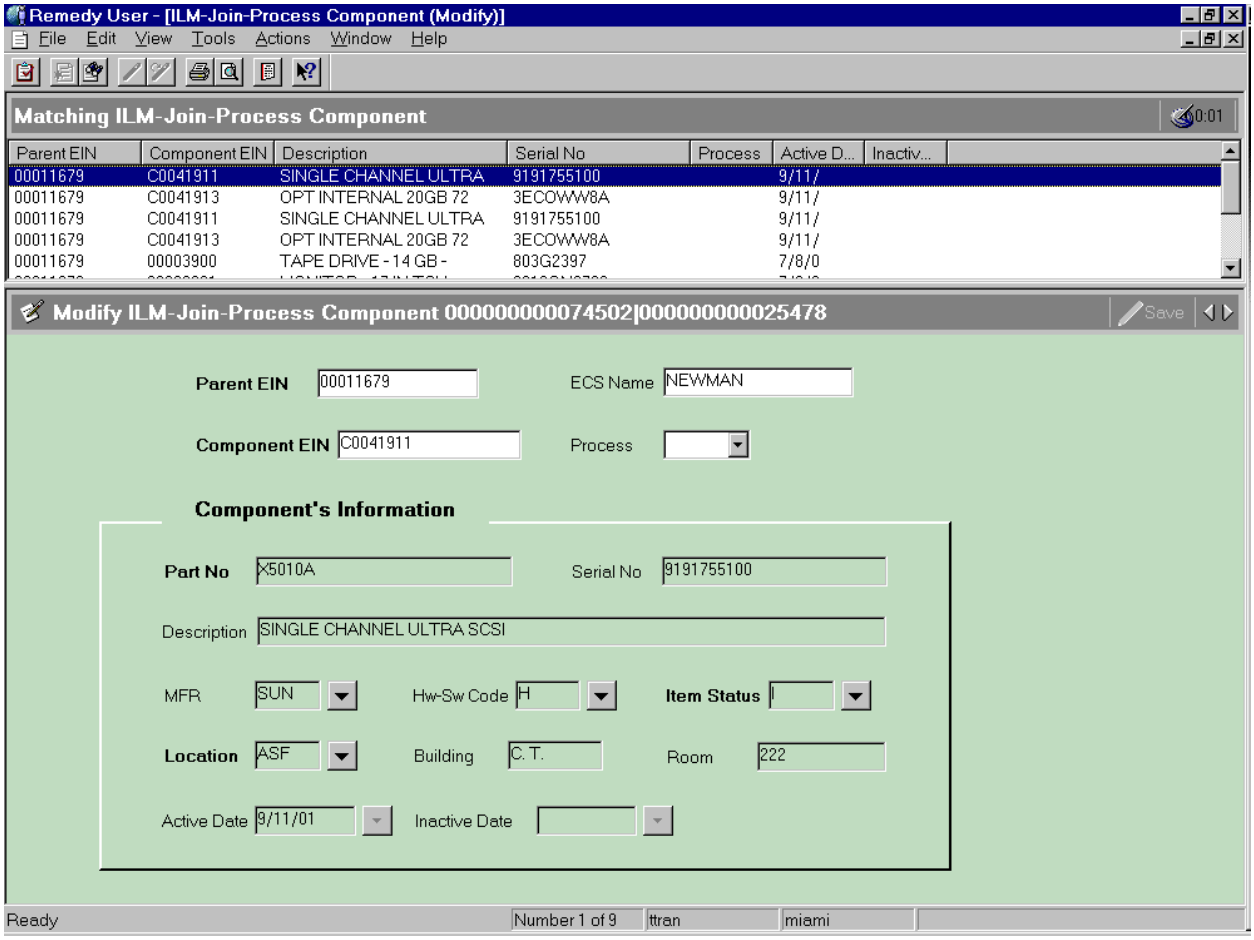


Figure 4.3.4-12. ILM-Join-Process Component GUI

Table 4.3.4-5 provides fields definitions for the ILM-Join-Process Component Form.

Table 4.3.4-5. ILM-Join-Process Component Form Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Parent EIN	Char	20	System-supplied	EIN for the parent item in an EIN structure.
ECS Name	Char	30	system-supplied	Name of the machine with which the item is associated.
Component EIN	Char	20	system-supplied	EIN for the Component item in an EIN structure.
Process	Char	1	Optional	Indicates whether or not a component is to be processed. Y = Yes, N = No.
Part No	Char	34	system-supplied	Manufacturer's or vendor's part number.

Table 4.3.4-5. ILM-Join-Process Component Form Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Serial No	Char	30	system-supplied	Serial number of the item.
Description	Char	60	system-supplied	Manufacturer's or vendor's description for the item.
MFR	Char	6	system-supplied	Code for the manufacturer of the item.
Hw-Sw Code	Char	2	system-supplied	Code for classifying items according to source of inventory. This code is provided automatically. Do not change it, manually.
Item Status	Char	1	system-supplied	Code that designates the status of the item.
Location	Char	6	system-supplied	Identifier that designates an inventory location.
Building	Char	6	system-supplied	The build where the item can be found.
Room	Char	15	system-supplied	The room where the item can be found.
Active Date	Date	n/a	system-supplied	Date the item was added to the parent structure.
Inactive Date	Date	n/a	system-supplied	Date the component is no longer assigned to the EIN Structure.

4.3.4.2.3 ILM-Transaction Log

ILM-Transaction Log form (Figure 4.3.4-13) is designed for viewing/browsing all the EIN transactions performed on property records. Remedy logs the type of transaction, date/time, operator initiating the transaction, ECS name, Parent EIN, and location changes. This form also shows property record changes due to maintenance actions performed on inventory items (refer to Section 4.3.4.3 for description of maintenance actions.).

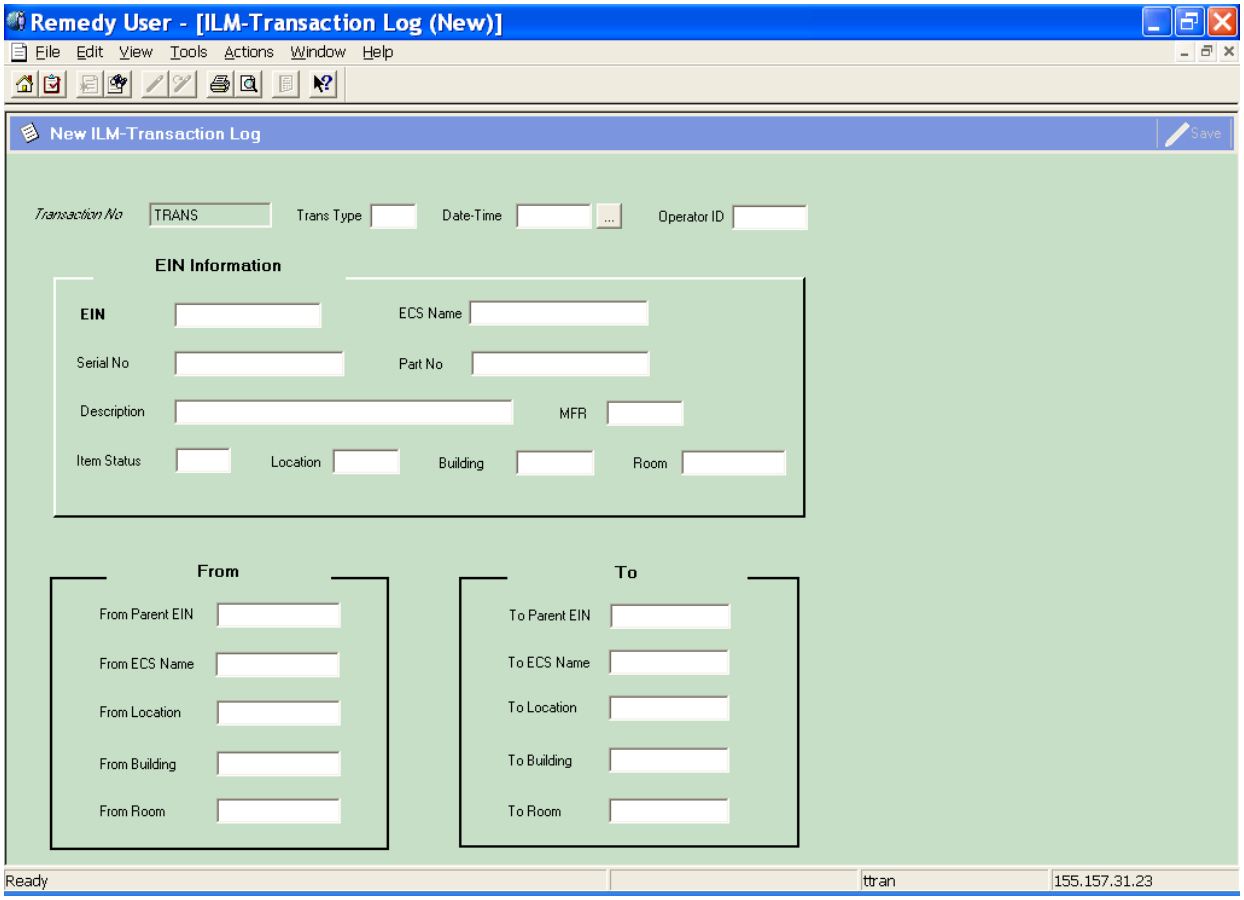


Figure 4.3.4-13. ILM-Transaction Log GUI

Table 4.3.4-6 describes the fields on the ILM-Transaction Log form.

Table 4.3.4-6. ILM-Transaction Log Form Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Transaction No	Numeric	10	system-supplied	A system generated number that uniquely identify the transaction.
Trans Type	Char	5	system-supplied	The type of transaction operators perform on an inventory item, including: INS - Install, MVE – Move, REL - Relocate, ARC – Archive, MFS – Failed and Returned to Stock, MFV – Failed and returned to the vendor, MNS – New and came from stock, MNV – New and came from vendor, MRR – Relocate to a new Parent via the MWO, and MRS – Relocate to stock via the MWO.
Date-Time	Date	n/a	system-supplied	Date and time the transaction occurred.
Operator ID	Char	10	system-supplied	The operator id who performed the transaction.
EIN	Char	20	system-supplied	The EIN number that the transaction performed on.
ECS Name	Char	30	system-supplied	Name of the machine with which the item is associated.
Serial No	Char	30	system-supplied	Serial number of the item.
Part No	Char	30	system-supplied	Manufacture's or vendor's part number.
Description	Char	60	system-supplied	Manufacturer's or vendor's description of the item.
MFR	Char	6	system-supplied	Code for the manufacturer of the item.
Item Status	Char	1	Optional, default R.	Code that designates the status of the item. The following values are set when processing transactions: R = Received; SP = Spare Equipment; I = Installed; X = Archived;
Location	Char	6	system-supplied	Identifier that designates an inventory location. This field reflects the location of the Parent EIN entered above.
Building	Char	6	system-supplied	The building where the item can be found.
Room	Char	15	system-supplied	The room where the item can be found. This field reflects the room of the Parent EIN entered above.
From Parent EIN	Char	20	system-supplied	The parent EIN where the EIN originated from.
To Parent EIN	Char	20	system-supplied	The new parent EIN where the EIN is locating.

Table 4.3.4-6. ILM-Transactions Log Form Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
From ECS Name	Char	30	system-supplied	Name of the machine with which the item is associated
To ECS Name	Char	30	system-supplied	Name of the machine with which the item is associated
From Location	Char	6	system-supplied	The original location where the EIN was.
To Location	Char	6	system-supplied	The new location where the EIN can be found.
From Building	Char	6	system-supplied	The original building where the EIN was located.
To Building	Char	6	system-supplied	The new building where the EIN is located.
From Room	Char	15	system-supplied	The Original room where the EIN located.
To Room	Char	15	system-supplied	The new room where the EIN can be found.

4.3.4.2.6 ILM-OEM Parts GUI

Operators use the ILM-OEM Parts form (Figure 4.3.4-14) to maintain standardized information about manufacturer's parts. Parts information must be recorded in the ILM-OEM Parts form before they can be added to an inventory item's record.

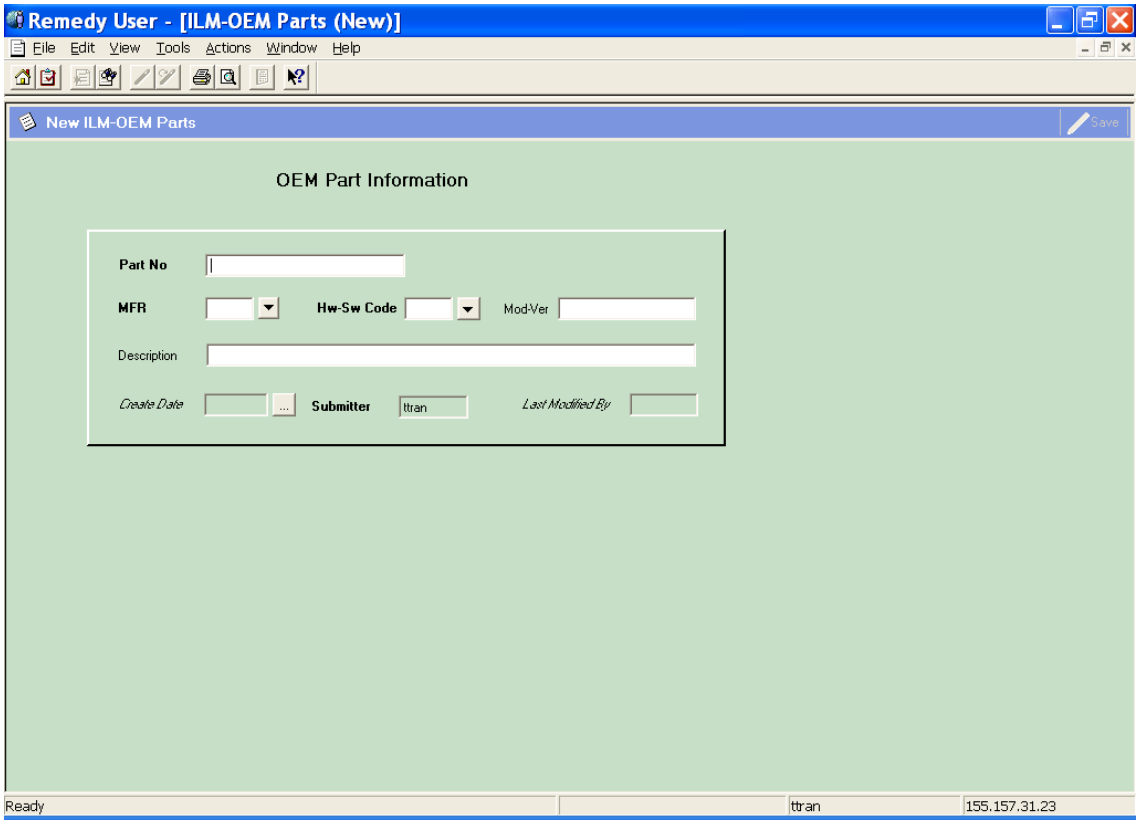


Figure 4.3.4-14. ILM-OEM Parts GUI

Table 4.3.4-7 provides the definitions for fields on the ILM-OEM Parts form.

Table 4.3.4-7. ILM-OEM Parts Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Part No	Char	34	required	Manufacturer's or vendor's part number for an item.
MFR	Char	6	required	Code for the manufacturer of the item.
Hw-Sw Code	Char	2	optional	Code for classifying items according to source of maintenance costs.
Mod-Ver	Char	24	optional	Model or version of the item.
Description	Char	60	required	Manufacturer's or vendor's description of the item.
Create Date	Date	n/a	system-supplied	Date the record was created.
Submitter	Char	30	system-supplied	The user who created the record.
Last Modified By	Char	30	system-supplied	User ID of the last person that modified the record.

4.3.4.2.7 ILM-Vendor-MFR GUI

The ILM-Vendor-MFR form (Figure 4.3.4-15) enables operators to define valid vendor codes for use with EIN records. The operator enters the data or modifies the data in the fields for this form as required.

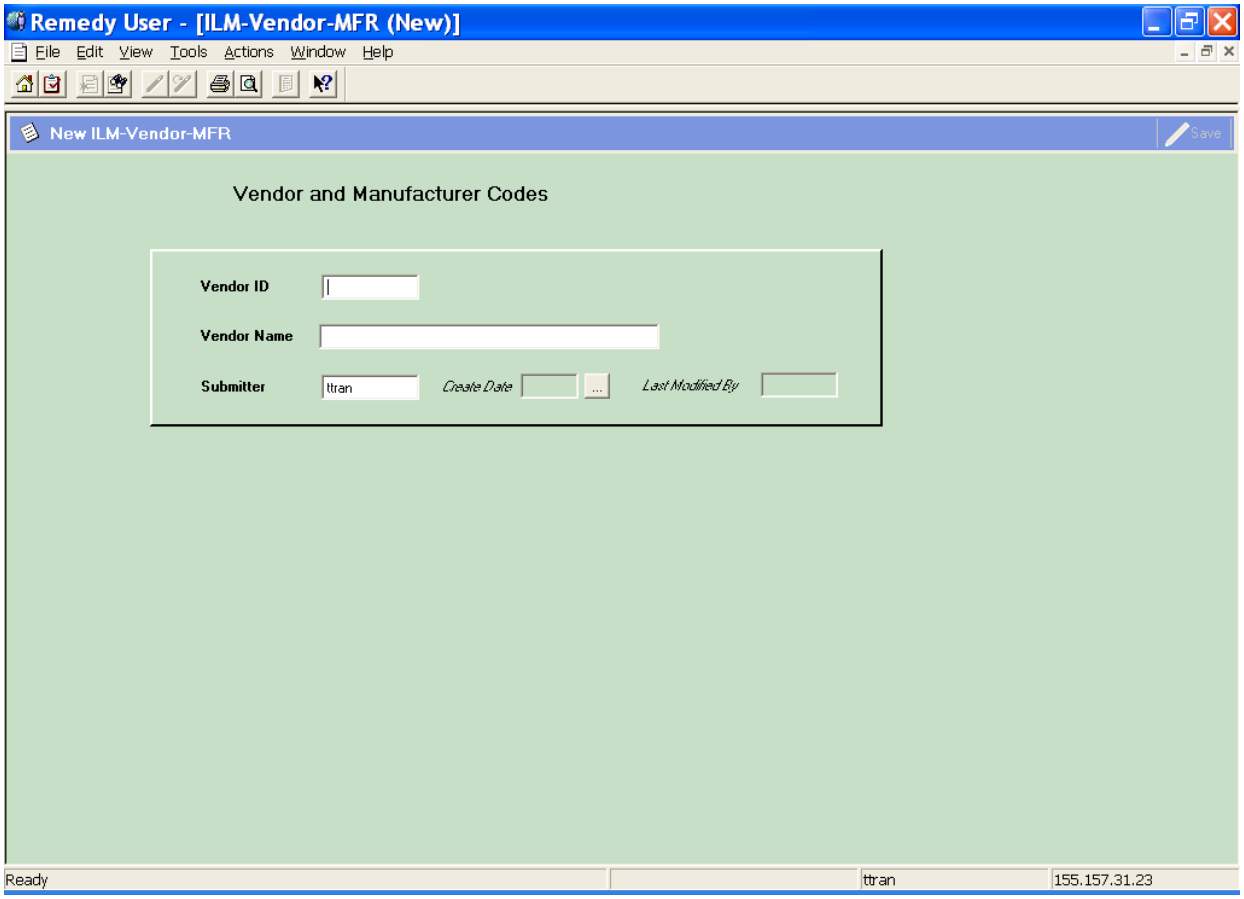


Figure 4.3.4-15. ILM-Vendor-MFR GUI

Table 4.3.4-8 describes the fields on the ILM-Vendor-MFR form.

Table 4.3.4-8. ILM-Vendor-MFR Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Vendor ID	Char	6	required	Code for a vendor from whom items are purchased.
Vendor Name	Char	30	optional	Full name of a vendor from who items are purchased.
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The user that last modified the record.

4.3.4.2.8 ILM-HwSw Codes GUI

Operators use this form (Figure 4.3.4-16) to maintain a standard set of codes for distinguishing items according to source of maintenance costs. These codes are associated with EIN items and are essential for grouping inventory items for reporting and browsing.

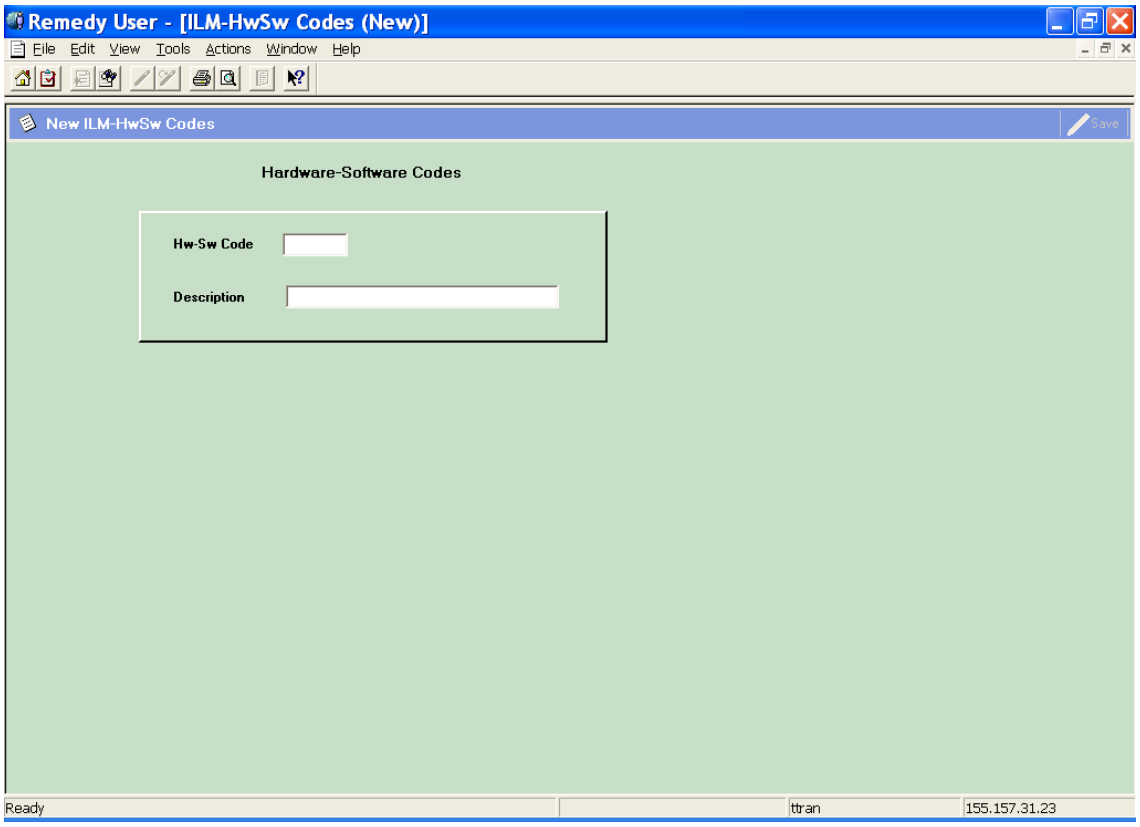


Figure 4.3.4-16. ILM-HwSw Codes GUI

Table 4.3.4-9 describes the fields on the ILM-HwSw Codes form.

Table 4.3.4-9. ILM-HwSw Codes Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Hw/Sw Code	Char	2	required	Code for classifying items according to source of maintenance costs.
Description	Char	30	required	Description for the Hardware/Software code.

4.3.4.2.9 ILM-Status Codes GUI

The ILM-Status Codes form (Figure 4.3.4-17) maintains a set of standardized codes for identifying valid inventory item states in the inventory and logistics life cycle.

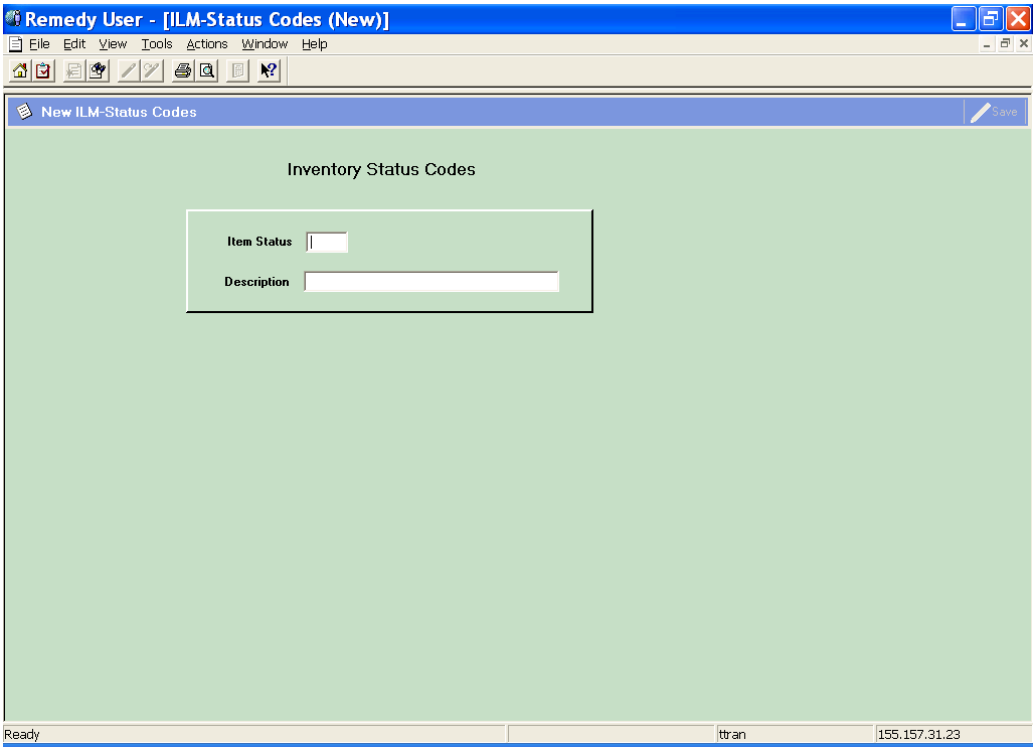


Figure 4.3.4-17. ILM-Status Codes GUI

Table 4.3.4-10 describes the fields on the ILM-Status Codes form.

Table 4.3.4-10. ILM-Status Codes Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Item Status	Char	6	required	Code for an inventory status for an item.
Description	Char	30	required	Description for the code.

4.3.4.2.10 ILM-Maint Contract GUI

The ILM-Maint Contract form (Figure 4.3.4-18) provides the ability to track information about maintenance contracts with vendors and suppliers. The contract ID is the key field and should be the actual number that the purchasing agent or the vendor assigns. The data entered here supports data entry for the ILM-EIN form (Section 4.3.4.2.2). This form contains two tabs: Purchasing Information and EINs Covered. Purchasing Information contains fields pertaining to the maintenance purchase order. The EINs Covered tab displays a list of EINs the maintenance contract covers. (See Figures 4.3.4-19 and 4.3.4-20).

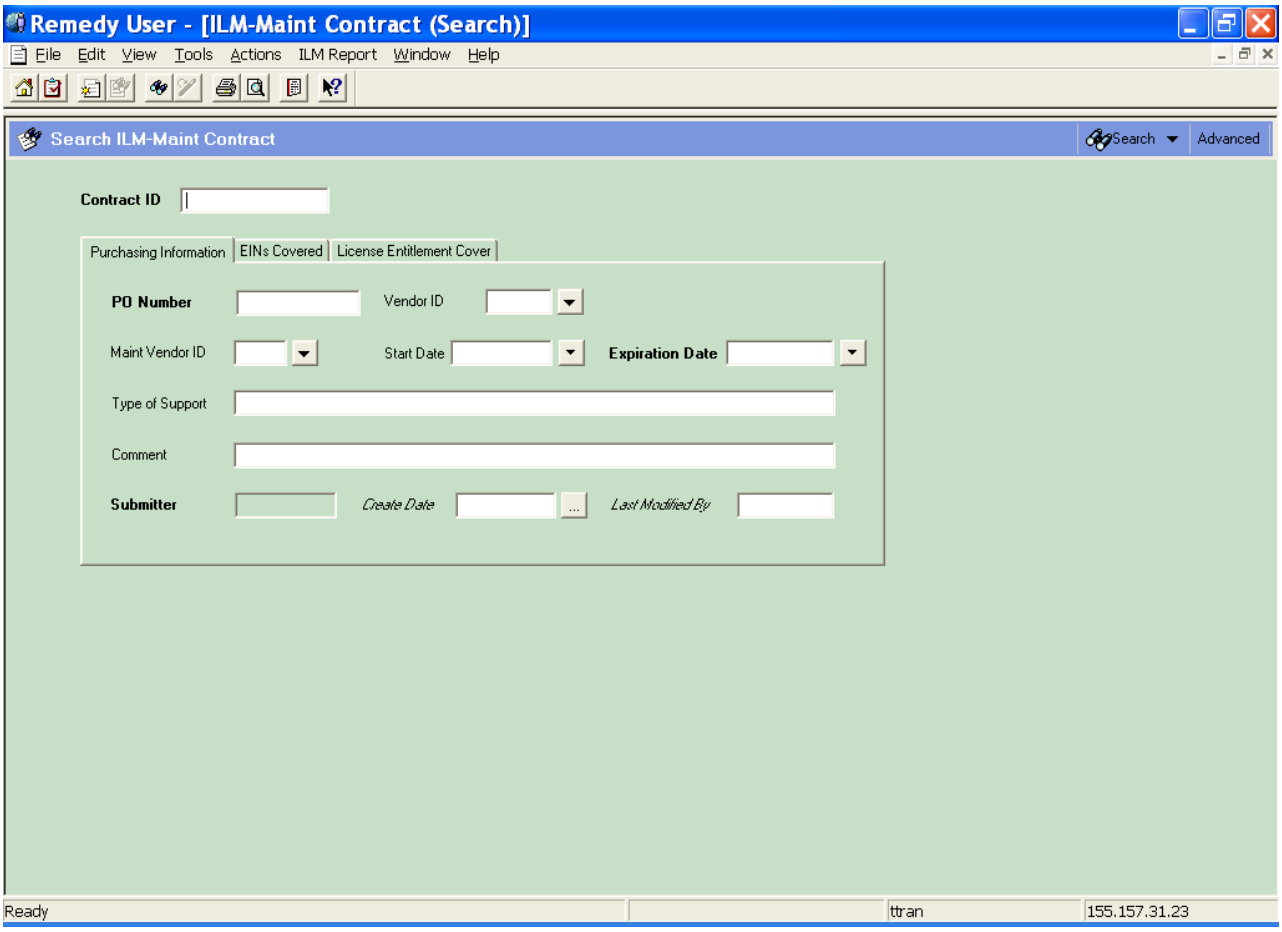


Figure 4.3.4-18. ILM-Maint Contract GUI – Purchasing Information

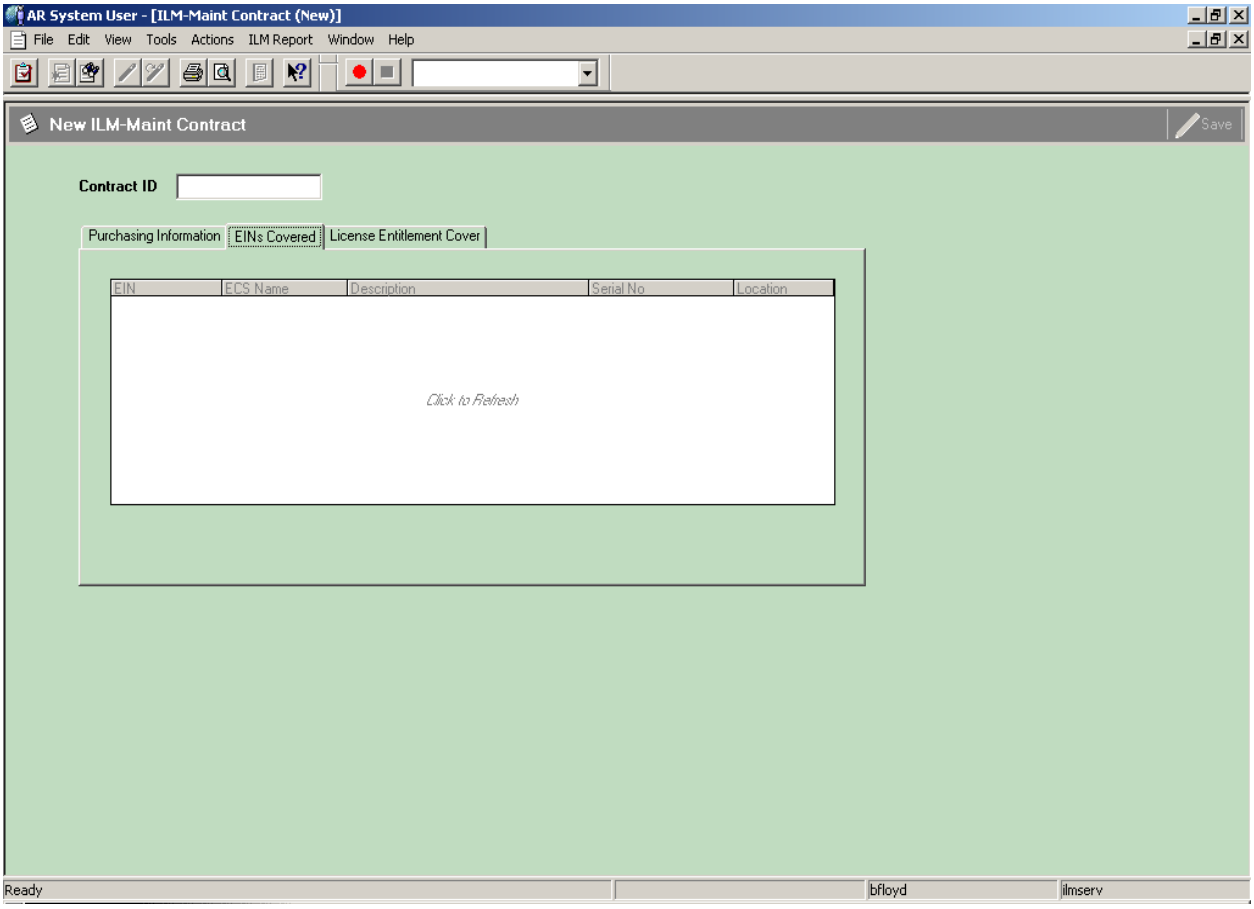


Figure 4.3.4-19. ILM-Maint Contract GUI – EINs Covered

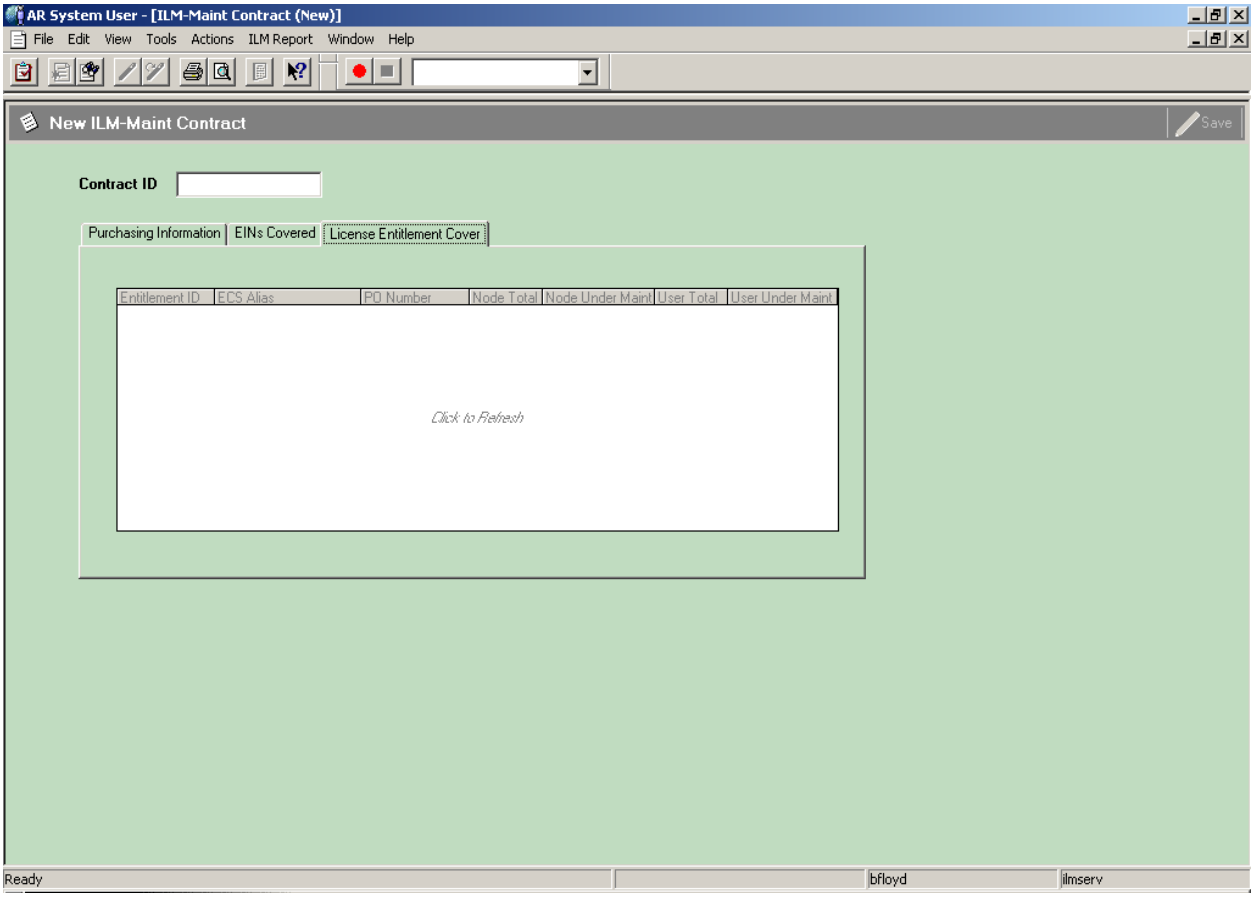


Figure 4.3.4-20. ILM-Maint Contract GUI – License Entitlement Cover

Table 4.3.4-11 provides definitions for fields on the ILM-Maint Contract form.

Table 4.3.4-11. ILM-Maint Contract Form Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Contract ID	Char	10	Required	Identifier for the maintenance contract as assigned by purchasing or provided by the vendor.
PO Number	Char	10	Required	Purchase order number of the purchase order that procured the maintenance coverage.
Vendor ID	Char	6	Optional	Code for the vendor with whom the contract is placed.
Maint Vendor ID	Char	6	Optional	Code for the vendor whom will provide the services.
Start Date	Date	n/a	Optional	Date the contract is to become effective.
Expiration Date	Date	n/a	Required	Date the contract will expire.

Table 4.3.4-11. ILM-Maint Contract Form Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Type of Support	Char	60	Optional	Type of support procured.
Comment	Char	60	Optional	Miscellaneous information specific to the maintenance contract
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date		system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.
EINs Covered	Page	n/a	system-supplied	Page for displaying the EINs covered under the maintenance contract
License Entitlement Cover	Page	n/a	System-supplied	Page for displaying the license entitlements covered under the maintenance contract.

4.3.4.2.11 ILM-Sites GUI

This form (Figure 4.3.4-21) allows operators to maintain a set of valid standard codes and descriptions for identifying ECS sites. Each code represents one site.

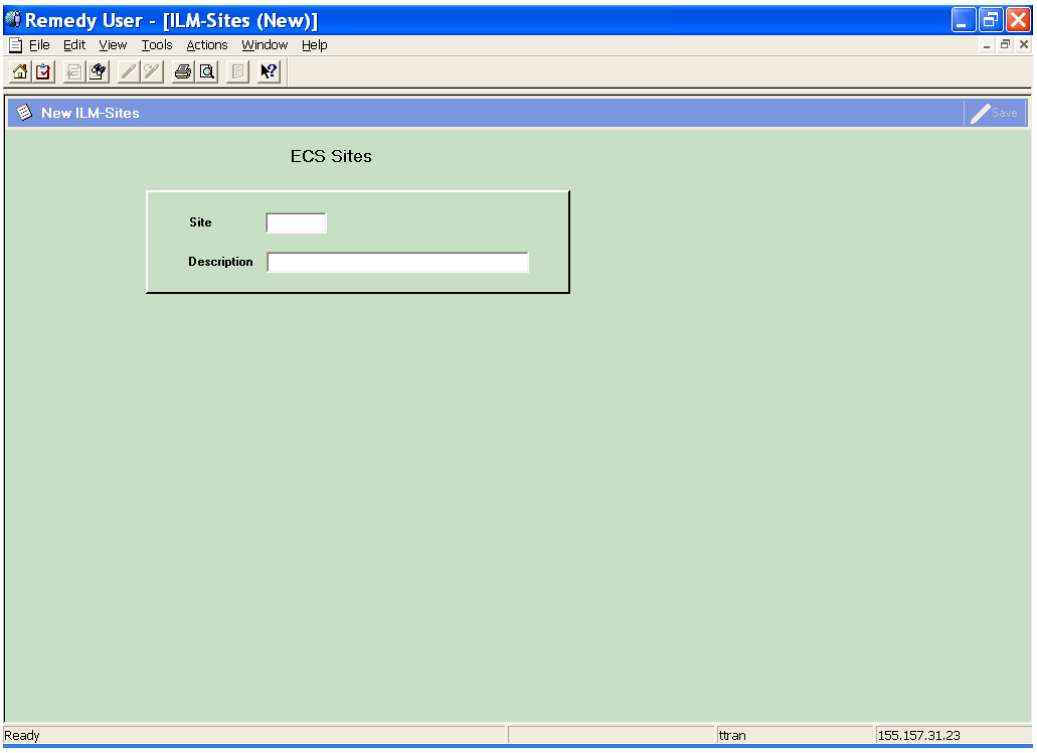


Figure 4.3.4-21. ILM-Sites GUI

Table 4.3.4-12 describes the fields on the ILM-Sites form.

Table 4.3.4-12. ILM-Sites Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Site	Char	6	Required	Code for an ECS site.
Description	Char	40	optional	Description of the Site.

4.3.4.2.12 ILM-Inventory Location GUI

The form shown in Figure 4.3.4-22 is used to maintain information about ECS inventory locations. This standardized information is available to other screens and reports, which can access it by reference to a location.

Note: An important distinction is made in Remedy between an ECS site and an inventory location. Sites are officially designated by NASA and generally include the SMC, DAACs, and other official support installations. ECS Property Administrators designate inventory locations for purposes of property management. They are typically facilities or locales where inventory items are stored or installed and there can be more than one inventory location at a site. Inventory locations are sometimes assigned the same names and codes as a site, but Remedy treats the two as different entities.

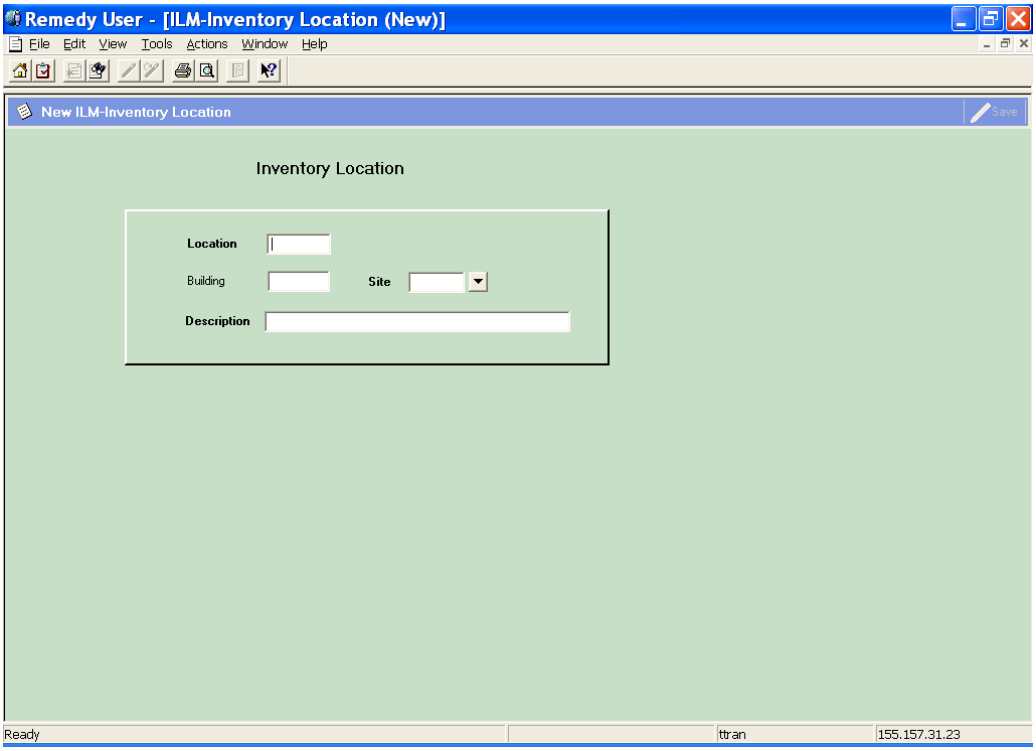


Figure 4.3.4-22. ILM-Inventory Location GUI

Table 4.3.4-13 describes the fields on the ILM-Inventory Location form

Table 4.3.4-13. ILM-Inventory Location Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Location	Char	6	required	Identifier for the inventory location where material can be found.
Building	Char	6	optional	Building where the inventory items can be found.
Site	Char	6	required	Code for the ECS site hosting the inventory location.
Description	Char	30	required	Description for the location id.

4.3.4.3 Maintenance Management

Maintenance Work Orders (MWOs) are the heart of Remedy's Maintenance Management functionality. They are used for collecting downtime information against equipment subject to Reliability, Maintainability, and Availability (RMA) reporting as well as to identify equipment that has failed and/or been replaced during system maintenance. By way of a special feature available to the ILM-MWO and the ILM-MWO Line Item forms, operators can have the system update property records automatically based on the maintenance activities a work order describes. The following sections describe the maintenance work order forms.

4.3.4.3.1 ILM-MWO GUI

The ILM-MWO form (Figures 4.3.4-23 to 4.3.4-26) provides the ability to create and update maintenance work orders as maintenance activity proceeds and as additional information about the repair becomes known. It also has a special feature that updates property records on demand based on events and data described in a work order's line items (ILM-MWO Line Item Form).

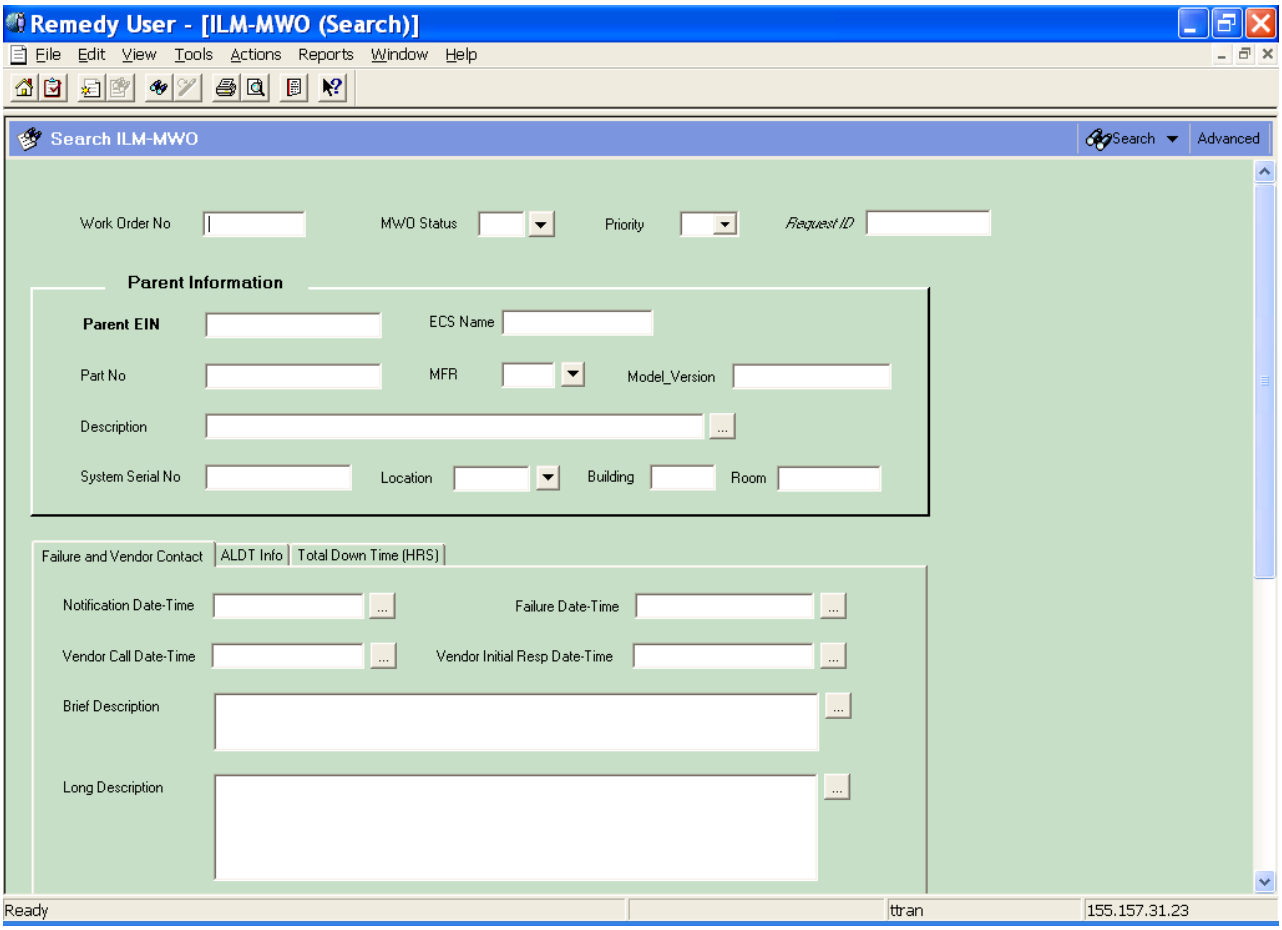


Figure 4.3.4-23. ILM-MWO GUI

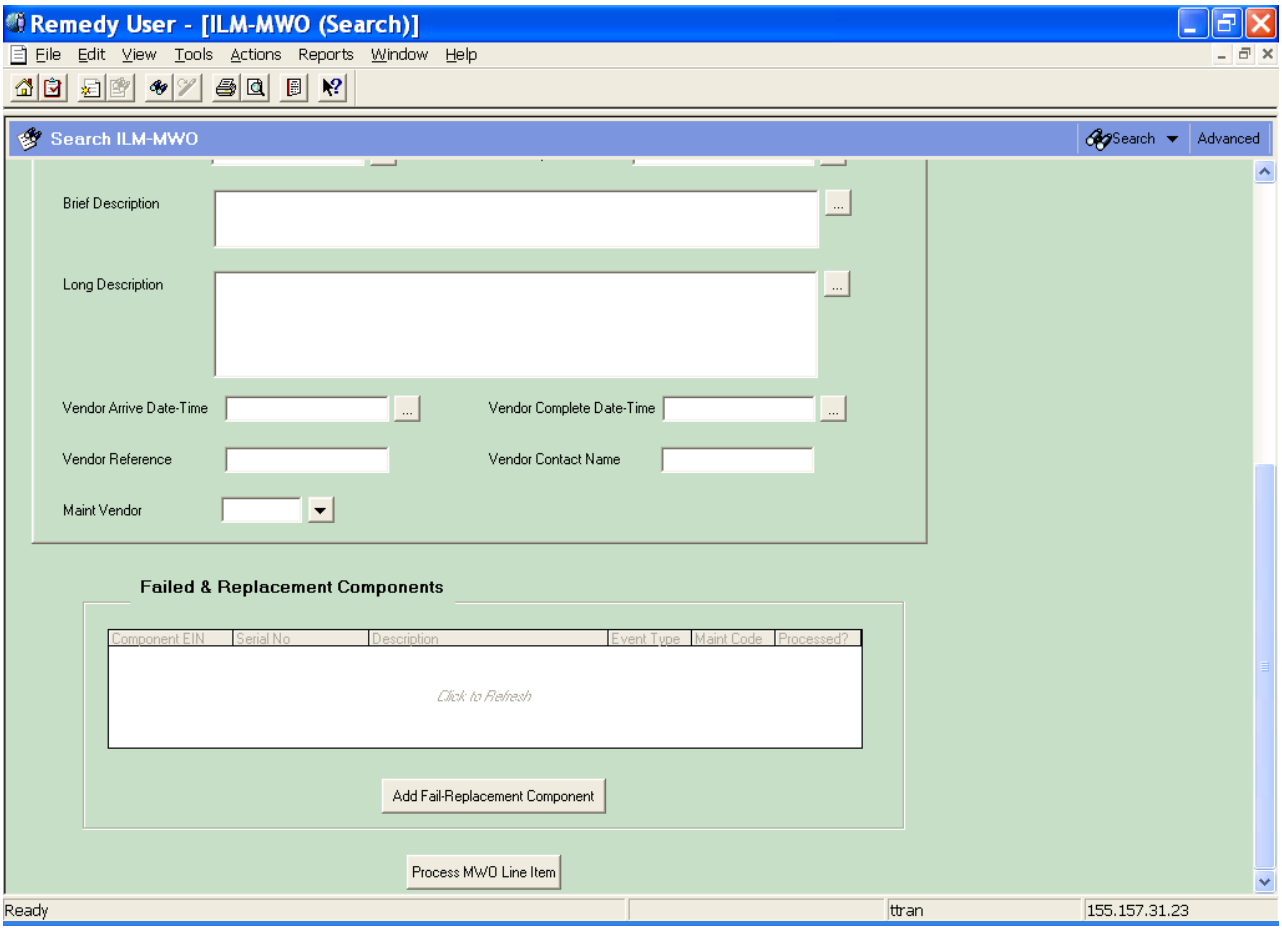


Figure 4.3.4-24. ILM-MWO Failure and Vendor Contact Tab

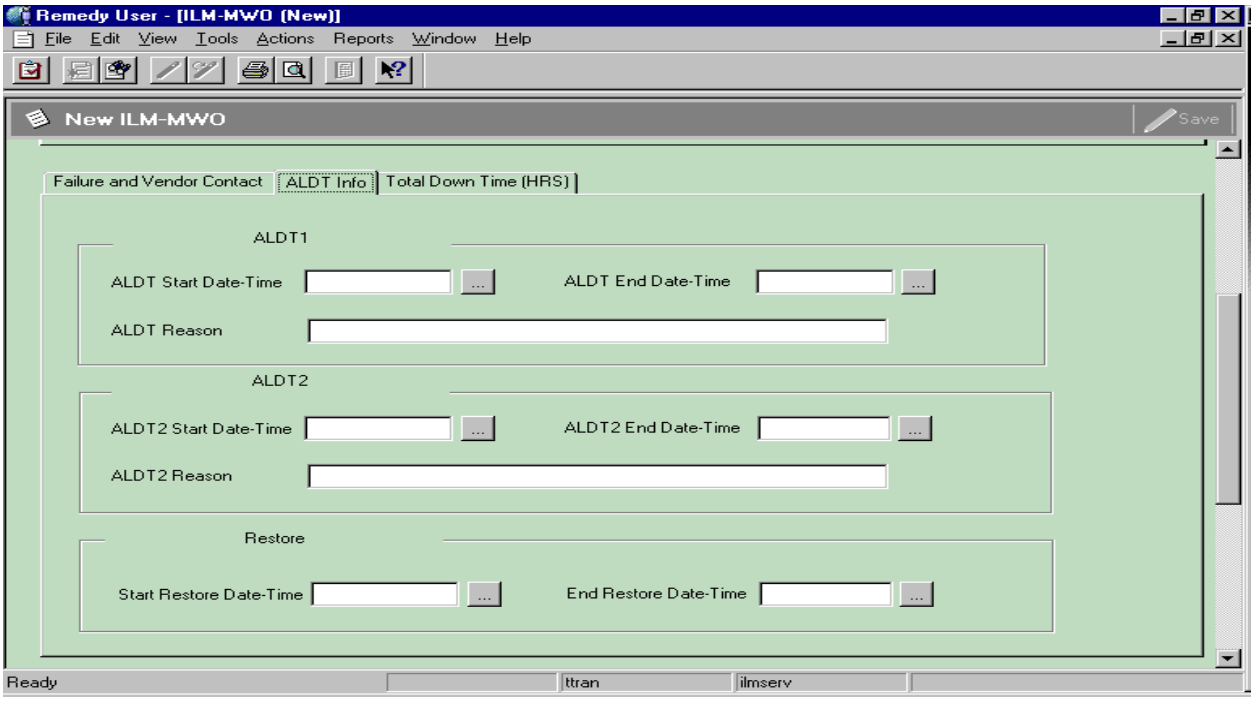


Figure 4.3.4-25. ILM-MWO ALDT Info Tab

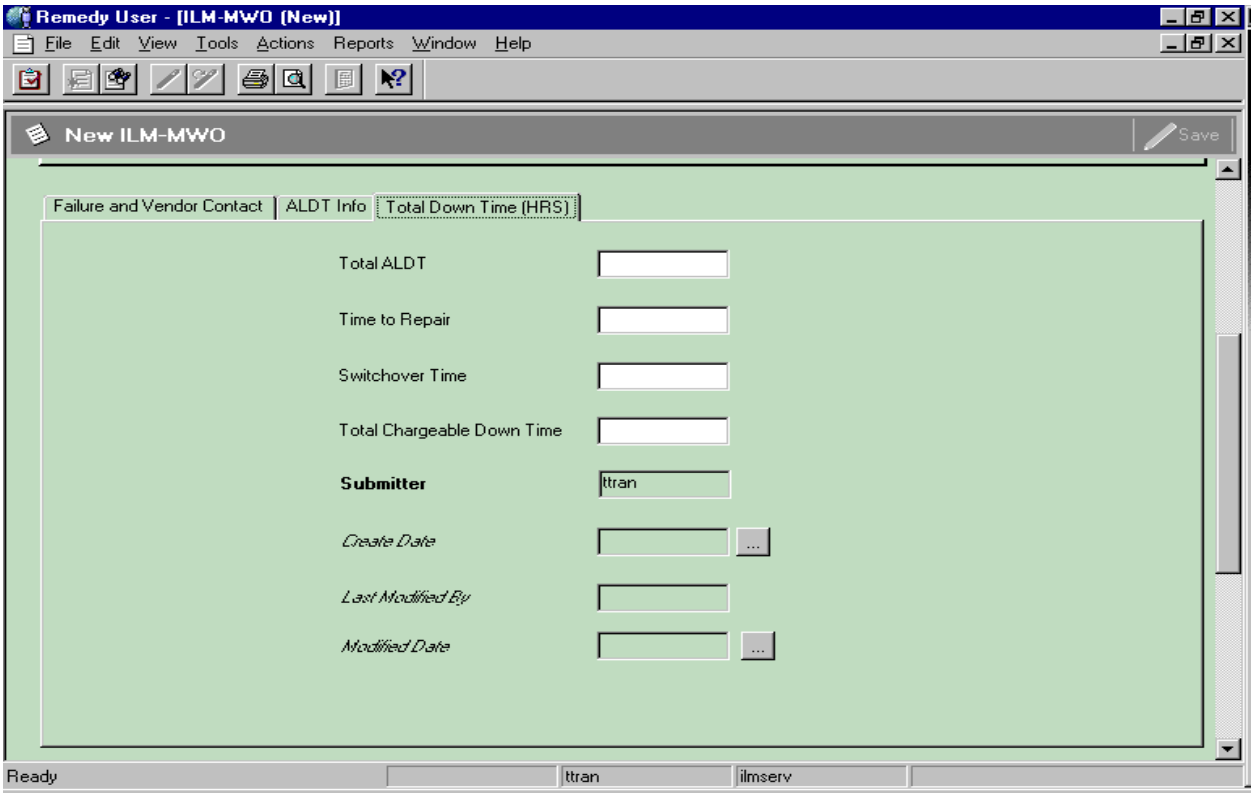


Figure 4.3.4-26. ILM-MWO Total Down Time Tab

Table 4.3.4-14 describes the fields on the ILM-MWO Form.

Table 4.3.4-14. ILM-MWO Form Field Descriptions (1 of 3)

Field Name	Data Type	Size	Entry	Description
Work Order No	Char	10	system-supplied	Identifier for the work order.
MWO Status	Char	1	optional; O, A, F, or R	Code for the status of the work order. O = Open; A = Audit; F=Finish; R = Retired.
Priority	Char	1	optional	Code for the priority assigned to the work.
Request ID	Char	15	System-supplied	Provides and displays the record identifier.
Parent EIN	Char	20	optional	EIN for the parent item in an EIN structure.
ECS Name	Char	30	system-supplied from EIN record	Name of the machine with which the item is associated.
Part No	Char	34	system-supplied from EIN record	Manufacturer's part number for the item entered as Parent EIN.
MFR	Char	6	optional	Code for the manufacturer of the item.
Model_Version	Char	24	optional	Manufacturer model number or version number for the item.
Description	Char	60	system-supplied from EIN record	Manufacturer's description for the item entered as Parent EIN.
System Serial Number	Char	30	system-supplied	Serial number of the item entered as Parent EIN.
Location	Char	8	system-supplied from EIN record	Designator for the location where the item entered as Parent EIN is situated.
Building	Char	6	optional	Building where the item will be found.
Room	Char	6	system-supplied from EIN record	Room in which the item entered as Parent EIN is situated.
Notification Date-Time	Date-Time	n/a	optional	The date and time problem was reported. This field is initialized with the current date and time but can be modified.
Failure Date-Time	Date-Time	n/a	optional	Date and time that the failure occurred.
Vendor Call Date-Time	Date-Time	n/a	optional	The date and time the maintenance vendor was called.
Vendor Initial Resp Date-Time	Date-Time	n/a	Optional	Indicate the vendor initial response date and time to the service call.
Brief Description	Char	140	Optional	A brief description of the problem and resolution
Long Description	Char	1024	optional	A long description of the problem and resolution relevant to the maintenance event.

Table 4.3.4-14. ILM-MWO Form Field Descriptions (2 of 3)

Field Name	Data Type	Size	Entry	Description
Vendor Arrive Date-Time	Date-Time	n/a	optional	The date and time the maintenance vendor actually arrived to perform the repairs.
Vendor Complete Date-Time	Date-Time	n/a	optional	Date and time the repair was completed.
Vendor Reference	Char	20	optional	Operator has option to enter any information in reference to the vendor.
Vendor Contact Name	Char	30	optional	Vendor point of contact.
Maint Vendor	Char	6	optional	Code for the vendor that provides maintenance support for this item.
ALDT Start Date-Time	Date-Time	n/a	optional	The date and time a delay in repairing the system began.
ALDT End Date-Time	Date-Time	n/a	optional	The date and time a delay in repairing the system ended.
ALDT Reason	Char	60	optional	A code for the reason a delay was encountered.
ALDT2 Start Date-Time	Date-Time	n/a	optional	The second delay date and time for when the vendor's work was suspended and resumed (including travel time, admin delays, and logistics delays).
ALDT2 End Date-Time	Date-Time	n/a	optional	The second ending date and time for the delay.
ALDT2 Reason	Char	60	optional	The reason for the second delay.
Start Restore Date-Time	Date-Time	n/a	optional	The date and time when start restoring the failed system.
End Restore Date-Time	Date-Time	n/a	optional	The date and time end restoring the system.
Total ALDT	Real	5.2	optional	Total Administrative logistic delay time (ALDT) Specified in hours.
Time To Repair	Real	5.2	optional	Time required to effect the repair. Specified in hours.
Switchover Time	Real	5.2	optional	Time required for system switch-over. Specified in hours.
Total Chargeable Down Time	Real	5.2	optional	Time to be charged for downtime. Specified in hours.
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.

Table 4.3.4-14. ILM-MWO Form Field Descriptions (3 of 3)

Field Name	Data Type	Size	Entry	Description
Modified Date	Date	n/a	system-supplied	The last date the record was modified.
Failed & Replacement Components	Table field	n/a	System-supplied	Field for displaying the failed and replacement components.

The following buttons/functions are unique to the ILM-MWO form:

- Add Fail/Replacement Component - provides access to the ILM-MWO Line Item Form (Figure 4.3.4-28) for adding or accessing data about components involved in individual maintenance actions.
- Process MWO Line Item - The Process MWO Line Item button provides a convenient, reliable, and efficient means for updating ILM property records based on information contained in ILM-MWO line item form. New EIN records are created as necessary, as are corresponding Part No and EIN structure records. Processing adds new items to the ECS inventory, archives those that have failed or been returned to the vendor, and re-assigns any that have been relocated or returned to stock. Additionally, items returned to a vendor are rendered obsolete with respect to their parent EINs and, of those that had failed, costs are transferred to their replacements. If Remedy is to update property records based on ILM-MWO line item data, line item records must specify values for Event Type and Maint Code. They determine the type of property record changes to be made. (See Table 4.3.4-15) Additionally, operators must supply a value for New Parent EIN if an item is designated for relocation. Other line item fields, such as Component EIN, Change Date, Replacement's EIN, New Location, and New Room, have special significance as well in that they influence which database records actually change.

4.3.4.3.2 ILM-MWO Line Item GUI

The ILM-MWO Line Item form (Figure 4.3.4-27) provides the ability for the Local Maintenance Coordinator to identify equipment that has failed and/or been replaced during system maintenance. In general, a line item would be created for each EIN component that has failed, been replaced, or been added new. Line items can be created even if an EIN record does not exist for the component, and operators can record observed details about a repair item even if the details conflict with what is currently contained in the EIN record for the item. This form has two sections the "Database Values" and the "Observed Values". The "Database Values" displays the database value of the component EIN record if the Component EIN exists in the database. Operator may not update the fields listed in the "Database Values" section. However, the operator may update the Component EIN record in the "Observed Values" section to reflect the actual data of the Component EIN.

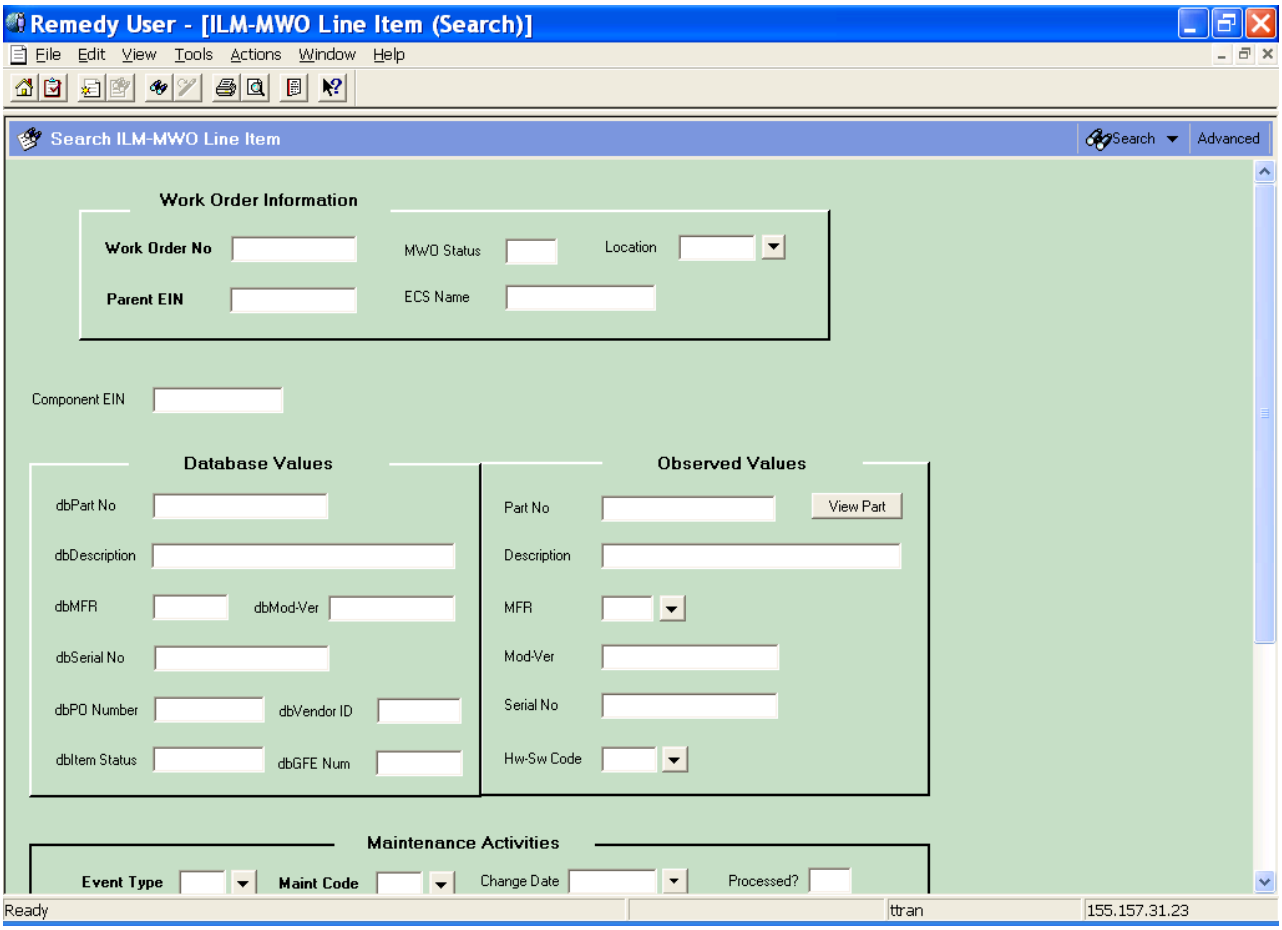


Figure 4.3.4-27. ILM-MWO Line Item GUI (1 of 2)

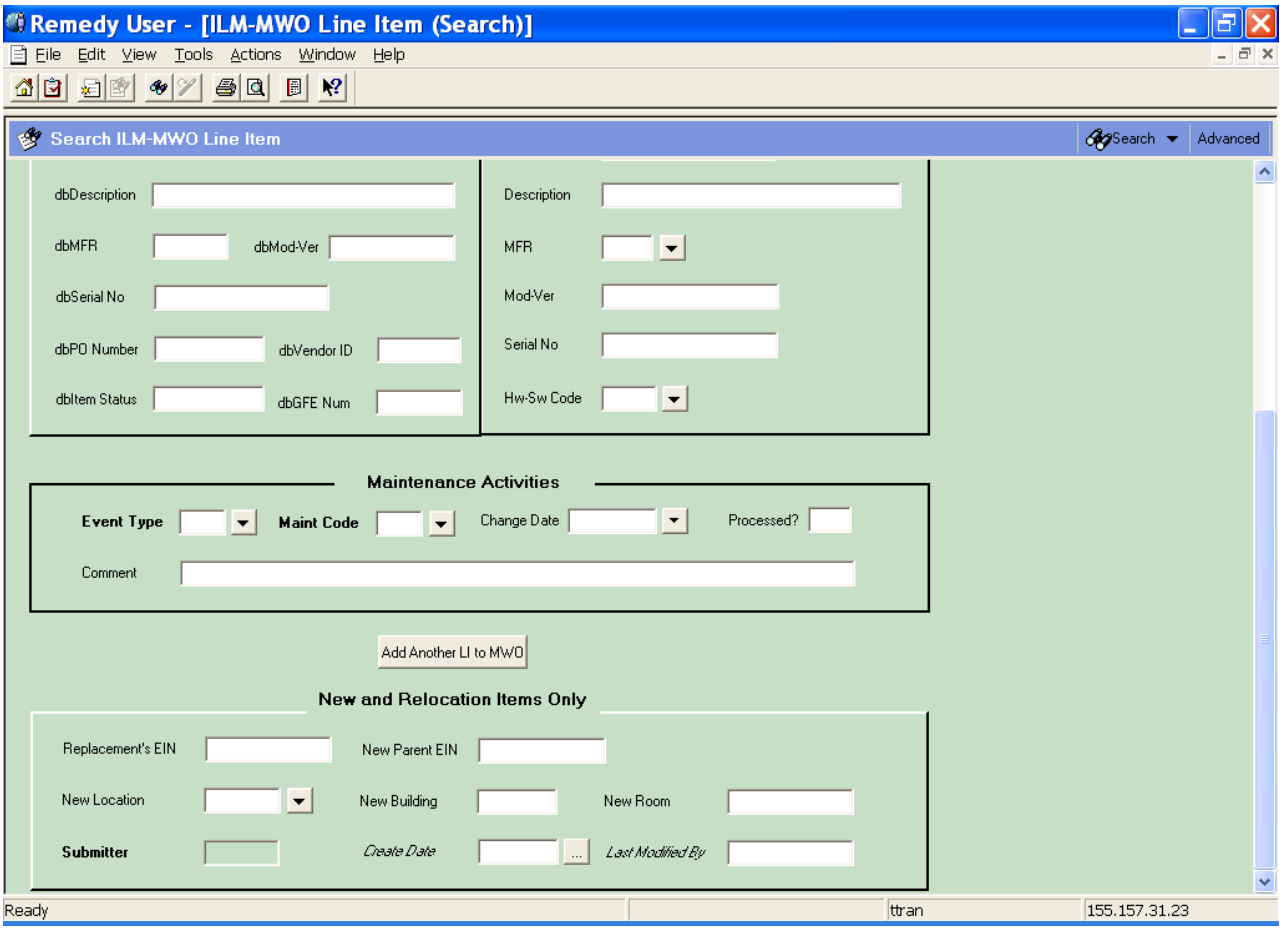


Figure 4.3.4-27. ILM-MWO Line Item GUI (2 of 2)

Table 4.3.4-15 describes the fields on the ILM-MWO Line Item form.

Table 4.3.4-15. ILM-MWO Line Item Form Field Descriptions (1 of 3)

Field Name	Data Type	Size	Entry	Description
Work Order No	Char	10	system-supplied	Identifier for the work order.
MWO Status	Char	1	system-supplied	Code for the status of the work order. O = Open; A = Audit; F=Finish; R = Retired.
Location	Char	6	system-supplied	Location of the Parent EIN.
Parent EIN	Char	20	system-supplied	EIN for the parent item in an EIN structure.
ECS Name	Char	30	System-supplied	Name of the machine with which the item is associated.

Table 4.3.4-15. ILM-MWO Line Item Form Field Descriptions (2 of 3)

Field Name	Data Type	Size	Entry	Description
Component EIN	Char	20	optional	Identifier for an item that is a child (component) of a parent EIN and the target of the maintenance event. If the field is left null or blank, the system will create an inventory number with a C-prefix for it automatically when the line item is processed.
Database Values Section fields	n/a	n/a	system-supplied	If the entered Component EIN record exists in the ILM-EIN form, the system will populate the fields in this section with the data derived from the ILM-EIN form record.
Observed Values Section fields	n/a	n/a	n/a	User may enter information that describes the Component EIN in this section. If the Component EIN does not exist in the database, the component EIN will be added to the database using the information provided in the fields in the Observed Values section.
Part No	Char	34	optional	Manufacturer's or vendor's part number for the item.
Description	Char	60	optional	Manufacturer's or vendor's description of the item. The operator may zoom to the OEM Parts table to choose a description, if it had been entered there previously (see the OEM Parts section).
MFR	Char	6	optional	Code used for the manufacturer of the item. The operator may zoom to the Vendor table to choose a code, if it had been entered there previously (see the Vendor Master section).
Mod-Ver	Char	24	optional	Model or Version of the item.
Serial No	Char	30	optional	Serial number of the item.
Hw-Sw Code	Char	2	Optional	Code for classifying items according to source of inventory.
Event Type	Char	1	required	Code identifying a type of maintenance event (N=new item installed; F=failed item replaced; R=serviceable item replaced).
Maint Code	Char	1	required	Code designating the item's disposition. Property records are updated differently depending on the value entered. (R = Relocate, S = Stock, V = Vendor).
Change Date	Date		required	Effective date of the configuration change.
Processed?	Char	1	system supplied	Flag signifying whether or not the line item has been processed by the Work Order's .P(rocess_Changes) bottom-line command. The command updates the Component EIN's property records.
Comment	Char	60	Optional	Miscellaneous information specific to the item.

Table 4.3.4-15. ILM-MWO Line Item Form Field Descriptions (3 of 3)

Field Name	Data Type	Size	Entry	Description
Replacement's EIN	Char	20	Optional	Identifier of the new item being used as a replacement. This field is used only for items that have failed or that are being replaced (i.e., Event Type="F", or Event Type="R").
New Parent EIN	Char	20	Optional	EIN of the item to which the Component EIN is to be re-assigned. This field is applicable only to components that have failed or are being replaced (Event Type="F" or "R"), and are being relocated (Maint Code="R"). *The value must be supplied or the item will not get processed.*
New Location	Char	6	optional	Code for the new inventory location to which the item is to be assigned. This field is used for items that have failed or are being replaced (i.e., Event Type="R") and are being returned to stock.
New Building	Char	6	optional	Building where the item is to be installed.
New Room	Char	15	optional	Room where the item is to be installed.
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date		system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.

The following buttons are unique to this form:

- View Part – displays the record of the Part No. if it exists in the database.
- Add Another LI to MWO – brings up the MWO Line Item form to facilitate another line item record entry.

Table 4.3.4-16 lists the appropriate combinations of event types and maintenance codes and their effects on property records when processed.

Table 4.3.4-16. Effects on Property Records by MWO Line Item Processing (1 of 4)

Event Type	Maint Code	Property Record Updates

F
(Failed)
	S
	(Stock)
		Situation: an item has failed and has been returned to stock.
		EIN records:
		• Creates a record if one doesn't exist for the specified component EIN
		• For the specified component EIN:
		  • Clears its Parent EIN
		  • Clears its installation date
		  • Sets Item status to "F"
		  • Sets audit date to the Change Date
		  • Sets ECS name to "IN STOCK"
		  • Sets location, building, and room to new values.
		OEM part records:
		• Creates an OEM Part record if "observed values" for Part No, MFR, and Description are specified and the part record doesn't already exist
		EIN structure records:
		• Obsoletes the specified component EIN in EIN Structures where it is active. The structure is rendered inactive as of the specified Change Date.
		Inventory transaction records:
		• Creates an entry for event of type "MFS" for the specified component.

F
(Failed)
	V
	(Vendor)
		Situation: an item has failed and has been returned to the vendor.
		EIN records:
		• If the Component EIN field is blank, the system will not process the record and sets the Process field to "X."
		• Creates a record if one doesn't exist for the specified component EIN.
		• For the specified component EIN:
		  • Clears its Parent EIN.
		  • Clears its installation date.
		  • Sets item status to "X".
		  • Sets audit date to the Change Date.
		  • Sets ECS name to "ARCHIVE".
		  • Sets location to "EDFARC" and clears the building and room values.
		OEM part records:
		• Creates an OEM Part record if "observed values" for Part No, MFR, and Description are specified and the part record doesn't already exist.
		EIN structure records:
		• Obsoletes the specified component EIN in EIN Structures where it is active. The structure is rendered inactive as of the specified Change Date.
		Inventory transaction records:
		• Creates an entry for event of type "MFV" for the specified component.

Table 4.3.4-16. Effects on Property Records by MWO Line Item Processing (2 of 4)

Event Type	Maint Code	Property Record Updates

N
(New)
	S
	(Stock)
		Situation: the replacement item is new and is taken from stock.
		EIN records:
		• Creates a record if one doesn't exist for the specified component EIN
		• For the specified component EIN:
		  • Sets the Parent EIN to the MWO's Parent EIN.
		  • Sets installation date to the Change Date.
		  • Sets item status to "I".
		  • Sets audit date to the Change Date.
		  • Sets ECS name to that of the Parent EIN specified for the MWO itself.
		  • Sets location and room values to that of the Parent EIN specified for the MWO.
		OEM part records:
		• Creates an OEM Part record if "observed values" for Part No, MFR, and Description are specified and the part record doesn't already exist.
		
		EIN structure records:
		• Obsoletes the specified component EIN in EIN Structures where it is active, if any. The structure is rendered inactive as of the specified Change Date.
		• Adds the EIN as a component of the item specified as a component of the MWO's Parent EIN. The structure is rendered active as of the Change Date specified.
		
		Inventory transaction records:
		• Creates an entry for event of type "MNS" for the specified component.

Table 4.3.4-16. Effects on Property Records by MWO Line Item Processing (3 of 4)

Event Type	Maint Code	Property Record Updates

N
(New)
	V
	(Vendor)
		Situation: the replacement item is new and came from the vendor.
		EIN records:
		• Creates a record if one doesn't exist for the specified component EIN
		• For the specified component EIN:
		  • Sets the Parent EIN to the MWO's Parent EIN
		  • Sets installation date to the Change Date
		  • Sets receive date to the Change Date
		  • Sets item status to "I"
		  • Sets audit date to the Change Date
		  • Sets ECS name to that of the Parent EIN specified for the MWO itself
		  • Sets location, building, and room values to that of the Parent EIN specified for the MWO itself
		  • If the component is replacing an EIN specified in a separate line item as a failed item being returned to the vendor and copies the item cost from the EIN record for the failed item to the EIN record for the new item
		• For a failed item being replaced by the specified component EIN:
		  • Sets cost to 0
		
		OEM part records:
		• Creates an OEM Part record if "observed values" for Part No, MFR, and Description are specified and the part record doesn't already exist.
		
		EIN structure records:
		• Obsoletes the specified component EIN in EIN Structures where it is active, if any. The structure is rendered inactive as of the specified Change Date.
		• Adds the EIN as a component of the item specified as a component of the MWO's Parent EIN. The structure is rendered active as of the Change Date specified.
		
		Inventory transaction records:
		• Creates an entry for event of type "MNV" for the specified component.

Table 4.3.4-16. Effects on Property Records by MWO Line Item Processing (4 of 4)

Event Type	Maint Code	Property Record Updates

R
(Replaced)
	R
	(Relocate)
		Situation: an item is being relocated to a new machine.
		EIN records:
		• Creates a record if one doesn't exist for the specified component EIN
		• For the specified component EIN:
		  • Sets the Parent EIN to the New Parent EIN
		  • Sets the Installation Date to Change Date
		  • Sets item status to "I"
		  • Sets audit date to the Change Date
		  • Sets ECS name to the name of the new parent EIN
		  • Sets location, building, and room to that of the new parent EIN
		
		OEM part records:
		• Creates an OEM Part record if "observed values" for Part No, MFR, and Description are specified and the part record doesn't already exist.
		
		EIN structure records:
		• Obsoletes the specified component EIN in EIN Structures where it is active. The structure is rendered inactive as of the specified Change Date.
		• Adds the EIN as a component of the item specified as New Parent EIN. The structure is rendered active as of the specified Change Date.
		
		Inventory transaction records:
		• Creates an entry for event of type "MRR" for the specified component.

R
(Replaced)
	S
	(Stock)
		Situation: an item is being returned to stock.
		EIN records:
		• Creates a record if one doesn't exist for the specified component EIN
		• For the specified component EIN:
		  • Sets the Parent EIN to blank
		  • Clears its installation date
		  • Sets item status to "R"
		  • Sets audit date to the Change Date
		  • Sets ECS name to "IN STOCK"
		  • Sets location, building, and room to new values, if specified
		
		OEM part records:
		• Creates an OEM Part record if "observed values" for Part No, MFR, and Description are specified and the part record doesn't already exist.
		EIN structure records:
		• Obsoletes the specified component EIN in EIN Structure where it is active. The structure is rendered inactive as of the specified Change Date.
		Inventory transaction records:
		• Creates an entry for event of type "MRS" for the specified component.

4.3.4.4 License Management

Many software products used in EMD are licensed; that is, subject to conditions of limiting how many users can run the product and where. Licenses take numerous forms. Nodelock licenses let users run the product, but only on a designated machine; counted nodelock licenses limit the number of users that can run the product on that machine. Floating licenses allow users to run a product from any machine in a network. They may limit the number of users that can run the product concurrently, the number of servers that can be used concurrently, the number of sites that can use the product, or any combination of the above. Licenses can apply to a named product, one or more of its features, one or more of its versions, and/or one or more types of platforms. Some vendors enforce these provisions through use of license keys, but ECS is accountable for adhering to licensing provisions whether vendors use keys or not.

The life cycle for licensed COTS software encompasses developmental and systems engineering, purchasing, receiving, stocking, distribution, installation, use, and recovery. Licenses associated with COTS products are obtained and allocated; they also expire. Licenses do not always change when the licensed product does.

When purchasing a product or obtaining an upgrade, engineering determines what licensing provisions are required. Depending on the product, license entitlements may appear as separate line items on purchase orders, but often not. (For example, purchased licensing provisions may be provided with the product; that is, not purchased separately.) License certificates (rights to certify) typically accompany software when it arrives and, in the case of operating system software, accompanies the computers themselves. These certificates describe the licensing provisions that were purchased and may carry an associated cost. Sometimes, the certificates include a license key, but usually they represent the right to obtain keys.

Multiple licenses are sometimes obtained from the product vendor under the provisions of a single license certificate. Each license would account for part of the rights-to-use under the certificate. Conversely, individual licenses can consume rights-to-use from more than one certificate. Each unique license key implies a unique license, but not every license has a key.

Licenses are allocated to the sites and host machines where their keys are installed, and keyless licenses are allocated to where their software products are installed. This is not so much for property accounting (i.e., cost accounting), but to verify adherence to purchased licensing provisions and to identify where licenses are used in case rights-to-use must transfer elsewhere. A single license can be allocated to multiple sites and machines, although it's unclear at present whether a machine's current location determines the license's allocation site.

License rights-to-use are counted differently depending on the type of licenses purchased. Rights for nodelock license are allocated and counted by node and are consumed at the rate of one license per node. Floating license rights are allocated and counted based on number of users on a network rather than by specific machines, where the network is represented by a machine on which the license is installed. Floating license rights are consumed at the rate of number of users per license. Occasionally, a purchased entitlement covers a total number of users across a limited number of machines. In this case, rights are consumed at the rate of one license per node as well as number of users per license.

The following forms provide the SLA capabilities to manage software licenses.

- ILM-License Products – to maintain standardized information about manufacturer's part numbers.
- ILM-License Entitlement – to maintain records of purchased rights-to-use for licensed software.
- ILM-License – to maintain records of software licenses obtained from vendors and maintains license allocation.
- ILM-License Mapping – manages the mapping of a license to purchased entitlements.
- ILM-Additional Host – identifies redundant or backup server machines on which the license will be installed

4.3.4.1.1 ILM-License Product GUI

This form (Figure 4.3.4-28) provides the SLA the ability to maintain standardized information about manufacturers' part numbers for software licenses. Licenses part numbers and associated information must be recorded before they can be added to an entitlement or license via the ILM-Entitlement form or the ILM-License form.

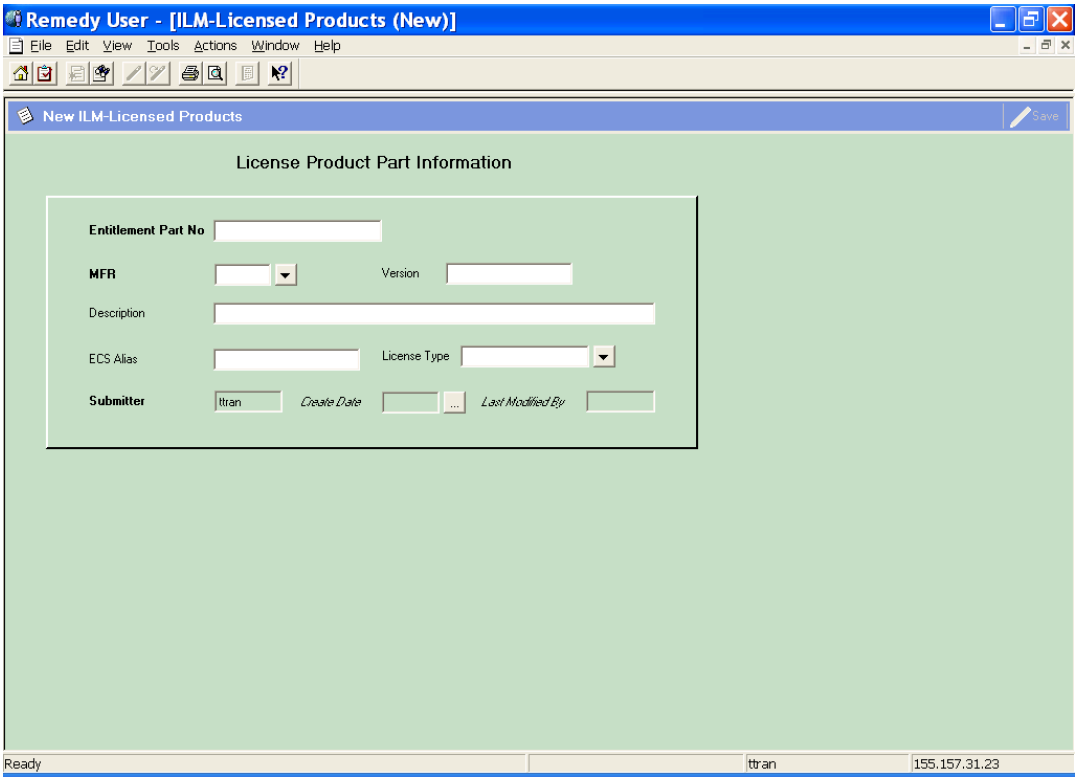


Figure 4.3.4-28. ILM-License Products GUI

Table 4.3.4-17 describes the ILM-License Products form fields definitions.

Table 4.3.4-17. ILM-Licensed Products Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Entitlement Part No	Char	34	Required	Manufacturer's or vendor's part number for the entitlement.
MFR	Char	6	Required	Code for the manufacturer from whom the item was purchased.
Version	Char	34	Optional	Version number of the part.
Description	Char	50	Required	Manufacturer's or vendor's description for the entitlement. This field reflects the description of the OEM Part Number entered in the field above.
ECS Alias	Char	30	optional	Common name used in ECS for the licensed product and all its versions and variants.
License Type	Char	16	optional	Classification that distinguishes among licenses according to rules of use. Examples include: floating (limited number of concurrent users), nodelocked (limited to use on a single machine), user (limited to use by a certain individual), project (unlimited use anywhere by individuals working on a certain project), site (unlimited use at a single site), etc.
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.

4.3.4.4.2 ILM-License Entitlement Form

Operators use the ILM-License Entitlement form (Figures 4.3.4-29-4.3.4-31) to maintain records of purchased rights-to-use for licensed software, including how many node and user rights-to-use have been consumed, remain, and are under maintenance. Rights consumed and remaining are computed automatically based on the licenses mapped against it.

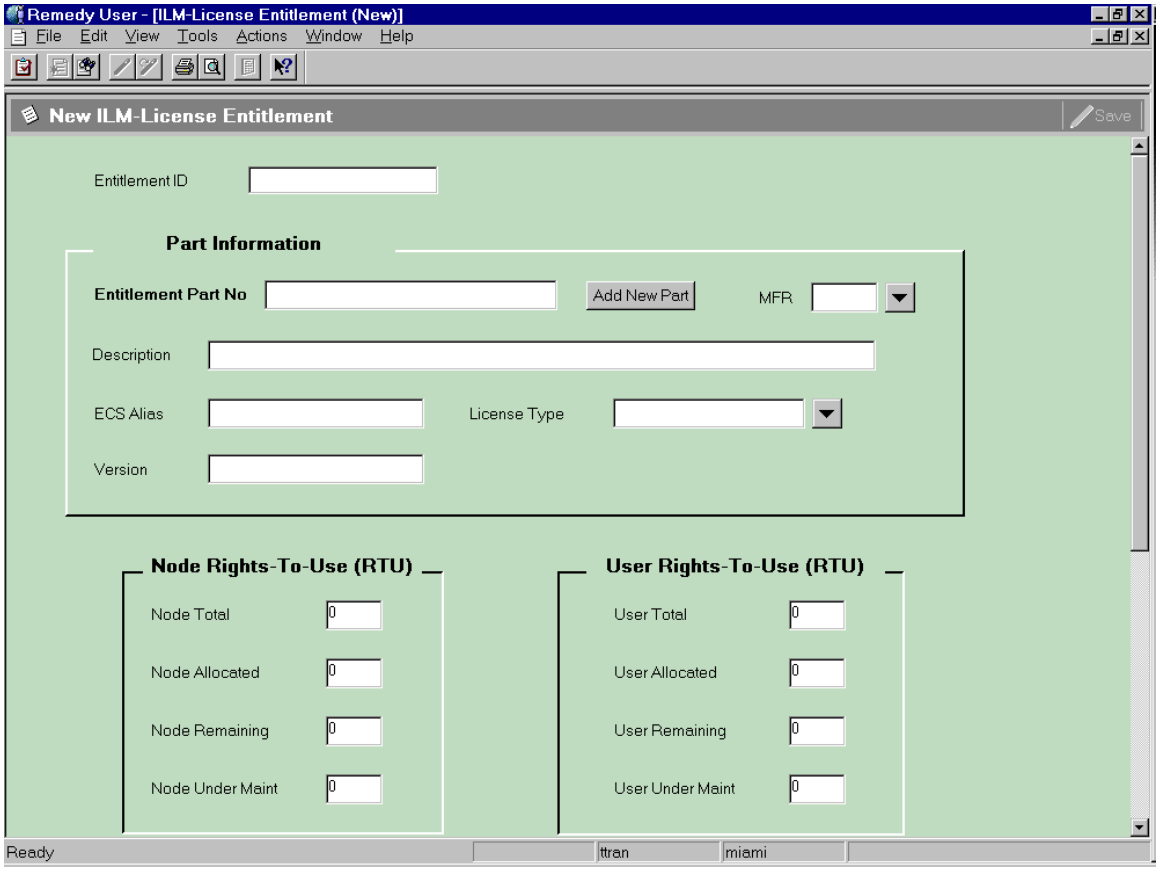


Figure 4.3.4-29. ILM-License Entitlement GUI

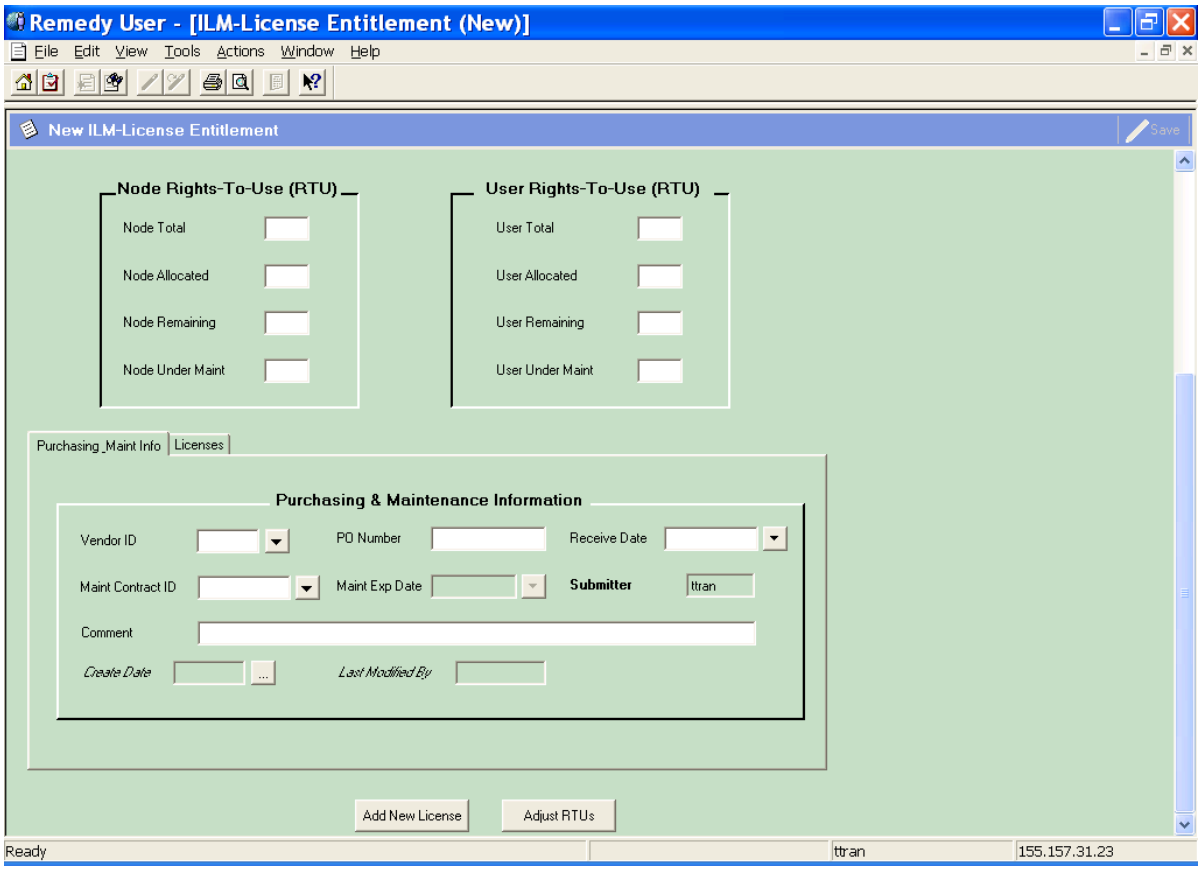


Figure 4.3.4-30. ILM-License Entitlement GUI – Purchasing Maintenance Information

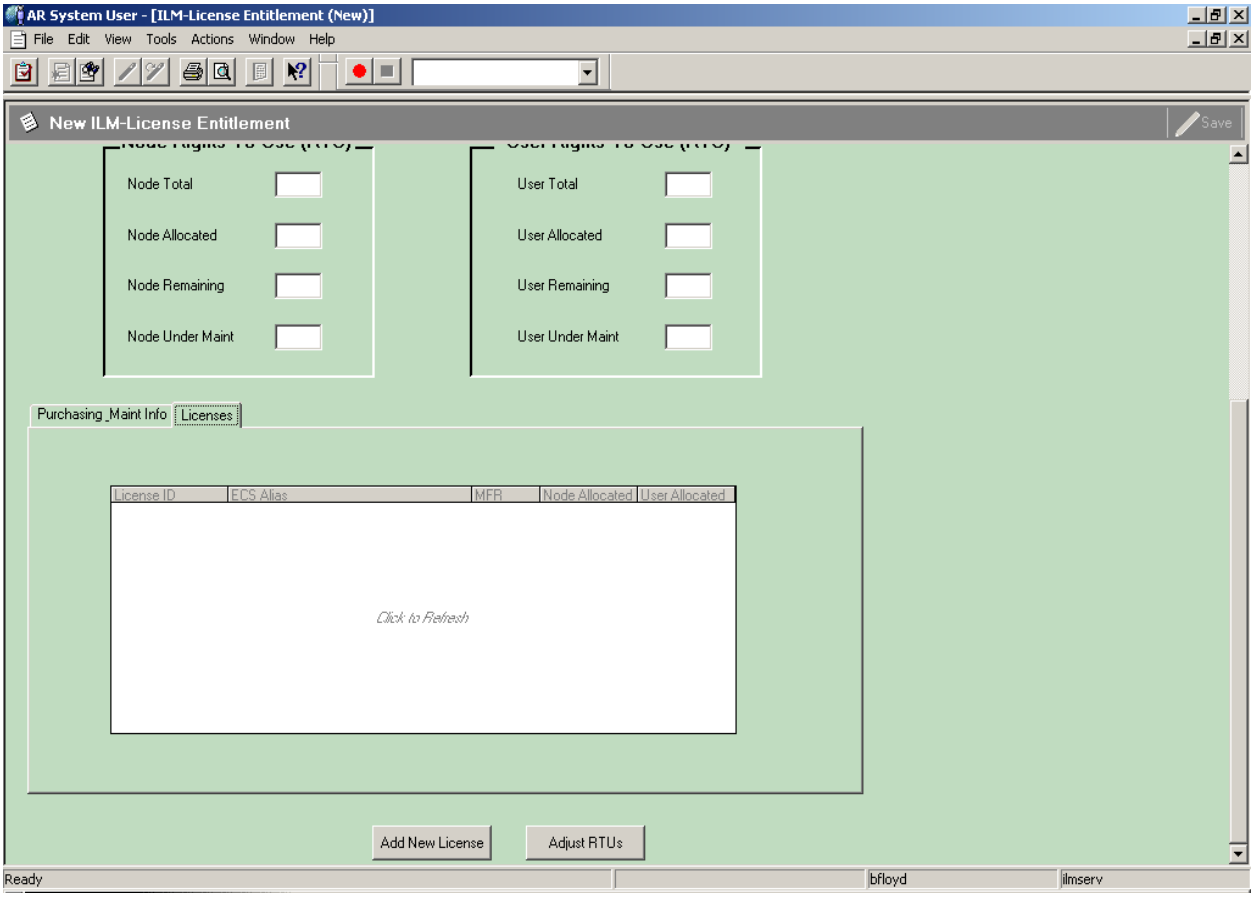


Figure 4.3.4-31. ILM-License Entitlement GUI - Licenses

Table 4.3.4-18 describes the ILM-License Entitlement form's field descriptions.

Table 4.3.4-18. ILM-License Entitlement Form Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Entitlement ID	Char	10	System supplies	Identifier for a purchased license entitlement.
Entitlement Part No	Char	34	required	Manufacturer's or vendor's part number for the entitlement.
MFR	Char	6	system supplied	Code for the manufacturer from whom the item was purchased. This field reflects the MFR of the entitlement Part No entered in the field above.
Description	Char	50	system supplied	Manufacturer's or vendor's description for the entitlement. This field reflects the description of the entitlement Part No entered in the field above.
ECS Alias	Char	30	system supplied	Common name used in ECS for the licensed product and all its versions and variants. This field reflects the ECS Alias of the entitlement Part No entered in the field above.
License Type	Char	16	system supplied	Classification that distinguishes among licenses according to rules of use. This field reflects the license type of the entitlement Part No entered in the field above.
Version	Char	34	system supplied	Version number of the part. This field reflects the version of the entitlement Part No entered in the field above.
Rights to Use (RTU) Node/User Total	Integer	8	Optional	Quantity of node or user rights-to-use authorized by this purchased entitlement.
Node/User Allocated	Integer	8	system supplied	Quantity of node or user rights under the license entitlement currently allocated by licenses mapped to the entitlement. This value is calculated by the system and reflects the total number of active allocations of those licenses.
Node/User Remaining	Integer	8	system supplied	Quantity of node or user rights under a license entitlement not yet consumed by the mapping of licenses to the entitlement.
Node/User Under Maint	Integer	8	system supplied	Quantity of node or user rights-to-use currently under maintenance.
Vendor ID	Char	6	optional	Code for the vendor from whom the item was purchased.
PO Number	Char	10	optional	Identifier of the purchase order against which the item was received.
Receive Date	Date	n/a	optional	Date item was received from vendor.
Maint Contract ID	Char	10	optional	Identifier for the Maintenance Contract under which the item is covered.
Maint Exp Date	Date	n/a	optional	Date the maintenance contract expired.

Table 4.3.4-18. ILM-Entitlement Form Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Comment	Char	30	Optional	Miscellaneous information specific to the item.
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.
Licenses	Page	n/a	system-supplied	This page lists the licenses that are associated with the license entitlement record.

The following buttons are unique to this form:

- Add New Part – Activates the ILM-License Entitlement Part form. This allows the operator to add new parts.
- Add New License – Displays the ILM-License form (Figure 4.3.4-32) to allow the SLA to add new licenses.
- Adjust RTUs – Facilitates adjustments of the right-to-use numbers.

4.3.4.4.3 ILM-License GUI

The ILM-License form (Figures 4.3.4-32 to 4.3.4-35) maintains records of software licenses obtained from vendors. This form also maintains records about the hosts and sites to which the licenses have been allocated. Licenses can be mapped to purchase license entitlements so that consumption of license rights can be tracked.

A license is a euphemism for the rights granted a number of users to operate a software product or one or more of the product's versions or features concurrently on certain machines. These rights are often encoded in a license "key", but not all products employ such keys.

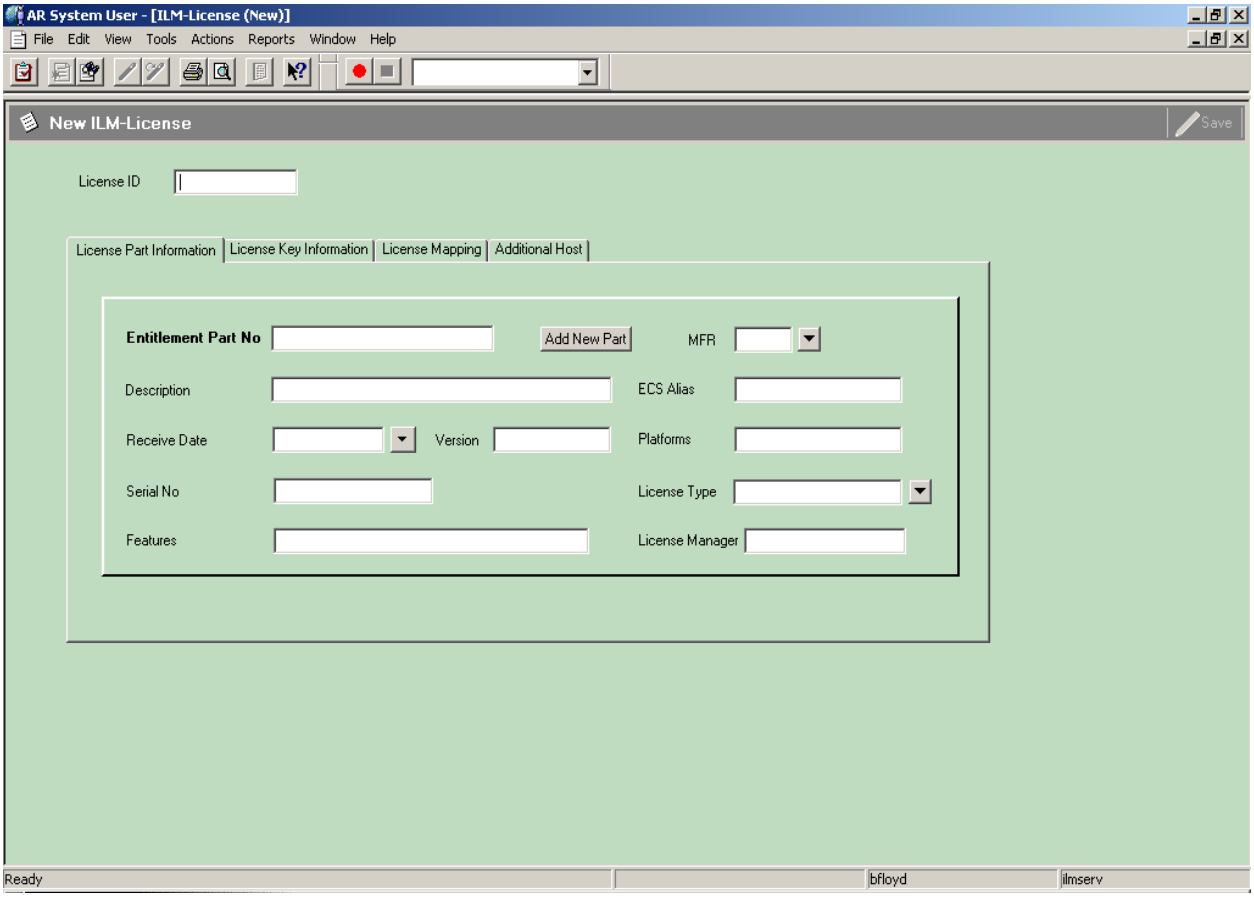


Figure 4.3.4-32. ILM-License GUI

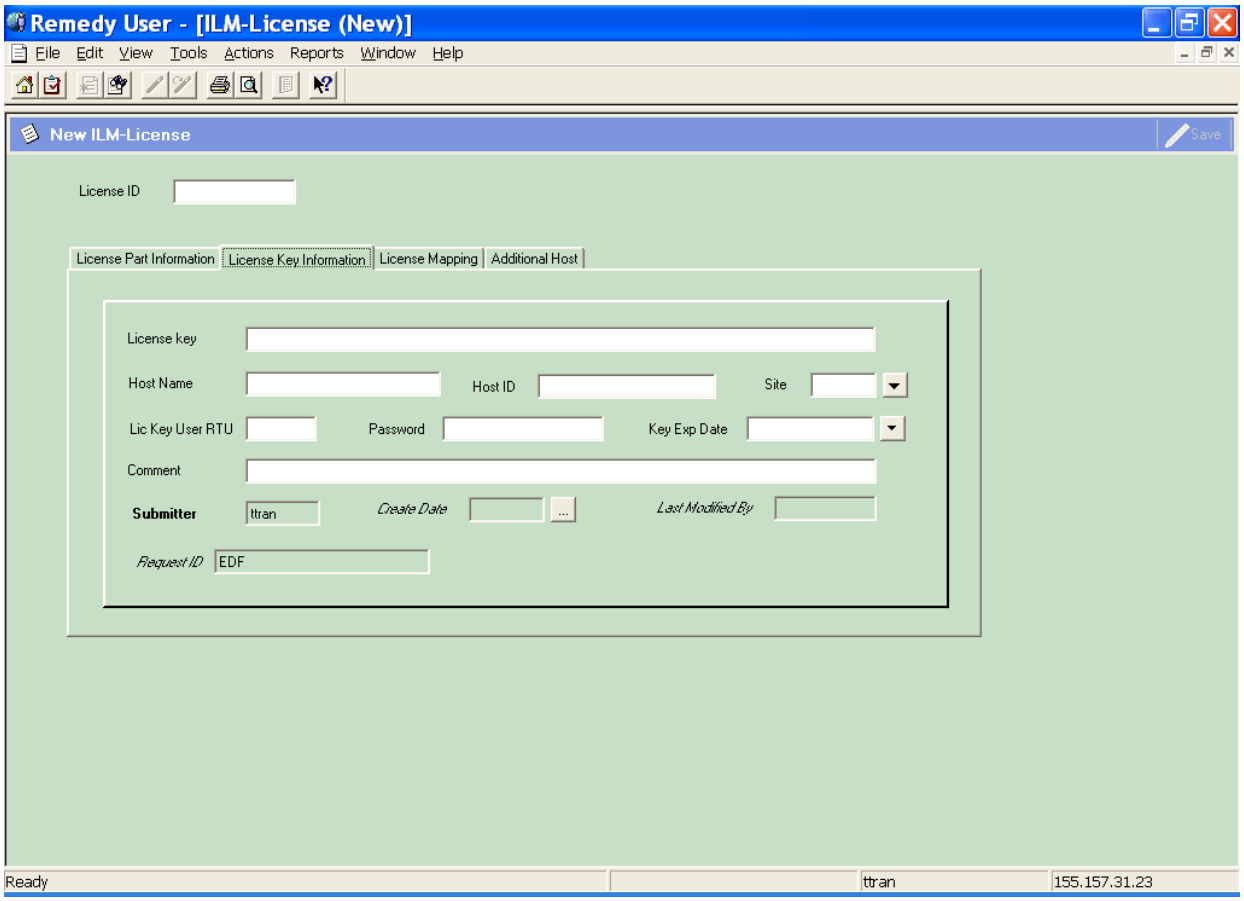


Figure 4.3.4-33. ILM-License GUI – License Key Information

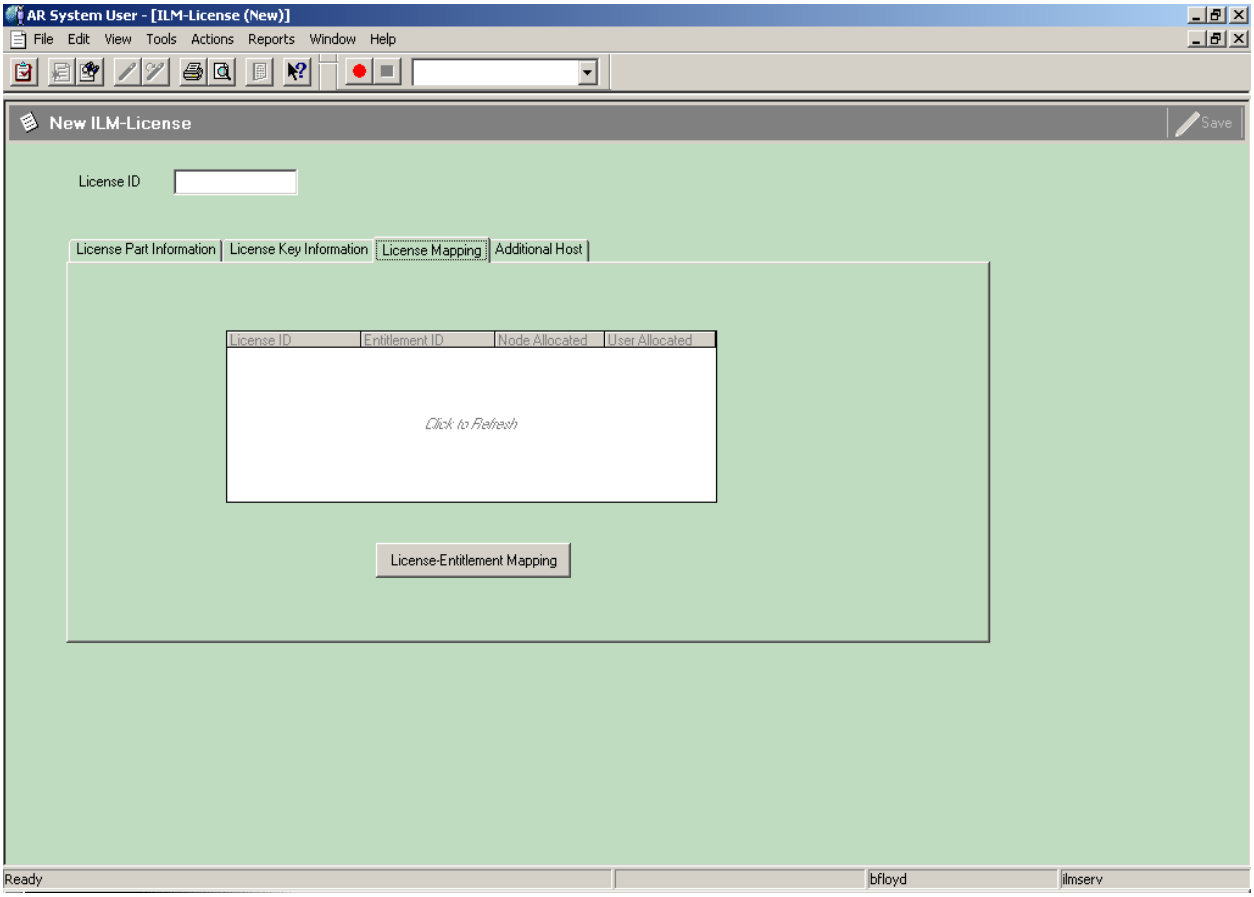


Figure 4.3.4-34. ILM-License GUI – License Mapping

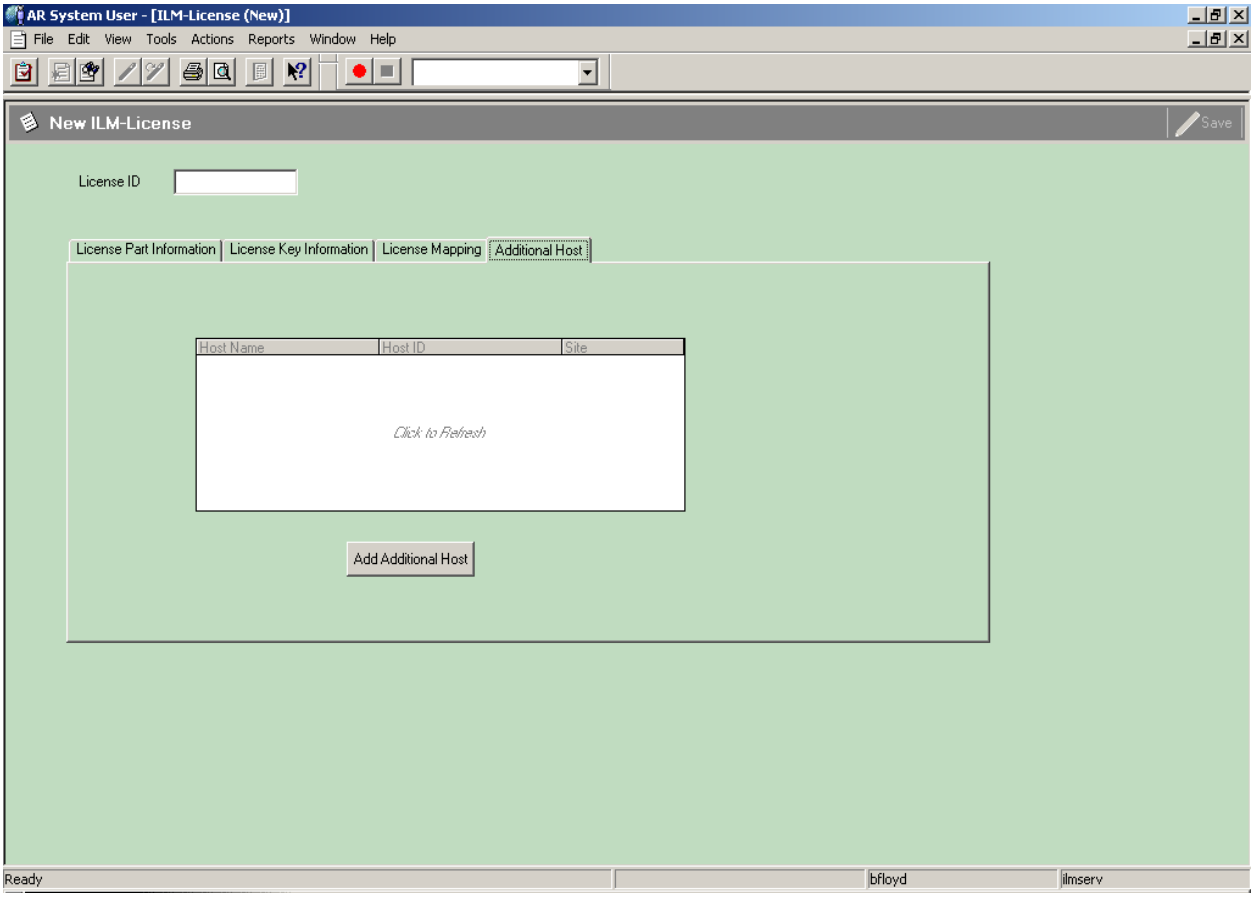


Figure 4.3.4-35. ILM-License GUI – Additional Host

Table 4.3.3-19 provides fields definitions for the ILM-License form.

Table 4.3.4-19. ILM-License Form Field Descriptions (1 of 3)

Field Name	Data Type	Size	Entry	Description
License ID	Char	10	System Supplies	Unique designator for a license.
Entitlement Part No	Char	34	required	Manufacturer's or vendor's part number for the entitlement.
MFR	Char	6	system supplied	Code for the manufacturer from whom the item was purchased. This field reflects the MFR of the entitlement Part No entered in the field above.
Description	Char	50	system supplied	Manufacturer's or vendor's description for the entitlement. This field reflects the description of the entitlement Part No entered in the field above.

Table 4.3.4-19. ILM-License Form Field Descriptions (2 of 3)

Field Name	Data Type	Size	Entry	Description
ECS Alias	Char	30	system supplied	Common name used in ECS for the licensed product and all its versions and variants. This field reflects the ECS Alias of the entitlement Part No entered in the field above.
Receive Date	Date	n/a	optional	Date the license key and/or data arrived.
Version	Char	34	system supplied	Version number of the part. This field reflects the version of the entitlement Part No entered in the field above.
Platforms	Char	15	optional	One or more codes for the types of machines to which the license applies (e.g., Sun, SGI, PC, etc.)
Serial No	Char	30	optional	Vendor-supplied serial number for the license or the product being licensed.
License Type	Char	16	system supplied	Classification that distinguishes among licenses according to rules of use. This field reflects the license type of the entitlement Part No entered in the field above.
Features	Char	54	optional	Name(s) of one or more features of the licensed product that are covered by the license.
License Manager	Char	12	optional	Technology employed in managing the license on-line (e.g., flexlm, proprietary, etc.)
License Key	Char	50	optional	Char of alphanumeric characters that represent the provisions for a license in an encoded form.
Host Name	Char	30	optional	ECS Name of a machine to which the license is allocated.
Host ID	Char	20	optional	Host id of the license server machine supplied to the vendor when requesting the license. This is an information only field. Allocations of licenses to machines are accomplished via the License Allocation Manager screen.
Site	Char	6	Optional	Code for the site to which the license is allocated.
Lic Key User RTU	Integer	8	optional	Number of users authorized by the license to run the licensed product concurrently on a single network. This value limits the user rights-to-use that can be recorded in the license's allocation records.
Password	Char	20	optional	Password supplied along with the license key by the vendor. This is an information only field.
Key Exp Date	Date	n/a	optional	Date on which the license key is no longer usable.
Comment	Char	60	optional	Comment to be stored in the record.
Submitter	Char	30	system-supplied	The user whom created the record.

Table 4.3.4-19. ILM-License Form Field Descriptions (3 of 3)

Field Name	Data Type	Size	Entry	Description
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.

The following buttons are unique to this form:

- Add New Part – Activates the ILM-License Product form. This allows the operator to add new parts.
- Add Additional Host – activates the ILM-Additional host form to allow the SLA to add redundant host or backup server to the license.
- License-Entitlement Mapping - activates the ILM-License Mapping form that allows the SLA to map the license to the purchased entitlement.

4.3.4.4.4 ILM-License Mapping GUI

The ILM-License Mapping form (Figure 4.3.4-36) manages the mapping of a license to purchased entitlements and specifies how many node and/or user rights-to-use the license is consuming from each. The form ensures that:

a) the rights-to-use attributed to an entitlement do not exceed the entitlement's rights remaining;

b) the sum of the rights being attributed to all entitlements do not exceed the rights-to-use for the license.

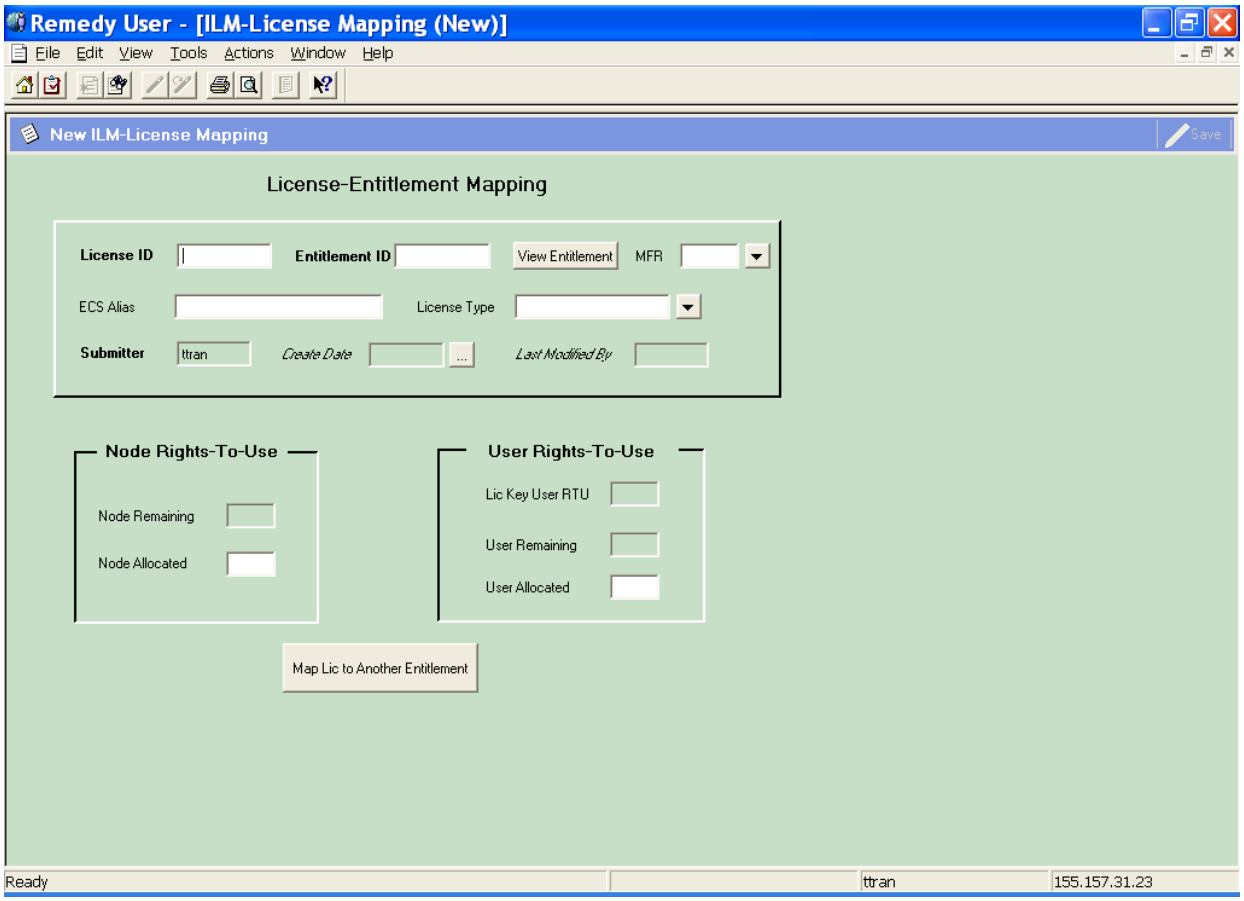


Figure 4.3.4-36. ILM-License Mapping GUI

Table 4.3.4-20 describes the fields on the License-Mapping form.

Table 4.3.4-20. ILM-License Mapping Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
License ID	Char	10	System Supplies	Unique designator for a license.
Entitlement ID	Char	10	required	Identifier for a purchased license entitlement.
MFR	Char	6	optional	Code for the manufacturer from whom the item was purchased.
ECS Alias	Char	40	system supplied	Common name used in ECS for the licensed product and all its versions and variants.
License Type	n/a	n/a	n/a	Type of license used.
Submitter	Char	30	system-supplied	The user that created the record.
Create Date	Date		system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The user who last modified the record.
Lic Key User Rtu	Numeric	8	system supplied	Number of users authorized by the license to run the licensed product concurrently on a single network. This value limits the user rights-to-use that can be recorded in the license's allocation records.
Node/User Remaining	Numeric	8	system supplied	Quantity of node or user rights under a license entitlement not yet consumed by the mapping of licenses to the entitlement.
Node/User Allocated	Numeric	8	optional	Number of node or user rights-to-use to be counted under the entitlement as having been consumed by the license. The value may not exceed the current value plus the rights remaining under the entitlement.

The following buttons are unique to this form:

- The "View Entitlement" button enables the operator to display the License Entitlement record that the license is being mapped to.
- The "Map Lic to Another Entitlement" button enables the operator to map the currently displayed License ID to another Entitlement record.

4.3.4.4.5 ILM-Additional Host GUI

The ILM-Additional Host form (Figure 4.3.4-37) is used for maintaining records about backup or redundant license servers for machines to which a license has been allocated. Identifying additional hosts has no effect on calculations of entitlements' node or user rights-to-use consumed or remaining, but is useful for tracking where licenses are supposed to be or may be installed.

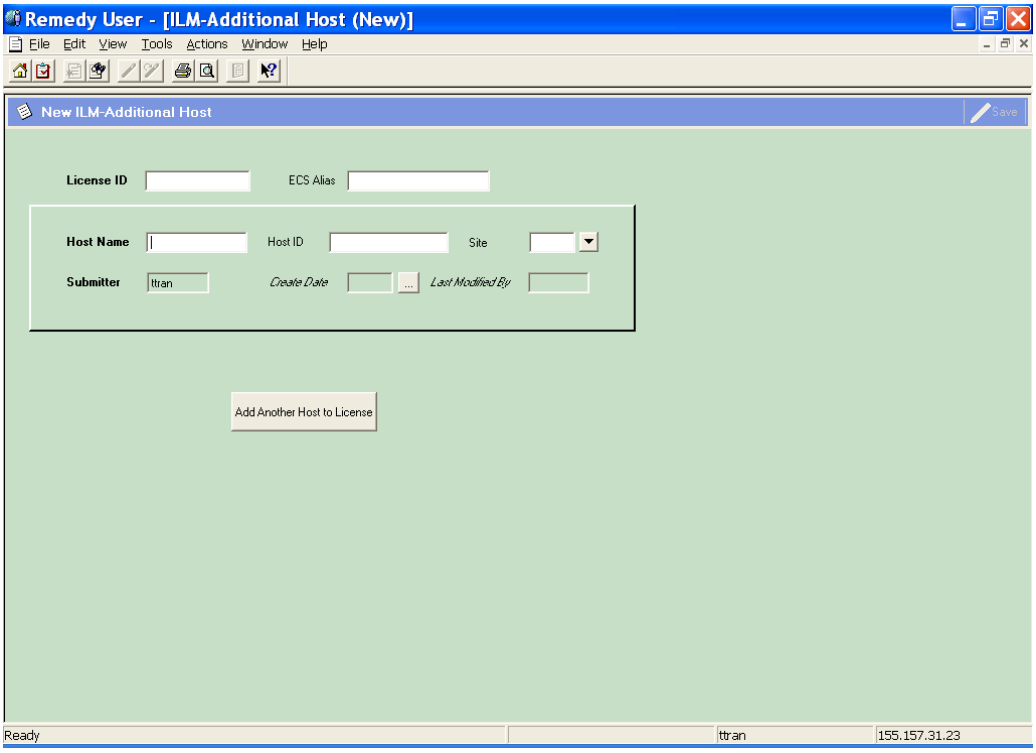


Figure 4.3.4-37. ILM-Additional Host GUI

Table 4.3.4-21 describes the fields on the ILM-Additional Host form.

Table 4.3.4-21. ILM-Additional Host Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
License ID	Char	10	System Supplied	Unique designator for a license. Derived from the displayed license.
ECS Alias	Char	30	System Supplied	Common name used in ECS for the licensed product and all its versions and variants.
Host Name	Char	30	optional	ECS name of a machine that is a backup or redundant license server for the one to which the license is principally allocated.
Host ID	Char	20	optional	Host id of a machine that is a backup or redundant license server for the one to which the license is principally allocated.
Site	Char	6	Optional	Code for the site to which the license is allocated.
Submitter	Char	30	system-supplied	The user whom created the record.
Create Date	Date	n/a	system-supplied	Date the record was created.
Last Modified By	Char	30	system-supplied	The last date the record was modified.

The "Add Another Host to License" Button enables the operator to allocated a license to more than one host. This is usually done to assign licenses to backup or redundant license servers

4.3.4.5 ILM-System Parameters

The ILM-System Parameters form (Figure 4.3.4-38) is for maintaining system-wide Remedy-ILM parameters and is principally used for initializing certain identifier fields.

Several fields have particular significance for ILM. The Site ID field contains the code for the ECS site where the operator's copy of Remedy is installed. This field is interrogated by ILM processes that have to determine which assets belong to the local site. The Next EIN ID field is used by Remedy to keep track of the most recently used, automatically-assigned EIN. Remedy increment the field whenever an operator creates a new EIN when creating records via ILM-EIN form.

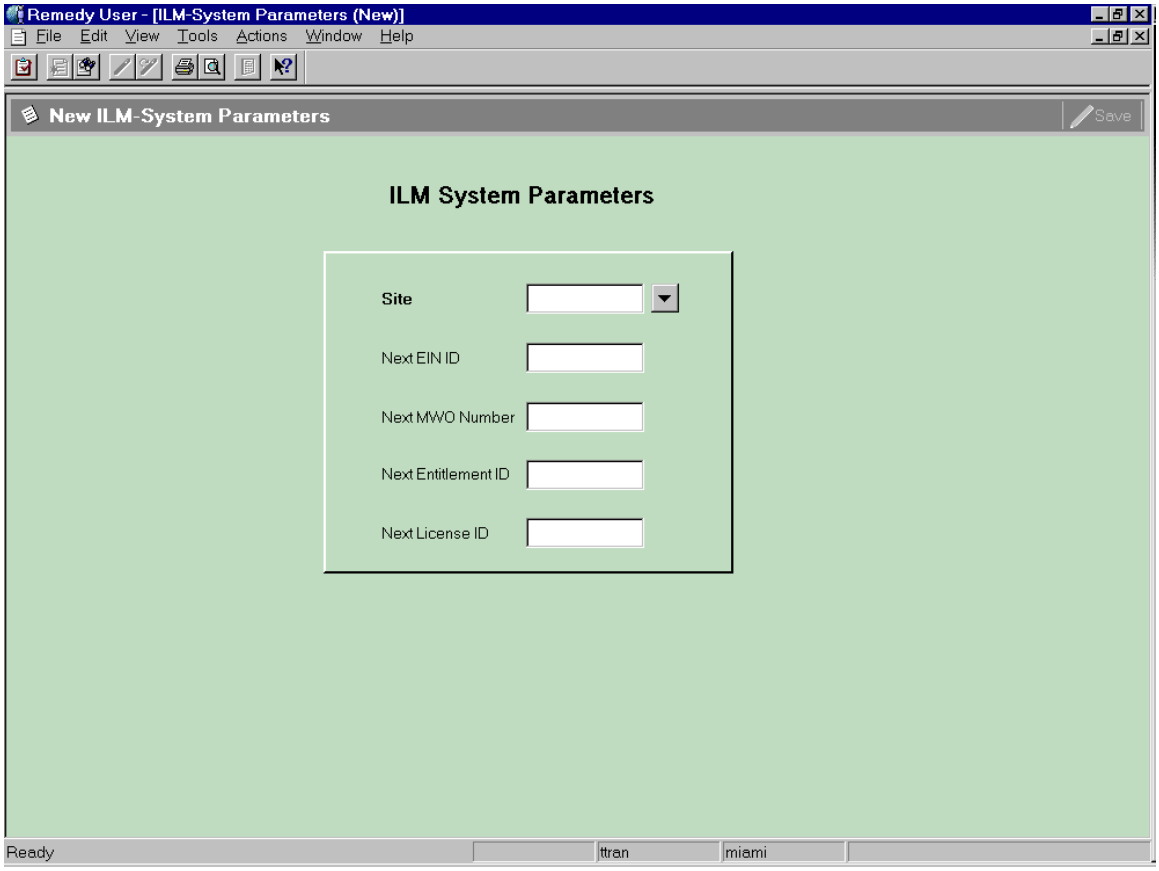


Figure 4.3.4-38. ILM-System Parameters GUI

Table 4.3.4-22 describes the fields on the ILM-System Parameters form.

Table 4.3.4-22. ILM-System Parameters Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Site	Char	6	required	Code that identifies the ECS site where this Remedy system is installed.
Next EIN ID	Char	20	system-supplied, but modifiable	Field containing the next sequentially-available identifier when assigning EIN numbers automatically.
Next MWO Number	Char	10	system-supplied, but modifiable	Field containing the next MWO number to be used.
Next Entitlement ID	Char	10	system-supplied, but modifiable	Field containing the next entitlement id number to be used.
Next License ID	Char	10	system-supplied, but modifiable	Field containing the next license id number to be used.

4.3.4.6 User GUI

The User form, shown in Figure 4.3.4-39, is used by the administrator to add, modify or remove users of the Action Request (AR) System. The "User" form is used in conjunction with the "Group" form to provide users with permissions ultimately determining which operations individual users can perform and which forms and fields they can access. For more information on the "User" form and the AR System access control, refer to the Action Request System Server Administrator's Guide. Table 4.3.4-23 provides descriptions of the User Form.

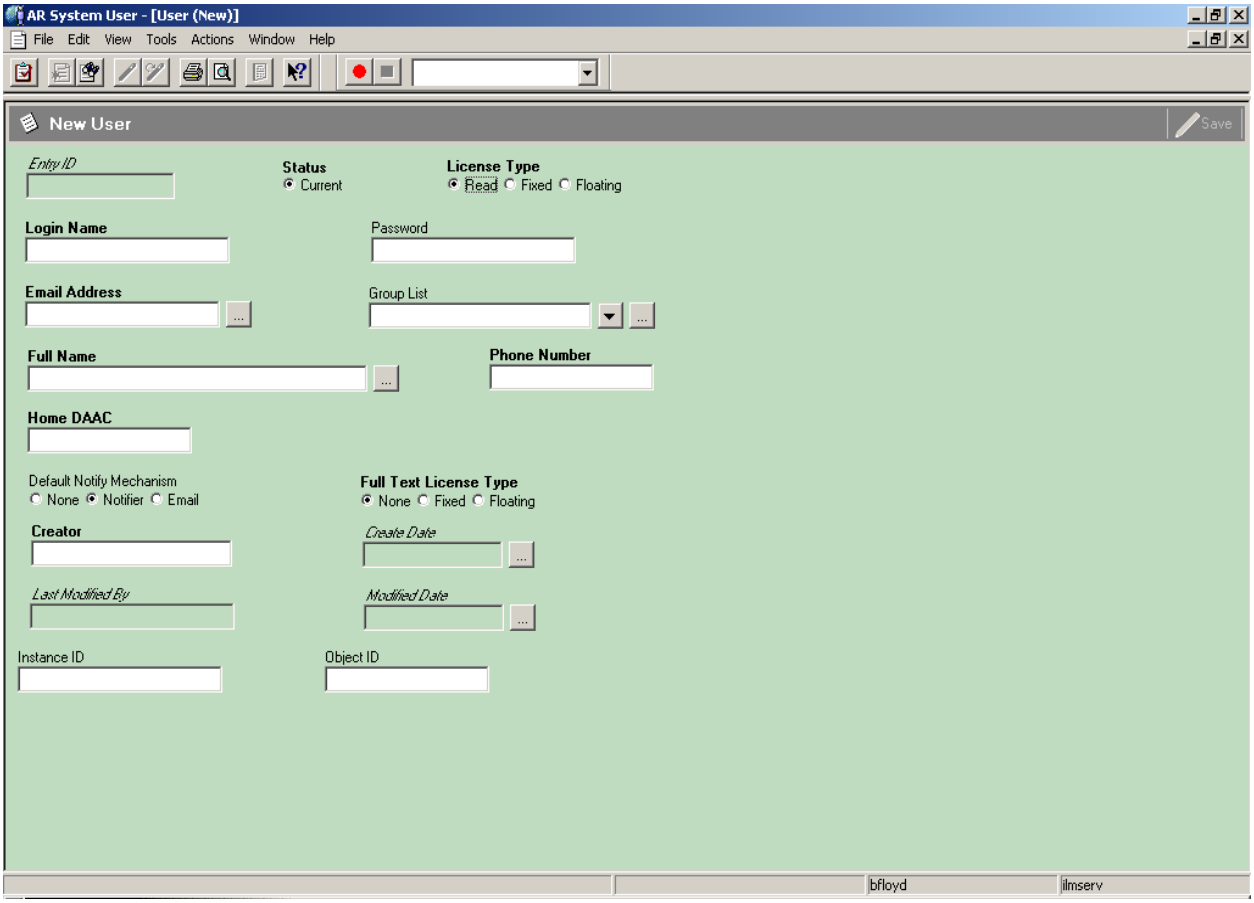


Figure 4.3.4-39. User GUI

Table 4.3.4-23. User Form Field Descriptions

Field Name	Data Type	Size	Entry	Description
Entry-Id	Character	15	System generated	Entry ID of user.
Status	Selection	*	Required	Is user current or not as shown by the "current" button.
License Type	Selection	*	Required	What type of license does this user have? (e.g., read, fixed, floating).
Login name	Character	30	Required	Login name of user.
Password	Character	30	Optional	Password of User.
Email Address	Character	255	Required	E-mail address of User.
Group list	Character	255	Optional	Groups to which the user belongs.
Full Name	Character	128	Required	Full Name of User.
Phone Number	Character	55	Required	Phone Number of User.
Home DAAC	Character	55	Required	Home DAAC of User.
Default Notify Mechanism	Selection	*	Optional	Notification method (e.g., None, Notifier, and Email buttons.)
Full Text License Type	Selection	n/a	Required	The Full Text License capability is not available. So, the selection value should be "None."
Creator	Character	30	Required	Person who created the user account.
Create-date	Date/Time	17	System generated	Date and time the entry was created at the present site (mm/dd/yy hh:mm:ss).
Last-modified-by	Character	30	System generated	User ID of person that last modified the user entry.
Modified-date	Date/Time	17	System generated	Date and time of last modification to user entry (mm/dd/yy hh:mm:ss).
Instance ID	Character	38	Optional	A Remedy reserve field for Remedy's use only.
Object ID	Character	38	Optional	A Remedy reserve field for Remedy's use only.

Note: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.4.7 Remedy's Admin Tool GUI

The Remedy Administrator Tool is the tool one uses to create, modify, and delete Remedy objects (e.g. forms and menus). Figure 4.3.4-40 shows the main Administrator Tool GUI and its starting screen, the server window, and the workflow objects categories.

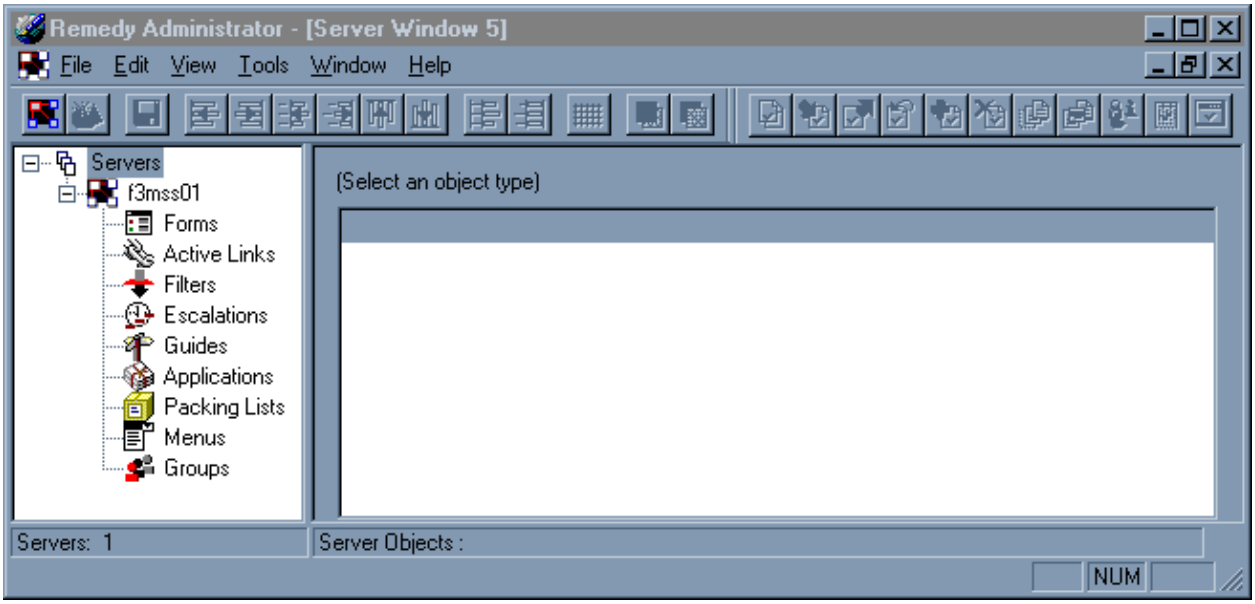


Figure 4.3.4-40. Admin Tool GUI

Table 4.3.4-24 provides a description of the Admin Tool GUI Workflow objects. For more information on these options, see *Remedy's Action Request System Administrator's Guide*, Vol. 1, Chapter 4, and/or the Remedy Administrator Tutorial using the Administrator Tool's Help menu.

Table 4.3.4-24. Admin Tool GUI, Workflow Object Descriptions

Workflow Object	Size	Entry	Description
Forms	Variable	System Generated	List of available forms.
Active links	Variable	System Generated	List of available active links.
Filters	Variable	System Generated	List of available filters.
Escalations	Variable	System Generated	List of available escalations.
Guides	Variable	System Generated	List of available guides.
Applications	Variable	System Generated	List of available applications
Packing lists	Variable	System Generated	List of available packing lists
Menus	Variable	System Generated	List of available menus
Groups	Variable	System Generated	List of available groups

4.3.4.8 Databases

Remedy's Action Request System uses the Sybase database called ARSystem that resides on the Remedy server machines. Tables and columns are created, modified, and deleted when forms are built and edited. This is all done automatically and is invisible to the user.

4.3.4.9 Special Constraints

Note that while ILM forms are open to all operators, and operators have view privileges to the user form, only system administrators have the ability to modify forms and tools presented in this section. Privileges are set according to DAAC policy.

4.3.4.10 Outputs

Output from Remedy's Action Request System (besides output to the screen in the form of its GUIs) is in the form of a report either to the printer or to a file (reports discussed in Section 4.3.4.12) or a log entry as shown in Table 4.3.4-25.

In the Remedy **aradmin** tool, you may enable and disable error logging at any time. Select File-> Server Information-> Log Files to display the current location of log files that have been enabled. The format of the messages is similar to the Unix syslog as seen in this example:

Table 4.3.4-25. Remedy Log File Messages Example

```
Mon Feb 23 16:28:16 1998  390600 : Failure during SQL operation to the database (ARERR 552)
Mon Feb 23 16:28:16 1998     Unable to connect: SQL Server is unavailable or does not exist. (Sybase 20009) : Connection refused
Mon Feb 23 16:28:16 1998     Unable to connect: SQL Server is unavailable or does not exist. (Sybase 20009) : Connection refused
```

4.3.4.11 Event and Error Messages

For Remedy's Action Request System's system messages see the *Action Request System Error Messages Guide*.

Table 4.3.4-26 lists non-system failure related messages that appear on the operator's screen.

Table 4.3.4-26. Non-System Failure Related Error Messages (1 of 6)

Error Message Char	Cause	Action
Inventory Management		
Parent EIN does not exist. Enter the correct Parent EIN.	Attempting to associate a component EIN to a Parent EIN that does not exist.	Enter the correct Parent EIN.
Parent EIN, $Parent EIN$, is a component. Please enter the correct Parent EIN number.	Attempting to associate a component EIN to a Parent EIN that is a component to another EIN Structure.	Enter the correct Parent EIN.
Parent EIN, $Parent EIN$, is not hardware. Enter the correct Parent EIN!	Attempting to associate a component EIN to a Parent EIN that is not hardware.	Enter the correct Parent EIN.
Part not found. Add new part into the part table or enter the correct part no.	Attempting to enter a part number that does not exist in the database.	Enter the correct Part No into the ILM-OEM Parts form or enter the correct part no.

Table 4.3.4-26. Non-System Failure Related Error Messages (2 of 6)

Error Message Char	Cause	Action
Part Number, $Part No$, already exists. Enter the correct Part Number!	Attempting to add a new Part No enter the ILM-Oem Parts form where the Part No already existed in the form.	Enter the correct Part number.
EIN is a component to Parent EIN. Update the Parent EIN's ECS name instead.	Attempting to update an ECS Name of a component EIN.	Update the Parent EIN's ECS Name.
New Parent EIN is the same as the old Parent EIN. Enter the correct new Parent EIN.	Attempting to relocate to relocate an item to the same Parent EIN.	Enter the correct New Parent EIN.
EIN already existed. Enter the correct EIN.	Attempting to create a new EIN that is already existed in the database.	Enter the correct EIN number.
A record for Location, $Location$, with Building, $Building$, already exists. Enter the correct Location and its associated Building!	Attempting to create a new location in the ILM-Inventory location form where the combination of location and building values already existed in the form.	Do not enter the new location and use the existed one.
EIN (EIN) is a Parent to EIN ($EIN is Parent$). Can not assign a Parent to another Parent structure.	Attempting to assign a Parent EIN as a component to an EIN structure.	Verify the Component EIN and the Parent EIN.
Audit Date ($Audit Date$) can not be greater than current date. Enter the correct audit date.	Attempting to update the audit date to a date greater than the current date.	Enter the correct audit date.
Receive Date ($Receive Date$) can not be greater than the current date ($DATE$). Enter the correct receive date.	Attempting to update the receive date to a date greater than the current date.	Enter the correct receive date.
Vendor ID, $Vendor ID$, already exists. Enter the correct Vendor ID!	Attempting to add a new vendor id that already existed in the ILM-Vendor-MFR form.	Use the existing Vendor ID if the vendor name is the same. If the vendor name is not the same, use another code to define the new vendor.
Site, $Site$, already exists. Enter the correct Site!	Attempting to add a site code that already existed in the ILM-Site form.	Use the existing site code.
Item Status, $Item Status$, already exists. Enter the correct Item Status!	Attempting to add a new item status that already existed in the ILM-Status Code form.	Enter the correct item status.
EIN Transactions		
Parent EIN field is a required field. Enter a Parent EIN value into the Parent EIN field.	Attempting to perform an EIN transaction where the Parent EIN value is not provided in the Parent EIN field.	Enter the correct Parent EIN value into the Parent EIN.

Table 4.3.4-26. Non-System Failure Related Error Messages (3 of 6)

Error Message Char	Cause	Action
Parent EIN ($Parent EIN$) does not exist. Enter the correct Parent EIN.	Attempting to perform an EIN transaction on the Parent EIN where the Parent EIN does not exist in the ILM-EIN form.	Enter the correct Parent EIN.
Parent EIN, $Parent EIN$ is a component of Parent EIN $Temp Parent Parent$. Perform transaction on the Parent EIN, $Temp Parent Parent$ instead.	Attempting to perform an EIN transaction on a component.	Enter the correct Parent EIN.
One or more of these fields is not completed (Archive (P)arent-(C)omponent and Archive Type. Enter values into both of these fields and execute the transaction again.	Attempting to perform an archive transaction where the Archive (P)arent-(C)omponent and/or Archive Type fields is not completed.	Complete both of these fields.
New Parent EIN is a component to Parent EIN ($Temp New Parent Parent$). Enter another New Parent EIN.	Attempting to relocate component(s) to a new Parent EIN where the new Parent EIN is a component to another EIN Structure.	Enter the correct new parent EIN.
New Parent EIN does not exist. Enter another New Parent EIN.	Attempting to relocate component(s) to a new parent EIN where the new parent EIN does not exist in the ILM-EIN form.	Enter the correct new parent EIN.
New Parent EIN ($New Parent EIN$) is not hardware. Enter another New Parent EIN value.	Attempting to relocate component(s) to a new parent EIN where the new parent EIN is something else other then hardware.	Enter the correct new parent EIN.
New Parent EIN ($New Parent EIN$) is the same as the old Parent EIN. Enter another new Parent EIN.	Attempting to relocate component(s) to a new parent EIN where the new parent EIN is the same as the old parent EIN	Enter the correct new parent EIN.
New Location values (New Location, New Building, or New Room) are not completed. Complete all the new location values.	Attempting to perform a transaction where all the new location values are not completed.	Make sure all the new location values are completed.
Maintenance Work Order		
Parent EIN ($Parent EIN$) does not exist. Enter the correct Parent EIN.	Attempting to create a new maintenance work order where the Parent EIN does not exist in the ILM-EIN form.	Enter the correct Parent EIN.
EIN, $Parent EIN$, is not a parent. Enter the correct Parent EIN!	Attempting to create a new MWO where the parent EIN entered is a component of some EIN structure.	Enter the correct parent EIN.

Table 4.3.4-26. Non-System Failure Related Error Messages (4 of 6)

Error Message Char	Cause	Action
ALDT 1 End Date-Time ($ALDT End Date-Time$) can not be greater than current date.	Attempting to enter an ALDT End Date-Time that is greater than the current date and time.	Enter the correct ALDT End date-time.
Notification Date ($Notification Date-Time$) can not be greater than current date.	Attempting to enter a notification Date-Time that is greater than the current date and time.	Enter the correct notification date-time.
Vendor Complete Date-Time ($Vendor Complete Date-Time$) can not be greater than current date.	Attempting to enter vendor complete Date-Time that is greater than the current date and time.	Enter the correct vendor complete date-time.
Vendor Call Date-Time ($Vendor Call Date-Time$) can not be greater than current date.	Attempting to enter vendor call Date-Time that is greater than the current date and time.	Enter the correct vendor call date-time.
ALDT Start Date-Time ($ALDT Start Date-Time$) can not be greater than current date.	Attempting to enter an ALDT start Date-Time that is greater than the current date and time.	Enter the correct ALDT start date-time.
Failure Date ($Failure Date-Time$) can not be greater than current date.	Attempting to enter failure Date-Time that is greater than the current date and time.	Enter the correct failure date-time.
Vendor Arrive Date-Time ($Vendor Arrive Date-Time$) can not be greater than current date.	Attempting to enter vendor arrive Date-Time that is greater than the current date and time.	Enter the correct vendor arrive date-time.
Vendor Initial Response Date-Time ($Vendor Initial Resp Date-Time$) can not be greater than current date.	Attempting to enter vendor initial response Date-Time that is greater than the current date and time.	Enter the correct vendor initial response date-time.
The MWO must already be created and you must have the MWO displayed in a Search/Modify window before clicking the Add Fail-Replacement Component Button!	Attempting to add a new work order line item where the work order information is blank.	Use the ILM-MWO form to find the appropriate work order and press the “Add Fail-Replacement Component” button to start adding line items to that work order.
Component EIN is the same as the MWO Parent EIN. Enter the correct component EIN.	Attempting to add a work order line item where the component EIN is the same as the MWO’s Parent EIN.	Enter the correct component EIN.
New Parent EIN is the same as the MWO's Parent EIN. Enter the correct New Parent EIN.	Attempting to add a work order line item to move a component to a new EIN structure where the new parent EIN is the same as the MWO’s Parent EIN.	Enter the correct new parent EIN value.
New Parent EIN ($New Parent EIN$) is a component to Parent EIN ($New Parent EIN Parent$). Enter the correct New Parent EIN value	Attempting to add a work order line item to move a component to a new EIN structure where the new parent EIN is the same as the MWO’s Parent EIN.	Enter the correct new parent EIN value.

Table 4.3.4-26. Non-System-Failure Related Error Messages (5 of 6)

Error Message Char	Cause	Action
New Parent EIN does not exist. Enter the correct New Parent EIN.	Attempting to add a work order line item to move a component to a new EIN structure where the new parent EIN does not exist in the ILM-EIN form.	Enter the correct new parent EIN value.
New Parent EIN is not hardware. Enter the correct New Parent EIN value.	Attempting to add a work order line item to move a component to a new EIN structure where the new parent EIN in not hardware.	Enter the correct new parent EIN value.
Component EIN is a parent. Enter the correct Component EIN value.	Attempting to add a work order line item where the component EIN is a parent.	Enter the correct component EIN value.
Line Item does not have the correct event type and maint code. Enter the correct event type and maint code.	Entering the incorrect combination of event type and maint code in the ILM-MWO Line Item form.	Enter the correct event type and maint code.
License Management		
Entitlement Part No does not exist. Enter the correct part number or add the new part into the ILM-License Entitlement Part form.	Attempting to associate entitlement with an Entitlement Part no that does not exist in the ILM-License Entitlement Form.	Enter the correct part number or add the new part into the ILM-License Entitlement Part form.
Contract ID, $Contract ID$, already exists. Enter the correct Contract ID!	Attempting to associate a license entitlement with a contract ID where the contract id does not exist in the ILM-Maint contract form.	Enter the correct contract ID.
Entitlement ID does not exist. Enter the correct Entitlement ID.	Attempting to map a license to a purchased entitlement that does not exist in the ILM-Entitlement form.	Enter the correct Entitlement ID.
Node allocated is greater than Node remaining. Reduce number of Right-To-Use or enter another Entitlement ID.	Attempting to map a license to an entitlement where the entitlement node remaining is less than the amount allocating.	Reduce the number of node allocated.
User Allocated is greater than License Key User RTU allocated to the license. Enter the correct User Allocated value.	Attempting to map a license to an entitlement where the user allocated is greater than the license key user rights-to-use.	Reduce the user allocated to equal to or less than the license key RTU.
User Allocated is greater than User RTU Remaining. Lower User Allocated or Enter another Entitlement ID.	Attempting to map a license to an entitlement where the user allocated is greater than the entitlement user rights-to-use remaining	Reduce the user allocated.
This license right-to-use had already been mapped to entitlement $Ent ID Holder$.	Attempting to map a node lock license to more than one entitlement.	Do not map the license to another entitlement.

Table 4.3.4-26. Non-System-Failure Related Error Messages (6 of 6)

Error Message Char	Cause	Action
Total user allocated ($Total User Allocated$) is greater than the lic key user RTU. Reduce number of User Allocated	Attempting to map a license to entitlements where the total user allocated is greater than the license key user rights-to-use.	Reduce the user allocated to equal to or less than the license key RTU.
Node allocated or User allocated has not been assigned to this Entitlement ID ($Entitlement ID$).	Attempting to map a license to an entitlement where the user did not enter any value in the Node or user allocated.	Enter node or user allocated to map against the entitlement.
Node Allocated can not be greater than one for nodelock licenses. Enter 1 to allocate 1 Right-To-Use for this Nodelock license.	Attempting to allocate more than 1 node rights-to-use for a node lock license.	reduce the number of node rtu allocated to 1.
Combination of Entitlement Part No-MFR and Version $Temp PN_MFR_Ver$ already existed. Enter the correct Entitlement Part No.	Attempting to add a new entitlement part into the ILM-License Products form where the combination of the Entitlement Part No, MFR, and version already existed in the database.	use the existing entitlement part information.

4.3.4.12 Reports

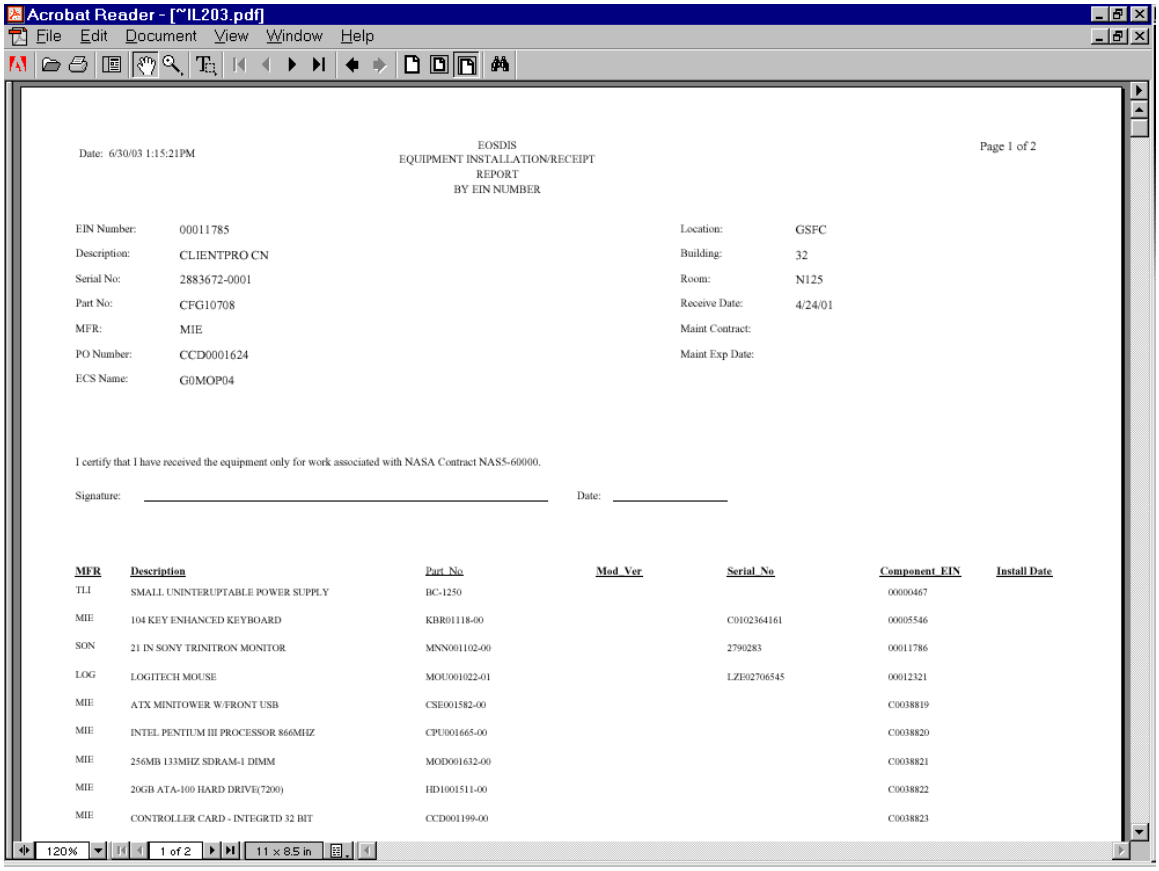
Operator may generate ad-hoc reports from any forms (see AR System 4.x User manual on Reporting). However, ILM provides a set of predefined reports that operator can generate through Tools→Report from the Menu bar. Table 4.3.4-27 identifies the predefined reports available in ILM. The figures that follow (Figures 4.3.4-41 through 4.3.4-57) present a sample of each.

Table 4.3.4-27. ILM Reports (1 of 2)

Report Type	Report Description
Inventory Management	
Install/Receipt Report	A report that describes an operator-specified EIN item together with all of its associated components order by EIN number. See Figure 4.3.4-41.
Installation Report	A report that describes an operator-specified EIN item together with its components having status “I” (for installed). See Figure 4.3.4-42.
Parent EIN Report	Provides a listing of only Parent items. See Figure 4.3.4-43.
Parent EIN and total System Cost Report	Provides a listing of only Parent items and the total system cost for each Parent. See Figure 4.3.4-44.
Inventory Report	Provides an ASCII formatted report identifying the inventory items by Parent EIN according to the operator-specified criteria. See Figure 4.3.4-45.
ECS Shipping Report	Provides a listing of items that were shipped within an operator-specified time frame. See Figure 4.3.4-46.
Quarterly Property Management Report	Provides a list of contractor-acquired equipment items by quarter, sorted by Mfr and product description. See Figure 4.3.4-47.

Table 4.3.4-27. ILM Reports (2 of 2)

Report Type	Report Description
Purchase Order Cost Report	Provides a list of EINs and their cost associated with an operator-specified purchase order. See Figure 4.3.4-48.
Cost - Selected ECS Managed Property	Provides the quantity and total cost of operator-selected EINs, grouped by type of inventory (Hardware, Software, Consumable, i.e.). See Figure 4.3.4-49.
EIN Transaction History	A list of the transactions processed for operator-specified items during an operator-specified timeframe, sorted by EIN number and "from" location. See Figure 4.3.4-50.
Spare Equipment Report	Provides a list of spare equipment for a selected site or system-wide report. See Figure 4.3.4-51.
Maintenance Management	
Maintenance Work Order Verification Report	A full description of operator-selected work orders and the items undergoing maintenance action that they cover. See Figure 4.3.4-52.
Maintenance Contract Report	Provides a list of operator-specified maintenance contract and all the associated items the contract covers. See Figure 4.3.4-53.
RMA Work Order Report	Provides an ASCII formatted spreadsheet formatted report with embedded formulas for RMA data. See Figure 4.3.4-54.
License Management	
License Entitlements Status Report	Lists the status of current license entitlements for licensed software products, sorted by software product, version, and license type. See Figure 4.3.4-55.
License Allocations by Product Report	Lists license allocations for licensed software products, sorted by product, version, and host name. See Figure 4.3.4-56.
License Allocations by Host Report	Lists license allocations, sorted by host name and ECS part alias. See Figure 4.3.4-57.



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EOSDIS
EQUIPMENT INSTALLATION/RECEIPT
REPORT
BY EIN NUMBER

Page 1 of 2

EIN Number:	00011785	Location:	GSFC
Description:	CLIENTPRO CN	Building:	32
Serial No:	2883672-0001	Room:	N125
Part No:	CFG10708	Receive Date:	4/24/01
MFR:	MIE	Maint Contract:	
PO Number:	CCD0001624	Maint Exp Date:	
ECS Name:	G0MOP04		

I certify that I have received the equipment only for work associated with NASA Contract NAS5-60000.

Signature: _____ Date: _____

MFR	Description	Part_No	Mod_Ver	Serial_No	Component_EIN	Install Date
TLI	SMALL UNINTERUPTABLE POWER SUPPLY	BC-1250			00000467	
MIE	104 KEY ENHANCED KEYBOARD	KBR01118-00		C0102364161	00005546	
SON	21 IN SONY TRINITRON MONITOR	MNN001102-00		2790283	00011786	
LOG	LOGITECH MOUSE	MOU001022-01		LZE02706545	00012321	
MIE	ATX MINITOWER W/FRONT USB	CSE001582-00			C0038819	
MIE	INTEL PENTIUM III PROCESSOR 866MHZ	CPU001665-00			C0038820	
MIE	256MB 133MHZ SDRAM-1 DIMM	MOD001632-00			C0038821	
MIE	20GB ATA-100 HARD DRIVE(7200)	HD1001511-00			C0038822	
MIE	CONTROLLER CARD - INTEGRTD 32 BIT	CCD001199-00			C0038823	

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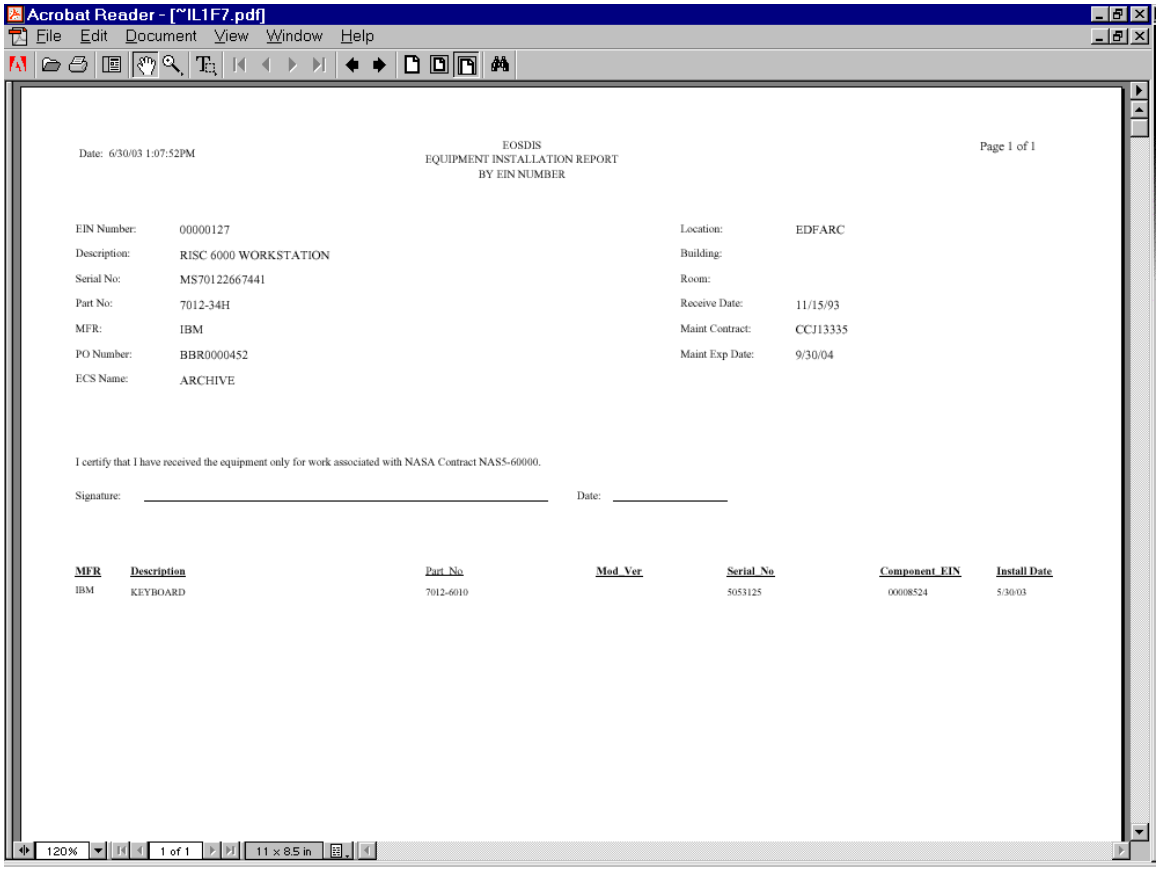
Figure 4.3.4-41. Install/Receipt Report



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EOSDIS
EQUIPMENT INSTALLATION REPORT
BY EIN NUMBER

Page 1 of 1

EIN Number:	00000127	Location:	EDFARC
Description:	RISC 6000 WORKSTATION	Building:	
Serial No:	MS70122667441	Room:	
Part No:	7012-34H	Receive Date:	11/15/93
MFR:	IBM	Maint Contract:	CCJ13335
PO Number:	BBR0000452	Maint Exp Date:	9/30/04
ECS Name:	ARCHIVE		

I certify that I have received the equipment only for work associated with NASA Contract NAS5-60000.

Signature: _____ Date: _____

MFR	Description	Part_No	Mod_Ver	Serial_No	Component_EIN	Install Date
IBM	KEYBOARD	7012-6010		5053125	00008524	5/30/03

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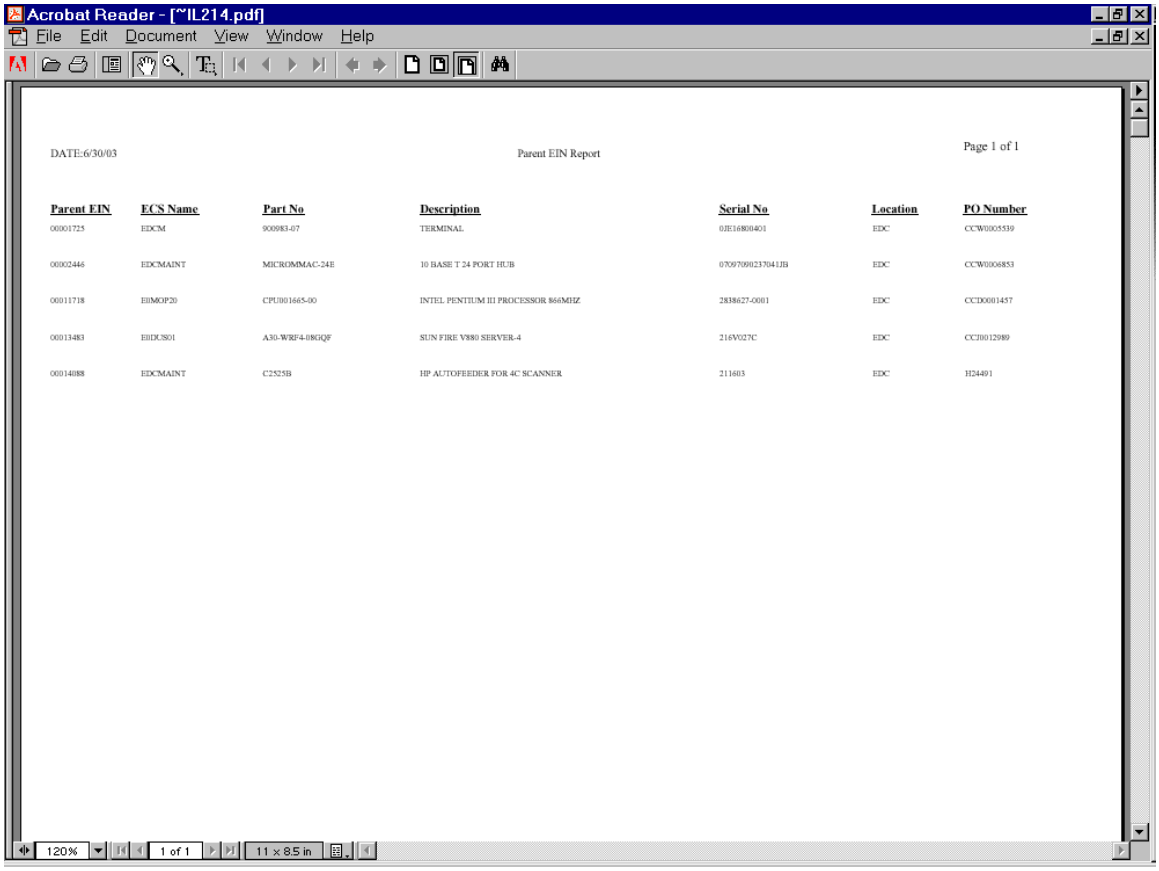
Figure 4.3.4-42. Installation Report



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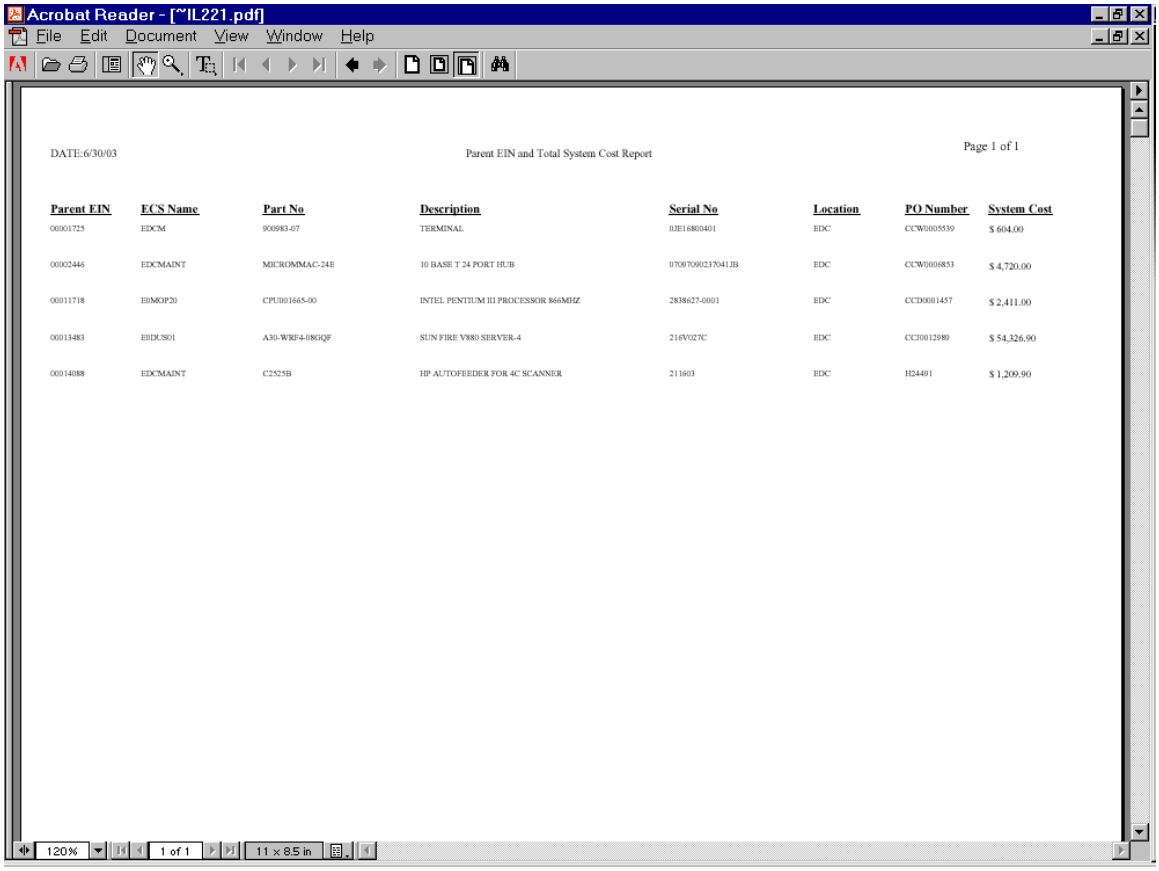
Parent EIN Report

Page 1 of 1

Parent EIN	ECS Name	Part No	Description	Serial No	Location	PO Number
00001725	EDCM	900983-07	TERMINAL	0JE16800401	EDC	CCW0005539
00002446	EDCMAINT	MICROMMAC-24E	10 BASE T 24 PORT HUB	070970902370411B	EDC	CCW0006853
00011718	EIIMOP20	CPU001665-00	INTEL PENTIUM III PROCESSOR 866MHZ	2838627-0001	EDC	CCD0001457
00013483	EIIDUS01	A30-WRF4-08GQF	SUN FIRE V880 SERVER-4	216V027C	EDC	CCJ0012989
00014088	EDCMAINT	C2525B	HP AUTOFEEDER FOR 4C SCANNER	211603	EDC	H24491

Figure 4.3.4-43. Parent EIN Report



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Parent EIN and Total System Cost Report

Page 1 of 1

Parent EIN	ECS Name	Part No	Description	Serial No	Location	PO Number	System Cost
00001725	EDCM	900983-07	TERMINAL	0JE16800401	EDC	CCW0005539	$ 604.00
00002446	EDCMAINT	MICROMMAC-24E	10 BASE T 24 PORT HUB	0709709023704 1JB	EDC	CCW0006853	$ 4,720.00
00011718	EIIMOP20	CPU001665-00	INTEL PENTIUM III PROCESSOR 866MHZ	2838627-0001	EDC	CCD0001457	$ 2,411.00
00013483	EIIDUS01	A30-WRF4-08GQF	SUN FIRE V880 SERVER-4	216V027C	EDC	CCJ0012989	$ 54,326.90
00014088	EDCMAINT	C2525B	HP AUTOFEEDER FOR 4C SCANNER	211603	EDC	H24491	$ 1,209.90

Figure 4.3.4-44. Parent EIN and Total System Cost Report

Parent EIN	Part EIN	Mfr	ECS Name	Audit Date	Stat	Part Num	Serial Num	Unit Cost	Product Description	Location	Bldg	Room	Code	PO Num	Date Rec'd	Vendor
00001838	00001838	SUN	n0dms04	2/6/02	I	A12-UBA1-1E-064AB	645F0AA4	$8,797.00	Ultra 1 System	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	00001891	SUN	n0dms04	2/6/02	I	X5203A	645G0830	$1,035.00	UniPak - 4.2 GB 5400 RPM FW SCSI-2	NSIDC	NSIDC	209	H	CCW0005354	12/18/96	SUN
00001838	00003491	SUN	n0dms04	2/6/02	I	X267A	9843KN4545	$5,000.00	Color Monitor - 20 IN	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	00006793	SUN	n0dms04	2/6/02	I	NE SUN1	LZB64001097	$0.00	Mouse - 3 Button Track Ball	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	00006794	SUN	n0dms04	2/6/02	I	320-1233-02	9626371319	$0.00	Keyboard	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009132	SUN	n0dms04	2/6/02	I	X1025A	12603	$1,500.00	FDDI SINGLE ATTACH SBUS CARD	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009133	SUN	n0dms04	2/6/02	I	X132P	501282278476877	$0.00	Memory - 32MB RAM Expansion (1x32	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009134	SUN	n0dms04	2/6/02	I	X132P	501262278476942	$0.00	Memory - 32MB RAM Expansion (1x32	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009135	SUN	n0dms04	2/6/02	I	X3500A		$0.00	Country Kit	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009136	SUN	n0dms04	2/6/02	I	X6001A	9625201083	$90.00	Floppy Drive - 3.5 IN Disk Drive-1	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009137	SUN	n0dms04	2/6/02	I	X6153A	9647723061	$240.00	CD ROM - Internal SUNCD 4	NSIDC	NSIDC	209	H	CCW0005354	12/2/96	SUN
00001838	C0009839	SUN	n0dms04	2/6/02	I	370-2286-01	9643604099	$0.00	Hard Drive - Internal for X5204A	NSIDC	NSIDC	209	H	CCW0005354	12/18/96	SUN
00001838	C0045377	SUN	n0dms04	6/25/02	I	X5237A	0145KP6EMS	$479.20	ULTRA SCSI DISK DRIVE, 18GB INTERN	NSIDC	NSIDC	209	H	CCD0002848	11/27/01	SUN
00001838	C0149507	SUN	n0dms04	1/27/99	I	SOLD-C		$45.00	Solaris Media for Servers	NSIDC	NSIDC	209	S	CCW0005354	12/2/96	SUN
00001839	00001839	SUN	n0mos20	2/6/02	I	A12-UBA1-1E-064AB	645F0B2C	$8,797.00	Ultra 1 System	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	00001890	SUN	n0mos20	2/6/02	I	X5203A	645G0868	$1,035.00	UniPak - 4.2 GB 5400 RPM FW SCSI-2	NSIDC	NSIDC	252	H	CCW0005354	12/18/96	SUN
00001839	00003494	SUN	n0mos20	2/6/02	I	X267A	9647GI3704	$5,000.00	Color Monitor - 20 IN	NSIDC	NSIDC	252	H	CCW0005354	4/3/00	SUN
00001839	00006771	SUN	n0mos20	2/6/02	I	320-1233-02	9626371388	$0.00	Keyboard	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	00006772	SUN	n0mos20	2/6/02	I	NE SUN1	LZB64001084	$0.00	Mouse - 3 Button Track Ball	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009138	SUN	n0mos20	2/6/02	I	370-2040-03	9643547711	$0.00	Hard Drive - 2.1 GB Internal	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009139	SUN	n0mos20	2/6/02	I	X1025A	11748	$1,500.00	FDDI SINGLE ATTACH SBUS CARD	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009140	SUN	n0mos20	2/6/02	I	X132P	501262279495644	$0.00	Memory - 32MB RAM Expansion (1x32	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009141	SUN	n0mos20	2/6/02	I	X132P	501262279495714	$0.00	Memory - 32MB RAM Expansion (1x32	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009142	SUN	n0mos20	2/6/02	I	X3500A		$0.00	Country Kit	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009143	SUN	n0mos20	2/6/02	I	X6001A	9625201087	$90.00	Floppy Drive - 3.5 IN Disk Drive-1	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009144	SUN	n0mos20	2/6/02	I	X6153A	6Y50C01029	$240.00	CD ROM - Internal SUNCD 4	NSIDC	NSIDC	252	H	CCW0005354	12/2/96	SUN
00001839	C0009838	SUN	n0mos20	2/6/02	I	370-2286-01	9643604145	$0.00	Hard Drive - Internal for X5204A	NSIDC	NSIDC	252	H	CCW0005354	12/18/96	SUN
00001839	C0038808	SUN	n0mos20	2/6/02	I	501-2961	017403	$0.00	System Board	NSIDC	NSIDC	252	H	CCW0005354	4/16/01	SUN
00001839	C0149508	SUN	n0mos20	1/27/99	I	SOLD-C		$45.00	Solaris Media for Servers	NSIDC	NSIDC	252	S	CCW0005354	12/2/96	SUN

Figure 4.3.4-45. Inventory Report

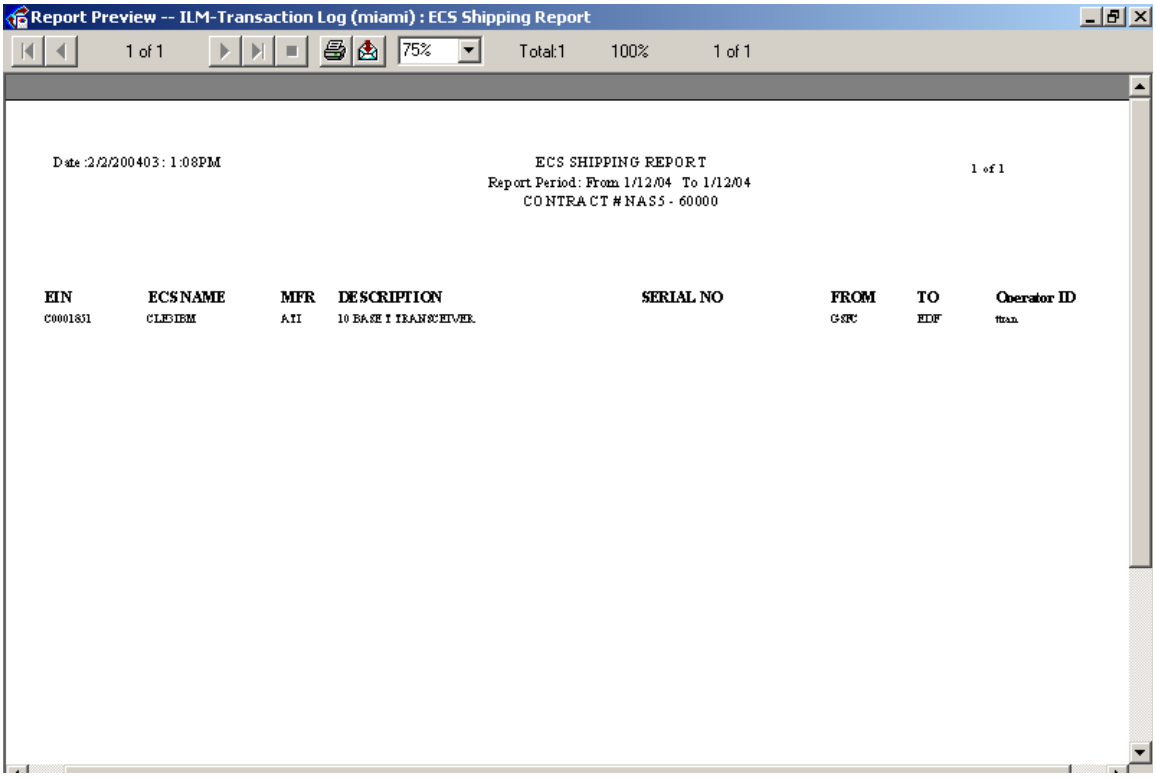

Figure 4.3.4-46. ECS Shipping Report

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ECS Quarterly Property Management Report
Contractor Acquired Equipment
Contract number NAS5-60000
Period: 4/1/03 to 6/30/03

Page 1 of 1

EIN	MFR	DESCRIPTION	SERIAL NO	LOCATION	COST
C0001851	ATI	10 BASE T TRANSCEIVER		EDFARC	$39.00
00000999	ATI	10 BASE T TRANSCEIVER		EDF	$0.00
00000998	ATI	10 BASE T TRANSCEIVER		EDF	$0.00
C0051060	STK	LC/SC 50M/120U FIBER CABLE		EDF	$126.00
C0051061	STK	FC 50/ 125 SC-SC DUP 50 MTR		EDF	$206.00
C0051094	SGI	25M OPT CABLE W/LC/LC CONNETORS		EDF	$340.56
C0051128	SUN	CABLE ULTRA SCSI-3		EDF	$152.00
C0051136	MIT	MITSUI DVD-R		EDF	$3,175.00
C0051137	MIT	JEWEL CASE ON SIDE		EDF	$100.00
C0051154	MBS	J-CARD FRONT INSERT 80#		EDF	$35.00
00030000	SUN	SPARCSTATION 20-71 SX	LKJSDFLJ	EDF	$4,522.00
C5000046	SUN	CD ROM - INTERNAL SUNCD 2 PLUS	LKEIOLKJASD	EDF	$555.00
C5000047	SUN	HARD DRIVE - 8.4GB F/W SCSI-2 DESKTOP	ILEJW90ELKJDA	EDF	$555.00
C5000052	SGI	18GB 10K EXTERNAL HD	1234567890123456789	EDF	$0.00
C5000053	SGI	18GB 10K EXTERNAL HD	1234567890123456789	EDF	$0.00
C5000054	SUN	INTERNAL 18.2GB ULTRA SCSI DRIVE	KLJASDJFKLSD56432132	EDF	$0.00
C5000058	SUN	INTERNAL 18.2GB ULTRA SCSI DRIVE	6523ASD56FDS321SD	EDF	$0.00
C5000068	IBM	TESTING MWO LI ADD NEW PART	KLJKJDAIODKL	EDF	$0.00

The cost of these contractor-acquired equipment for the quarter ending 6/30/03 is: **$9,805.56**

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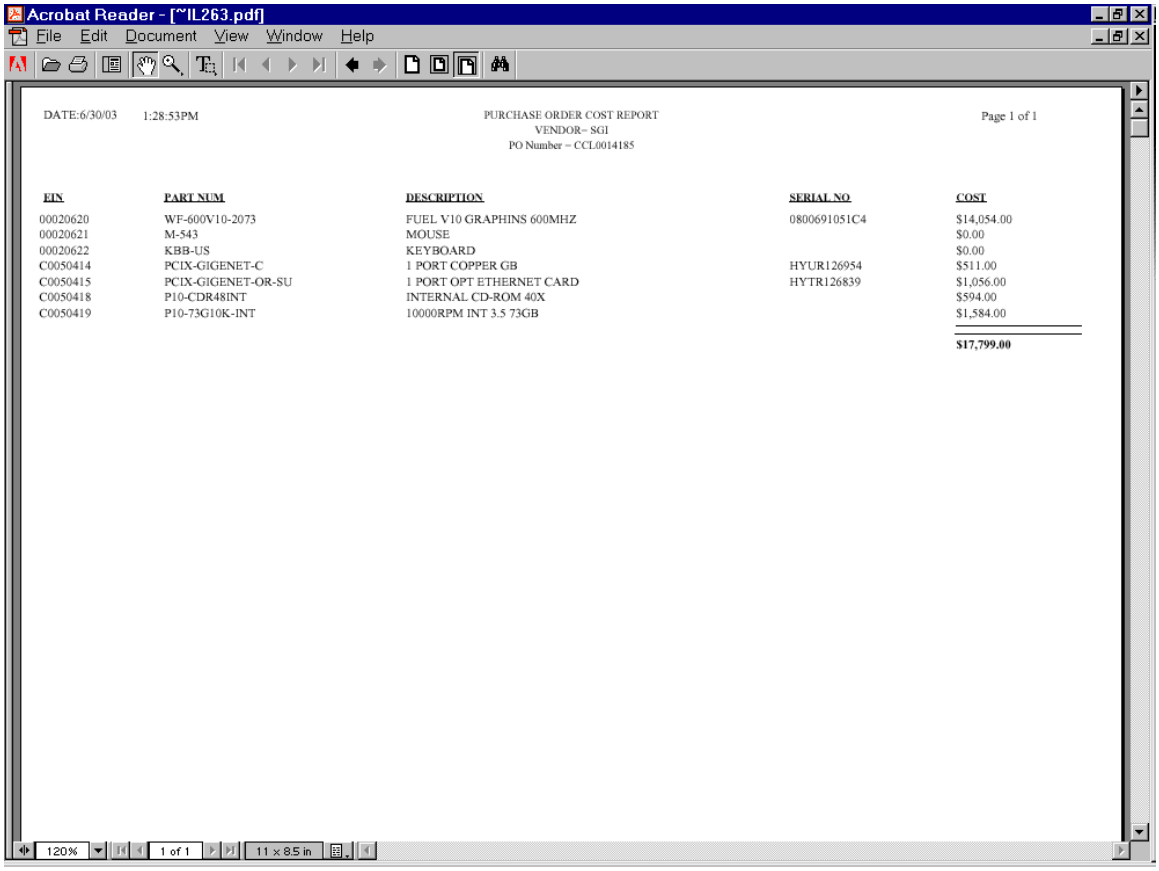
Figure 4.3.4-47. Quarterly Property Management Report



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PURCHASE ORDER COST REPORT
VENDOR– SGI
PO Number – CCL0014185

Page 1 of 1

EIN	PART NUM	DESCRIPTION	SERIAL NO	COST
00020620	WF-600V10-2073	FUEL V10 GRAPHINS 600MHZ	0800691051C4	$14,054.00
00020621	M-543	MOUSE		$0.00
00020622	KBB-US	KEYBOARD		$0.00
C0050414	PCIX-GIGENET-C	1 PORT COPPER GB	HYUR126954	$511.00
C0050415	PCIX-GIGENET-OR-SU	1 PORT OPT ETHERNET CARD	HYTR126839	$1,056.00
C0050418	P10-CDR48INT	INTERNAL CD-ROM 40X		$594.00
C0050419	P10-73G10K-INT	10000RPM INT 3.5 73GB		$1,584.00
				$17,799.00

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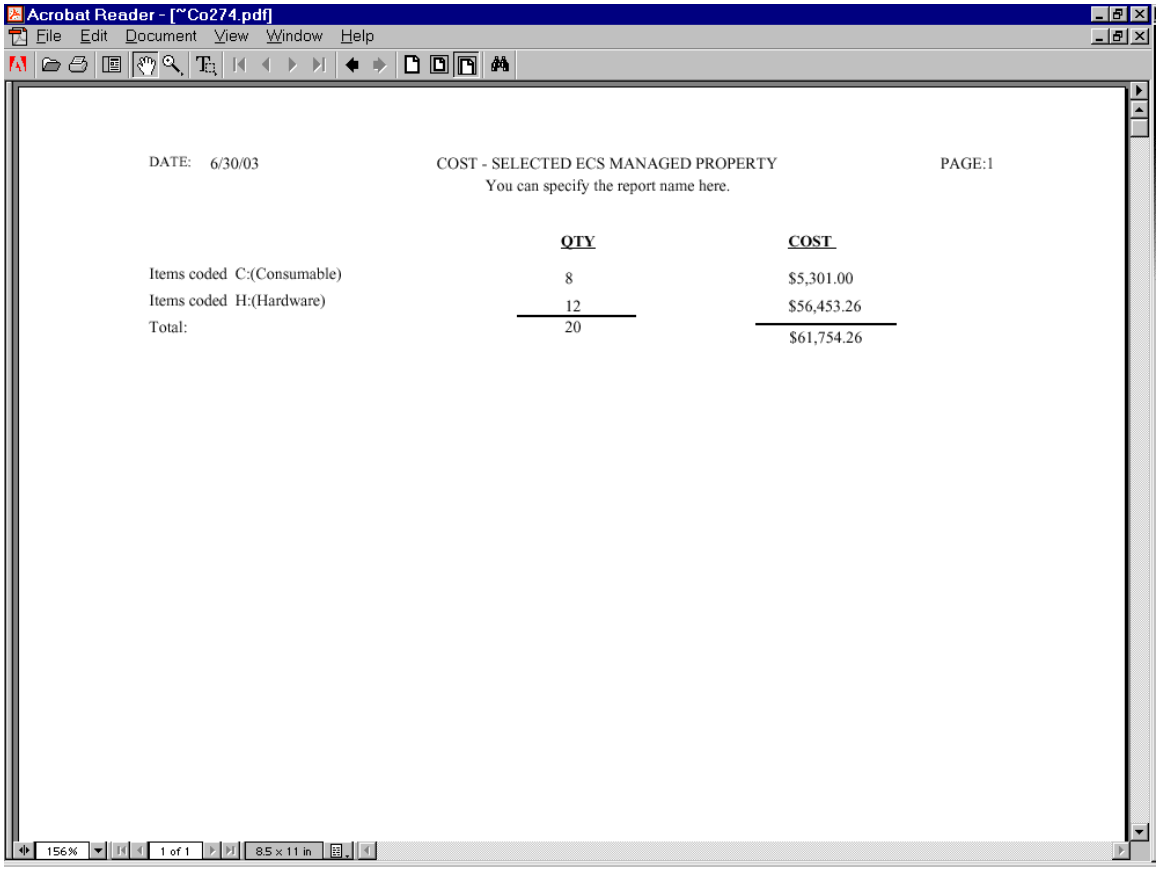
Figure 4.3.4-48. Purchase Order Cost Report



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DATE: 6/30/03 COST - SELECTED ECS MANAGED PROPERTY PAGE:1

You can specify the report name here.

	QTY	COST
Items coded C:(Consumable)	8	$5,301.00
Items coded H:(Hardware)	12	$56,453.26
Total:	20	$61,754.26

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Figure 4.3.4-49. Cost - Select ECS Managed Property Report

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Date: 6/30/03 1:32:07PM **EIN Transaction History Report** Page 1 of 1

EIN: C0001851
ECS_Name: IN STOCK
Description: 10 BASE T TRANS
Part_No: AT210TS
Serial_No:
MFR: ATI
Location: EDF
Room: 1073
Status: R

Trans_Type	Date	Operator_ID	From_Location	To_Location	From_Parent	To_Parent
RTS	6/4/03	ilmuser	EDF	EDF	00000127	
MFV	6/4/03	ilmuser	EDF	EDFARC	00001881	
REL	6/25/03	ttran	EDFARC		00000127	
REL	6/26/03	ttran	EDFARC		00000127	

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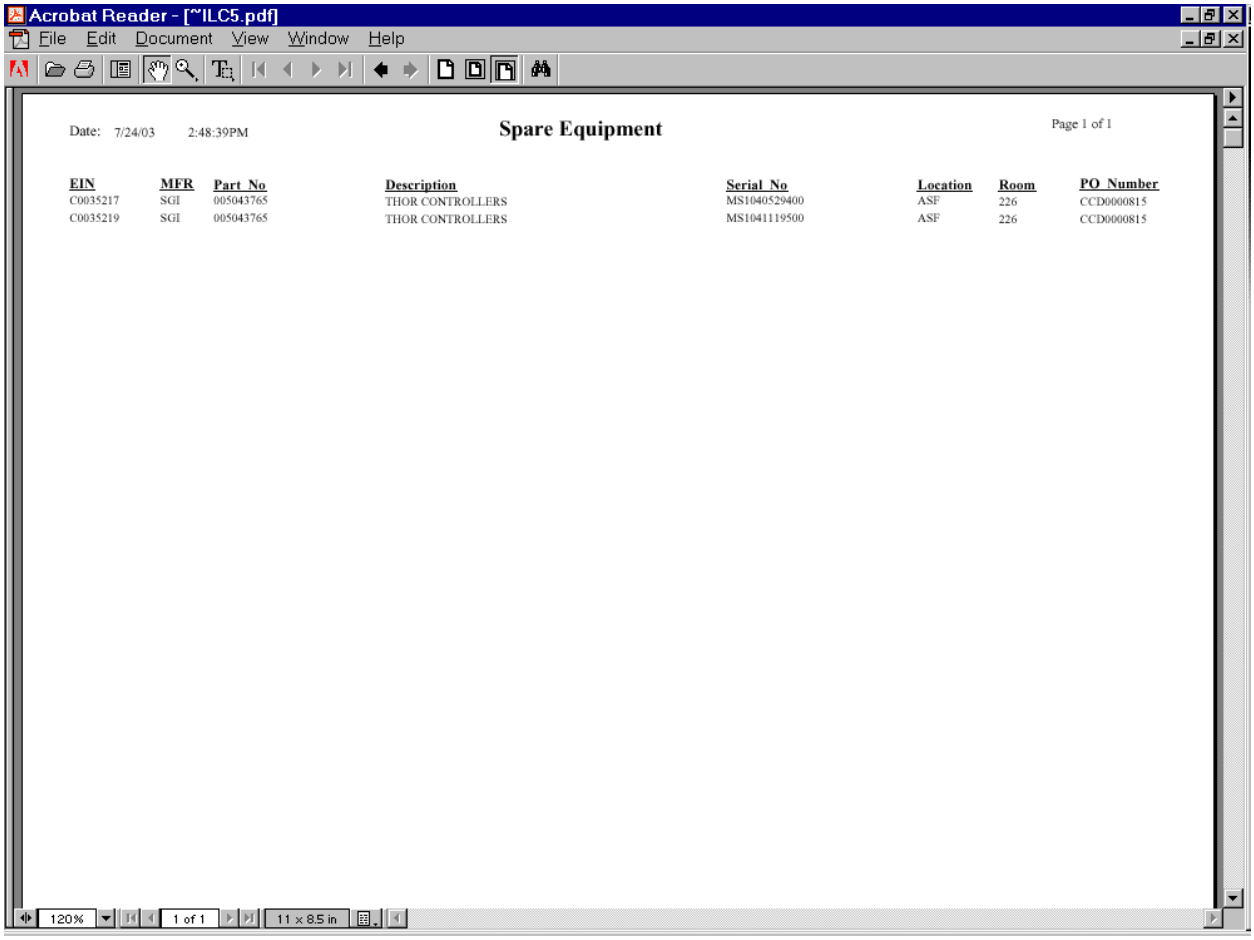
Figure 4.3.4-50. EIN Transaction History Report



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Spare Equipment

Page 1 of 1

EIN	MFR	Part No	Description	Serial No	Location	Room	PO Number
C0035217	SGI	005043765	THOR CONTROLLERS	MS1040529400	ASF	226	CCD0000815
C0035219	SGI	005043765	THOR CONTROLLERS	MS1041119500	ASF	226	CCD0000815

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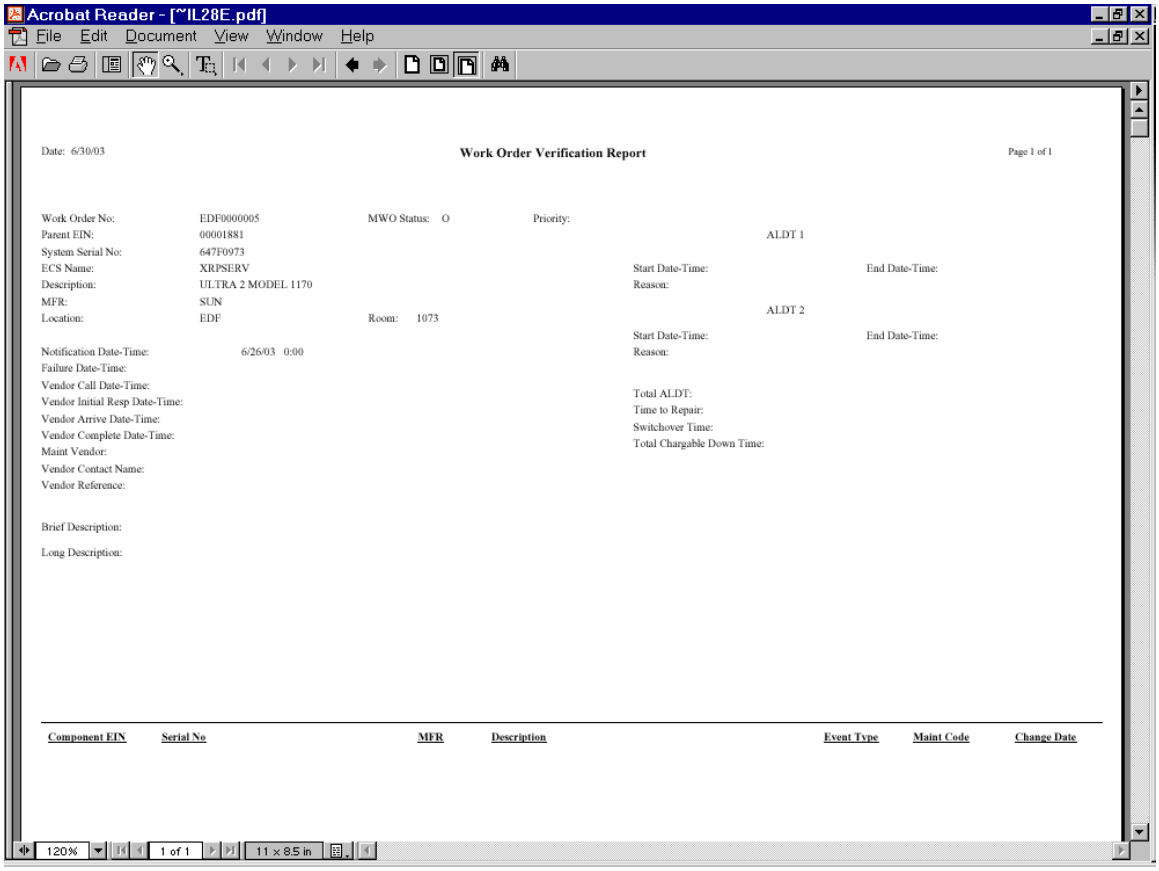
Figure 4.3.4-51. Spare Equipment Report



Acrobat Reader - [~IL28E.pdf]

File Edit Document View Window Help

Date: 6/30/03

Work Order Verification Report

Page 1 of 1

Work Order No: EDF0000005 MWO Status: O Priority:
Parent EIN: 00001881
System Serial No: 647F0973
ECS Name: XRPSERV
Description: ULTRA 2 MODEL 1170
MFR: SUN
Location: EDF Room: 1073

ALDT 1
Start Date-Time: End Date-Time:
Reason:

ALDT 2
Start Date-Time: End Date-Time:
Reason:

Notification Date-Time: 6/26/03 0:00
Failure Date-Time:
Vendor Call Date-Time:
Vendor Initial Resp Date-Time:
Vendor Arrive Date-Time:
Vendor Complete Date-Time:
Maint Vendor:
Vendor Contact Name:
Vendor Reference:

Total ALDT:
Time to Repair:
Switchover Time:
Total Chargable Down Time:

Brief Description:

Long Description:

Component EIN	Serial No	MFR	Description	Event Type	Maint Code	Change Date

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Figure 4.3.4-52. Maintenance Work Order Verification Report

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File Edit Document View Window Help

Date: 7/25/03 **Maintenance Contract Report** Page 2 of 7

Contract_ID: CCJ14086

Maint_Vendor:

Type_of_Support: EMOS MAINT

Start_Date: 11/1/02

Expiration_Date: 9/30/04

EIN	ECS_Name	Part_No	Description	Serial_No	Location	PO_Number
00008981	TIGGER	A21UJC1A9P256CP	SUN ULTRA 5 WORKSTATION	FN04520463	EMOSD	CCJ0014086
00009645		A26-UJC2-2GGD1	SERVER - SUN ENTERPRISE 250	124C0C4F	EMOSD	CCJ0014086
00009646		A26-UJC2-1GGB1	SERVER - SUN ENTERPRISE	123C055E	EMOSD	CCJ0014086
00014555		A23ULD29L512AV	SUN ULTRA 60, MODEL 2450	138C0314	EMOSD	CCJ0014086
00014508		AZ1UJC1Z9PC256C	SUN ULTRA 5, MODEL 400	FW13810287	EMOSD	CCJ0014086
00014509		AZ1UJC1Z9PC256C	SUN ULTRA 5, MODEL 400	FW13820105	EMOSD	CCJ0014086
00014511		AZ1UJC1Z9PC256C	SUN ULTRA 5, MODEL 400	FW13740159	EMOSD	CCJ0014086
00011914		AZ1UJC1Z9PC256C	SUN ULTRA 5, MODEL 400	FW13840181	EMOSD	CCJ0014086
00011960		AZ1UJC1Z9PC256C	SUN ULTRA 5, MODEL 400	FW13840233	EMOSD	CCJ0014086
00001991	RAVEN	A11-UAA1-1B-064AB	ULTRA 1 MODEL 140	644F0C01	EMOSD	CCJ0014086
00002395	eocsesparc01	A14-UBA1-1E-064AB	ULTRA 2 MODEL 1170	708F0797	EMOSD	CCJ0014086
00002399	eocsesparc06	A14-UBA1-1E-064AB	ULTRA 2 MODEL 1170	708F079A	EMOSD	CCJ0014086
00003404	r0uss15	A11-UAA1-1A-064AB	ULTRA 1 MODEL 140	719F1431	EMOSD	CCJ0014086
00003405	r0uss16	A11-UAA1-1A-064AB	ULTRA 1 MODEL 140	719F14F2	EMOSD	CCJ0014086

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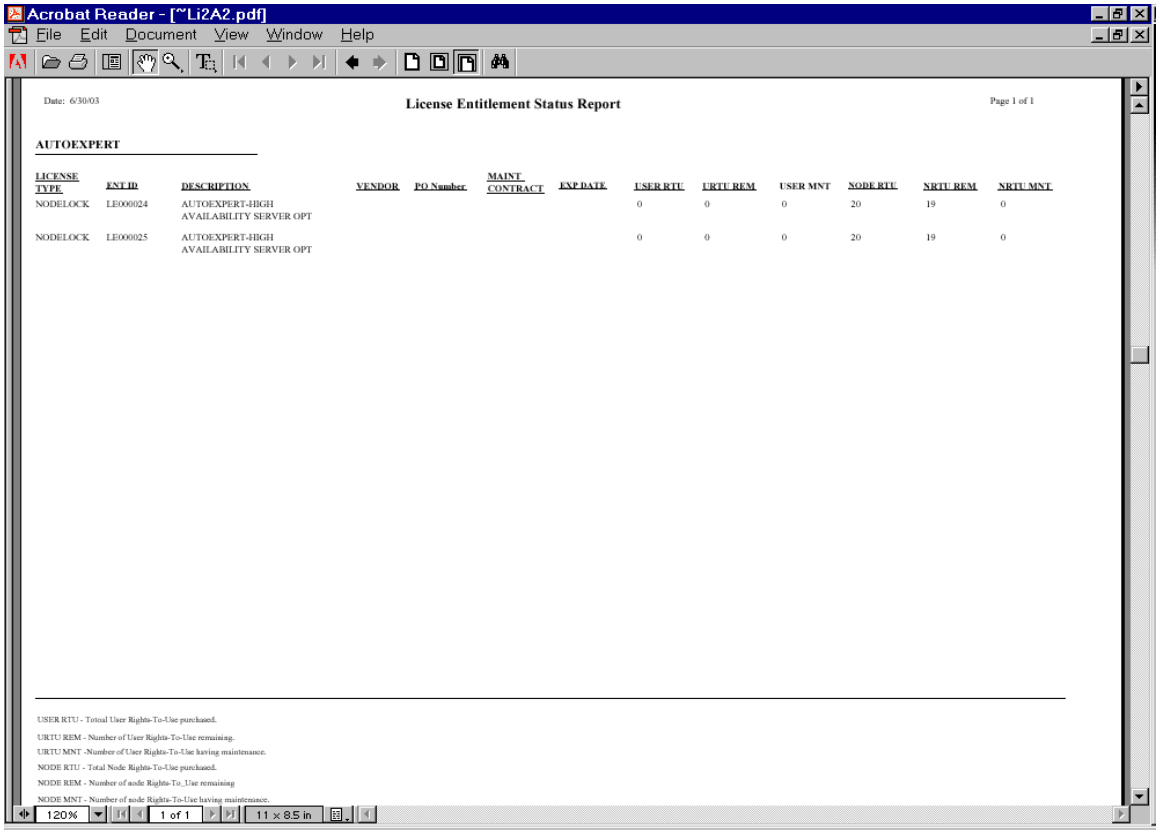
Figure 4.3.4-53. Maintenance Contract Report

Work Order	MFR	Description of System Down	System Name	Site	Date/Time Partially/ Capable	Total Partially Capable Time (HRS)	Date/Time System Down	Date Returned to Operation	Total Down Time (HRS)	Restore Time	Problem Description & Solution	Notes
EDC000 0509	SGI	RACK SERVER BASIC CHASIS	e0drg12	EDC	10/16/02 9:00	10/16/02	9:00	10/16/02 10:00	1.0	1.0	System board crashed due to bad node board.	Downtime was the result of troubleshooting and repair actions. System took an hour to restore but was operational.
LaR0000 269	STK	9940A	STK Powerde rhorn silo2	LaRC	10/15/02 8:00	28.0		10/16/02 12:00			Bad drive. Replace drive.	
EDC000 0498	STK	Small Communic ations Rack	e0hippi1	EDC	09/30/02 5:15	224.7		09/30/02 16:00			Bad HIPPI fiber Channel card going to e0drg12.	No Down time associated because Ops had an alternative path GB router.
EDC000 0500	SUN	Enterprise 4000 Enclosure 8-Slot Card Ca	e0sps04	EDC	09/09/02 2:45	8.3		09/09/02 11:00			32MB simm had parity errors causing box to reboot.	There are redundant cpu boards with memory.

Figure 4.3.4-54. RMA Report



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File Edit Document View Window Help

Date: 6/30/03

License Entitlement Status Report

Page 1 of 1

AUTOEXPERT

LICENSE TYPE	ENT ID	DESCRIPTION	VENDOR	PO Number	MAINT CONTRACT	EXP DATE	USER RTU	URTU REM	USER MNT	NODE RTU	NRTU REM	NRTU MNT
NODELOCK	LE000024	AUTOEXPERT-HIGH AVAILABILITY SERVER OPT					0	0	0	20	19	0
NODELOCK	LE000025	AUTOEXPERT-HIGH AVAILABILITY SERVER OPT					0	0	0	20	19	0

USER RTU - Totoal User Rights-To-Use purchased.

URTU REM - Number of User Rights-To-Use remaining.

URTU MNT -Number of User Rights-To-Use having maintenance.

NODE RTU - Total Node Rights-To-Use purchased.

NODE REM - Number of node Rights-To_Use remaining

NODE MNT - Number of node Rights-To-Use having maintenance.

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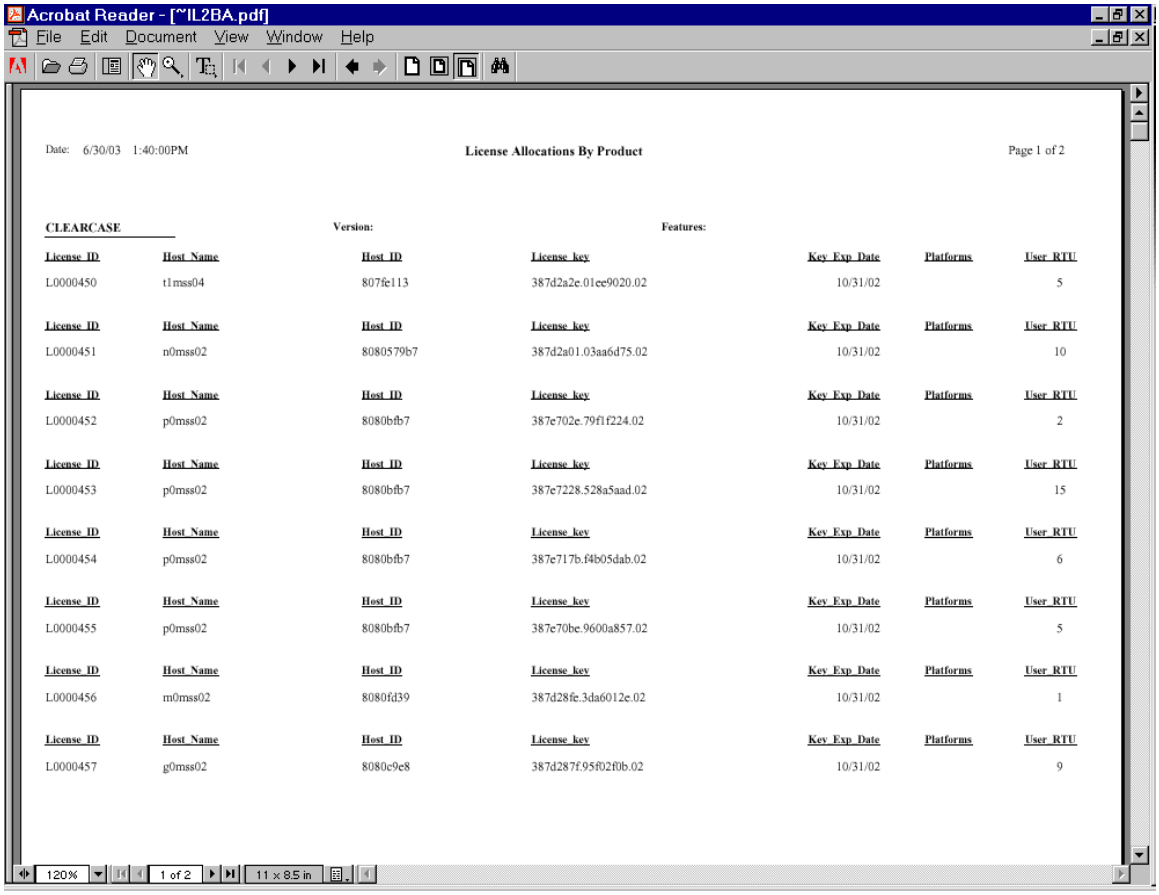
Figure 4.3.4-55. License Entitlements Status Report



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File Edit Document View Window Help

Date: 6/30/03 1:40:00PM

License Allocations By Product

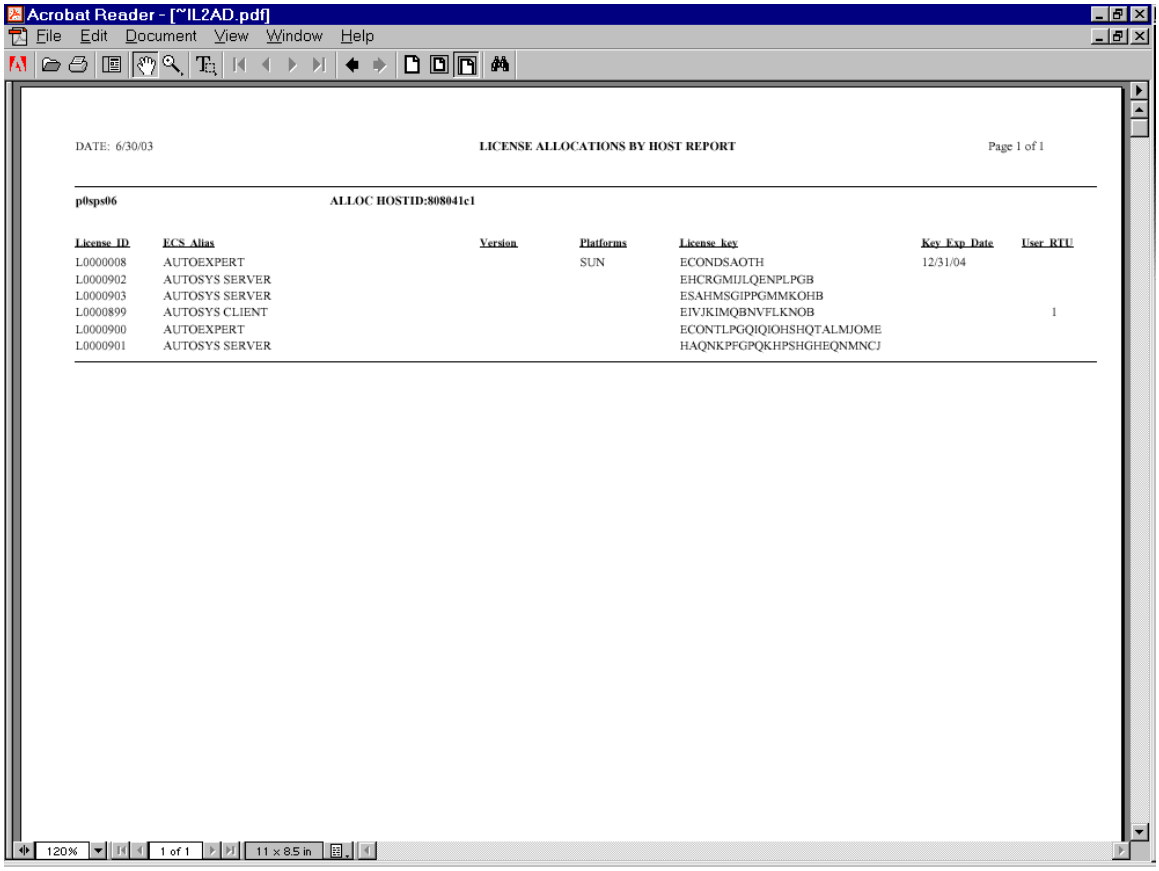
Page 1 of 2

CLEARCASE **Version:** **Features:**

License_ID	Host_Name	Host_ID	License_key	Key_Exp_Date	Platforms	User_RTU
L0000450	t1mss04	807fe113	387d2a2e.01ee9020.02	10/31/02		5
L0000451	n0mss02	8080579b7	387d2a01.03aa6d75.02	10/31/02		10
L0000452	p0mss02	8080bfb7	387e702e.79f1f224.02	10/31/02		2
L0000453	p0mss02	8080bfb7	387e7228.528a5aad.02	10/31/02		15
L0000454	p0mss02	8080bfb7	387e717b.f4b05dab.02	10/31/02		6
L0000455	p0mss02	8080bfb7	387e70be.9600a857.02	10/31/02		5
L0000456	m0mss02	8080fd39	387d28fe.3da6012e.02	10/31/02		1
L0000457	g0mss02	8080c9e8	387d287f.95f02f0b.02	10/31/02		9

120% 1 of 2 11 x 8.5 in

Figure 4.3.4-56. License Allocations by Product Report



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File Edit Document View Window Help

DATE: 6/30/03 **LICENSE ALLOCATIONS BY HOST REPORT** Page 1 of 1

p0sps06 **ALLOC HOSTID:808041c1**

License_ID	ECS_Alias	Version	Platforms	License_key	Key_Exp_Date	User_RTU
L0000008	AUTOEXPERT		SUN	ECONDSAOTH	12/31/04	
L0000902	AUTOSYS SERVER			EHCRGMIJLQENPLPGB		
L0000903	AUTOSYS SERVER			ESAHMSGIPPGMMKOHB		
L0000899	AUTOSYS CLIENT			EIVJKIMQBNVFLKNOB		1
L0000900	AUTOEXPERT			ECONTLPGQIQIOHSHQTALMJOME		
L0000901	AUTOSYS SERVER			HAQNKPFGPQKHPSHGHEQNMNCJ		

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Figure 4.3.4-57. License Allocations by Host Report

4.3.5 FLEXnet Publisher

FLEXnet (formerly FLEXlm) is a commercially available network license management product from Acresso Software that helps ECS sites administer licenses and enforce licensing provisions for FLEXnet-enabled COTS software. It enforces licensing provisions based on information from vendor-provided license keys and lets license administrators allow, deny, or reserve check out of licenses based on user, host, or display. FLEXnet handles floating (concurrent use) licenses, node locked licenses, and combinations of the two.

FLEXnet processing elements include license manager daemons, vendor daemons, license files, and FLEXnet-enabled applications. One or more license manager daemons control vendor daemon operations and enables client applications to contact them. Vendor daemons grant or deny concurrent use licenses requested by applications, tracking how many are checked out and by which users. License files are text files that contain the provisions for one or more licenses from one or more vendors, including the name of the vendor daemon needed to serve the license and the host(s) to use as license server(s). The applications communicate with the license and vendor daemons using embedded FLEXnet client software to request licenses in order to run.

FLEXnet permits use of single, multiple, or redundant server hosts, and can operate more than one license manager daemon on a given node. A license manager daemon serves all the licenses in the license file it uses, and different license files use separate license manager daemons (distinguished by the port number they use to communicate). In a redundant license server configuration, license manager daemons for a license file are executed on three server nodes such that all licenses in the file are available if any two out of the three server nodes is running. In a multiple license server configuration, licenses are allocated among multiple license files and a separate license manager daemon is run for each file.

Table 4.3.5-1 summarizes the operating functions that FLEXnet supports.

Table 4.3.5-1. Common ECS Operator Functions Performed with FLEXnet (1 of 2)

Operating Function	Function Name	Description	When and Why to Use
Start license manager	lmgrd	Starts FLEXnet's main daemon program, which reads the license file and manages vendor daemons and the connections between them and their client applications.	Used to initiate license management server processes.
Stop license manager	lmdown	Shuts down all license daemons (both lmgrd and all vendor daemons) on all nodes.	Used anytime to stop network license activities, such as when the license manager host is to be rebooted.

Table 4.3.5-1. Common ECS Operator Functions Performed with FLEXnet (2 of 2)

Operating Function	Function Name	Description	When and Why to Use
Install decimal format licenses	lminstall	Converts licenses between decimal and readable formats and between different versions of FLEXnet license formats.	Used anytime primarily to install decimal format licenses in readable format.
Read new licenses	lmreread	Causes the license servers to reread the license file they are using and start any new vendor daemons.	Used anytime to put the provisions of an updated license file into effect.
Monitor the status of network licensing activities	lmstat	Generates lists containing such information as active licenses, users of licensed product features, users of individual license management daemons, and status of server nodes.	Used anytime to check on the health and functioning of license server daemons, identify licenses installed, determine licenses in use, or review logged licensing events.
Rotate report log	lmnewlog	Causes a vendor daemon to move its existing report log information to a new file.	Used anytime to prevent report logs from growing too large.
Switch to new debug log	lmswitch	Causes a vendor daemon to use a new or different file as its debug log.	Used anytime to record one vendor's debug information in a file separate from the others'.
Switch to new report log	lmswitchr	Causes the license servers to use a new or different file as the report log.	Used anytime to move daemon logging to a different location.
Troubleshoot problems serving licenses	lmdiag	Performs problem diagnosis.	Used anytime to help determine why a license cannot be checked out.
Obtain license key from vendor	lmhostid	Reports the hostid of a system.	Used anytime to determine the host code that must be provided to vendors when obtaining a software license.
Recover inaccessible licenses	lmremove	Removes a single user's license for a specified feature.	Used when a client node crashes in order to recover a checked out license not automatically freed.
Determine version compatibility between the license server and an application	lmver	Reports the FLEXnet version of a library of binary files.	Used anytime to determine what version of FLEXnet a FLEXnet-enabled product uses.

4.3.5.1 Quick Start Using FLEXnet Publisher

Operators interact with FLEXnet via the license manager daemons and license files. FLEXnet's user interface is a set of Unix-like commands for starting, stopping, and requesting services from a license manager daemon. Command arguments specify input parameters, most notably the name of the license file whose contents determine the servers, daemons, and license provisions affected by the command. Operators install and maintain license files using any preferred editor.

4.3.5.1.1 Command Line Interface

To start FLEXnet license server daemons in a consistent, predictable manner, start the flexnet service:

```
> service flexnet start
```

Before it invokes FLEXnet's "lmgrd" program, the script adds the extension "_old" to the current FLEXnet log file (if any) so the new daemon will create its own. It then runs "lmgrd" as user "flexlm" to avoid running as "root", and it specifies the license and log file paths the daemons are to use (i.e., "/var/flexnet/license.dat" and "/tmp/license_log", respectively).

If license manager daemons are needed to serve licenses in additional license files, they can be started by running the "lmgrd" program as follow:

```
> su flexlm  -c "umask 022; /var/flexnet/lmgrd -c license_file -l logfile -p &"
```

To stop the FLEXnet license daemons that are running on all machines in the network, execute the FLEXnet command:

```
> /var/flexnet/lmdown –c license_file_list -all
```

However, to shut down the license manager daemons on a single machine only, log on to the machine and type the following command instead:

```
> service flexnet stop
```

Table 4.3.5-2 summarizes commands available with FLEXnet. See the *FLEXnet Licensing End Users Guide* for the complete description of each command and its arguments.

Table 4.3.5-2. Command Line Interfaces (1 of 3)

Command Line Interface	Description and Format	When and Why Used
lmborrow	lmborrow {*vendor* | all} enddate [*time*]	To use a license temporarily on a computer intermittently connected to the license server.
lmdiag	lmdiag [-c *license_file_list*] \ [-n] [*feature*[:*keyword*=*value*]]	To diagnose problems when a license cannot be checked out.
lmdown	lmdown [-c *license_file_list*] [-q] [-all] [-force	To shutdown selected license daemons (both lmgrd and selected vendor daemons) on all nodes.

Table 4.3.5-2. Command Line Interfaces (2 of 3)

Command Line Interface	Description and Format	When and Why Used
lmgrd	lmgrd [-c *license_file_list*] \ [-l [+]*debug_log_path*] [-2 -p] [-local] \ [-x lmdown] [-x lmremove] [-z] [-v] \ [-help]	To run the main daemon program for FLEXnet.
lmhostid	lmhostid [-n] [-type] [-utf8]	To determine the hostid of a system.
lminstall	lminstall [-i in_lic_file] [-maxlen n] [-e err_file] [-o out_lic_file] [-overfmt {2 | 3 | 4 | 5 | 5.1 | 6 | 7 | 7.1 | 8}] [-odecimal]	To convert licenses between decimal and readable formats and between different versions of FLEXnet formats.
lmnewlog	lmnewlog [-c *license_file_list*] \ *feature renamed_report_log* <u>or</u>: lmnewlog [-c *license_file_list*] \ *vendor renamed_report_log*	To move an existing report log to a new file and start a new log at the original filename.
lmpath	lmpath {-add | -override} {*vendor* | all} *license_file_list*	To add to, override, or get the current license path settings
lmremove	lmremove [-c *license_file_list*] *feature user user_host display* <u>or</u> lmremove [-c *license_file_list*] \ -h *feature server_host port handle*	To remove a single user's license for a specified feature. (This is only needed when a client node crashes, since that's the only condition where a license is not automatically freed. If the application is active, it checks out the license again after it is freed by lmremove.)
lmreread	lmreread [-c *license_file_list*] \ [-vendor *vendor*] [-all]	To cause the license daemon to reread the license file and start any new vendor daemons that have been added. In addition, one or all pre-existing daemons are signaled to reread the license file for changes in feature licensing information.
lmswitch	lmswitch [-c *license_file_list*] \ *vendor new_debug_log*	To start a new debug log for a vendor daemon, using a new filename.
lmswitchr	lmswitchr [-c *license file*] *feature* \ *new-file* <u>or</u> lmswitchr [-c license file] *vendor* \ *new-file* *(v5.0+ onl)*	To start recording license events in a new or different log file.

Table 4.3.5-2. Command Line Interfaces (3 of 3)

Command Line Interface	Description and Format	When and Why Used
lmstat	lmstat [-a] [-c *license_file_list*] \ [-f [*feature*]] \ [-i [*feature*] [-s[*server*][-S [*vendor*]] \ [-t *timeout_value*]	To report the status of all network licensing activities.
lmver	lmver *filename*	To identify the FLEXnet version of a library or binary file.

4.3.5.2 FLEXnet Main Screen

FLEXnet does not provide for operator interaction via a GUI. All interactions are through the Unix command line or a Unix script.

4.3.5.3 Required Operating Environment

For all COTS packages, appropriate information on operating environments, tunable parameters, environment variables, and a list of vendor documentation can be found in a CM-controlled document for each product. To find the installation and release notes for FLEXnet Publisher, refer to the Release Notes posted on the EMD Baseline Information System web page at your local site.

4.3.5.4 Databases

FLEXnet uses license and options files in lieu of a database. License files are independent text files, each of which contains all the site-specific information FLEXnet needs to serve the licenses specified in the file. Every license manager daemon requires a license file, and different license files require separate license manager daemons. To simplify operations, operators may combine license files obtained from multiple vendors if they are compatible. Refer to the *FLEXnet Licensing End User Guide* for information about the format of a license file, and when and how to combine them.

Options files are text files associated with specific vendor daemons named in license files. These files allow the operator to specify criteria for granting licenses to users, wait time before reclaiming inactive licenses, and how much license usage information is to be logged. FLEXnet does not require an options file. When specified however, there can only be one options file per vendor daemon, and each vendor needs a separate options file. See the *FLEXnet Licensing End User Guide* for details.

4.3.5.5 Special Constraints

FLEXnet cannot be run without one or more license files, and most FLEXnet commands require the name of a license file in order to execute. License files identify the host and port number a client is to use to communicate with the license server. If the license file parameter is missing from the command, FLEXnet tries using the file(s) named in the environment variable LM_LICENSE_FILE. If LM_LICENSE_FILE is not set, the default license file name */var/flexnet/license.dat* is assumed.

The *FLEXnet Licensing End User Guide* recommends the following operating constraints:

- Keep a copy or link of the license file in the vendor's "default" location; some vendors expect to find their license files at pre-determined locations. Refer to the *FLEXnet Licensing End Users Guide*.
- Run lmgrd as a non-privileged user (not *root)* to avoid security risks. Refer to the *FLEXnet Licensing End Users Guide.*

4.3.5.6 Outputs

FLEXnet's principal outputs are inter-process communications with COTS applications attempting to check out and check in FLEXnet licenses, but these are generally transparent to the operator. Outputs visible to the operator include an ASCII log of network licensing events and errors, and messages constituting responses to operator-entered commands.

4.3.5.7 Event and Error Messages

FLEXnet writes both status and error messages to standard output. Typically, operators redirect all output from the startup command "lmgrd" to a file, known as the debug file, to create a FLEXnet log at the site.

See the appendices of the *FLEXnet Licensing End User Guide* lists what causes the more common messages an operator may encounter, but primarily those written by the FLEXnet programs. Event and error messages logged by FLEXnet-enabled COTS applications are sometimes found in the application's manuals. Messages are typically self-explanatory and identify the date/time of the event, the license server host, the product or feature involved, and the name of the user.

4.3.5.8 Reports

FLEXnet's *lmstat* utility can generate the status reports listed in Table 4.3.5-3. Each is written to standard output and may be redirected to a named file or a printer using standard Unix conventions. Reports are generated on demand as required to meet operational needs.

Table 4.3.5-3. Reports

Report Type	Report Description	Example
lmstat -s	Lists status of clients running on a named host.	Figure 4.3.5-1
lmstat -i	Lists license information about all or a named feature.	Figure 4.3.5-2
lmstat -a	Lists all information about current network licensing activities.	Figure 4.3.5-3
lmstat -A	Lists all currently active licenses.	Figure 4.3.5-4
lmstat -f	Lists users of all or a named feature.	Figure 4.3.5-5
lmstat -S	Lists users of all or a named vendor's features.	Figure 4.3.5-6

4.3.5.8.1 Sample Reports

The figures (Figure 4.3.5-1 through 4.3.5-6) that follow contain sample FLEXnet status reports. One sample is provided for each report listed in Table 4.3.5-3.

```
lmstat - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or Macrovision Corporation. All
Rights Reserved.
Flexible License Manager status on Mon 6/23/2008 13:18

License server status: 1726@p4nsl01
    License file(s) on p4nsl01: /var/flexnet/license.dat:

   p4nsl01: license server UP (MASTER) v10.8

Vendor daemon status (on p4nsl01):

  rational: UP v10.8
```

Figure 4.3.5-1. All Clients (lmstat -s) Report

```
lmstat - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or Macrovision Corporation. All
Rights Reserved.
Flexible License Manager status on Mon 6/23/2008 13:16

NOTE: lmstat -i does not give information from the server,
      but only reads the license file.  For this reason,
      lmstat -a is recommended instead.

Feature                 Version   # licenses    Expires         Vendor
_______                 _______   __________    _______         ______
PurifyPlusUNIX          5.00000       1         1-jan-0 rational
```

Figure 4.3.5-2. License Information (lmstat -i) Report

```
lmstat - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or Macrovision Corporation. All
Rights Reserved.
Flexible License Manager status on Mon 6/23/2008 13:19

License server status: 1726@p4nsl01
    License file(s) on p4nsl01: /var/flexnet/license.dat:

   p4nsl01: license server UP (MASTER) v10.8

Vendor daemon status (on p4nsl01):

  rational: UP v10.8

Feature usage info:

Users of PurifyPlusUNIX:  (Total of 1 license issued;  Total of 0 licenses in use)
```

Figure 4.3.5-3. All Licensing Activities (lmstat -a) Report

```
lmstat - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or Macrovision Corporation. All
Rights Reserved.
Flexible License Manager status on Mon 6/23/2008 13:20

License server status: 1726@p4nsl01
    License file(s) on p4nsl01: /var/flexnet/license.dat:

   p4nsl01: license server UP (MASTER) v10.8

Vendor daemon status (on p4nsl01):

  rational: UP v10.8

Feature usage info:
```

Figure 4.3.5-4. All Active Licenses (lmstat-A) Report

```
lmstat - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or Macrovision Corporation. All
Rights Reserved.
Flexible License Manager status on Mon 6/23/2008 13:21

License server status: 1726@p4nsl01
    License file(s) on p4nsl01: /var/flexnet/license.dat:

   p4nsl01: license server UP (MASTER) v10.8

Vendor daemon status (on p4nsl01):

  rational: UP v10.8

Feature usage info:

Users of PurifyPlusUNIX:  (Total of 1 license issued;  Total of 0 licenses in use)
```

Figure 4.3.5-5. Users of All or Named Features (lmstat-f) Report

```
lmstat - Copyright (c) 1989-2006 Macrovision Europe Ltd. and/or Macrovision Corporation. All
Rights Reserved.
Flexible License Manager status on Mon 6/23/2008 13:24

Feature usage info:

Users of PurifyPlusUNIX:  (Total of 1 license issued;  Total of 0 licenses in use)
```

Figure 4.3.5-6. Users of All or Named Vendor's Features (lmstat-S) Report

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4.3.6 TestTrack Pro

TestTrack Pro (TTPro) provides a Trouble Ticketing service that furnishes both ECS users and operations personnel at the DAACs a common environment for classifying, tracking, and reporting the occurrence and resolution of system-related problems. The Trouble Ticketing Service:

- Provides a GUI for operations personnel to access all Trouble Ticket functions.
- Provides a common Trouble Ticket entry format.
- Stores Trouble Tickets.
- Retrieves Trouble Tickets via ad-hoc queries.
- Allows operations personnel to escalate problems to the EDF for review and resolution.
- Generates reports and statistics.
- Interfaces with user's and operator's e-mail to provide automatic notification.
- Offers an application programming interface, Simple Object Access Protocol (SOAP) Software Development Kit (SDK), through which applications can submit and manage Trouble Tickets.
- Generates a variety of reports about Trouble Tickets, including trend reports.
- Defines a consistent "life-cycle" for Trouble Tickets.
- Can be extended readily due to its highly customizable fields, workflow rules, system notifications, and user permissions.

TTPro gives ECS operators, technicians, and managers the means to manage a system defect through its lifecycle, whether as a Trouble Ticket at a DAAC or a non-conformance report at the EDF. Within TTPro a separate project (also known as a "database") exists for each ECS site's Trouble Tickets.

TTPro has a client/server architecture. The server is hosted on a Linux machine at the EDF, while client access is available locally or remotely via Windows-, Linux-, Mac OS, and Web-based clients.

User Services and other operations and support personnel use TTPro to perform the functions listed in Table 4.3.6-1. The sections that follow describe the GUIs that perform these functions, many of which include customizations made for ECS. Standard product features are mentioned but not discussed in detail. For more information about them, use the context sensitive help the tool provides, or refer to the following TestTrack vendor documents:

- *Getting Started with TestTrack*
- *Seapine TestTrack User Guide, Version 2009*
- *Seapine TestTrack Web User Guide, Version 2009*
- *Seapine License Server Admin Guide, Version 2009*

Table 4.3.6-1. Common ECS Operator Functions Performed using TestTrack Pro (1 of 3)

Operating Function	GUI (Section)	Description	When and Why to Use
Access defect tracking services	Login screens (4.3.6.2)	• Operators start their client of choice and use the Login screens to access a TTpro project. The Login screen is the gateway to TestTrack Pro's features. By default, users land on the Trouble Ticket list screen from where all other functions can be performed.	When there is a need to submit, query, or revise a Trouble Ticket.
Submit a Trouble Ticket	Add Trouble Ticket screen (4.3.6.2.2)	• Operators add a new Trouble Ticket to the system. • Trouble Ticket form is used to enter information about the problem.	When a problem is either found by or reported to User Services.
Browse Trouble Tickets	Edit Trouble Ticket screen (4.3.6.2.3)	• Operators review existing Trouble Tickets. • Allows entry of new information about the problem and recording of events that advance the defect report through its lifecycle states.	When information needs to be added to a Trouble Ticket or when a Trouble Ticket needs to be viewed.
Escalate a Trouble Ticket to the EDF	Escalate screen (4.3.6.2.4.5)	• Operators raise an Escalate event that forwards a specified Trouble Ticket to the EDF. • A script uses TTPro's SOAP API to create a defect report in the Operations_NCRs project automatically using information from the Trouble Ticket. • Notifications are sent to the EDF and the ticket owner that a ticket has been escalated.	When assistance in resolving the Trouble Ticket is needed from the EDF or the problem requires a hardware or software change.

Table 4.3.6-1. Common ECS Operator Functions Performed using TestTrack Pro (2 of 3)

Operating Function	GUI (Section)	Description	When and Why to Use
Generate reports	Reports screen (4.3.6.2.5)	• Operators run or create new reports. The screen is accessed from the Trouble Ticket list screen. Reports can be viewed, created, edited, deleted, printed, or previewed by selecting the appropriate button on the Reports screen.	When information is needed about one or more Trouble Tickets.
Add, delete, or modify user accounts	License Server Admin tool's Global Users screen (4.3.6.2.13) TTPro Client Edit Users screen (4.3.6.2.8)	• TTPro administrators add, delete, and modify user profiles, including user IDs and passwords. • TTPro administrators assign operators and users to a security groups on a project-by-project basis. Each project's security groups enforce what the operator or user can do in that project.	When there is a need to update: 1) the list of operators and users authorized to access each project; 2) what features and records an operator or user can access; 3) contact information and/or passwords; and. 4) reset individual passwords.
Customize pulldown menus	Setup <field> Names screens (4.3.6.2.9-4.3.6.2.11)	• TTPro administrators add, edit, reorder, and delete values used in TTPro's field pulldown menus. This ensures that data is entered uniformly in fields used for categorizing defects.	When current menus require updating.

Table 4.3.6-1. Common ECS Operator Functions Performed using TestTrack Pro (3 of 3)

Operating Function	GUI (Section)	Description	When and Why to Use
Issue Notifications	Configure Automation Rules screen Edit Trouble Ticket screens User Options screen (4.3.6.2.10 & 4.3.6.2.11)	• TTPro administrators configure rules used by TTPro for issuing system notifications to individual operators and users. System notifications are used primarily to alert defect report assignees, submitters, etc. when their defect report or its status has changed. • Operators and users designate particular individuals to receive an e-mail whenever a Trouble Ticket or NCR has changed. • Operators and users define personal rules the system uses to e-mail them about changes to defect reports they are authorized to see.	To inform someone via e-mail when a Trouble Ticket or NCR changes in one or more of a variety of ways.

4.3.6.1 Quick Start Using TestTrack Pro

This section describes how to invoke TTPro. For more information, use the context sensitive help the tool provides, or refer to the following vendor documents:

- *Getting Started with TestTrack*
- *Seapine TestTrack User Guide, Version 2009*
- *Seapine TestTrack Web User Guide, Version 2009*

4.3.6.1.1 Invoking TestTrack Pro

The various TTPro clients are started differently.

To start the Windows client on Windows XP:

> Click **`Start`** → **`All Programs`** → **`Seapine Software`** → **`TestTrack Client`** on your desktop.

To start the Linux client, enter:

```
/usr/ecs/OPS/COTS/ttpro/bin/ttclient &
```

To start the Mac client, double-click the **TestTrack Client** icon in the Applications/TestTrack folder.

To start the Web client, open a browser and enter the following URL:

```
https://links.gsfc.nasa.gov:<port>
```

Under Windows, Linux, and Mac OS, a Login dialog box similar to that in Figure 4.3.6-1 will appear. (See Section 4.3.6.2.14 for a discussion of the Web login screen.)

Select the TestTrack Server you want to access, and enter your TTPro Username (i.e., login ID) and password. Since the URL for the Web client already specifies the server to use, its Login GUI requests only the Username and Password.

Figure 4.3.6-1. TestTrack Studio Login GUI

Table 4.3.6-2 provides a description of the Login screen's field.

Table 4.3.6-2. TestTrack Studio Login Field Descriptions

Field Name	Data Type	Size	Entry	Description
Server	Selection	*	Required	Your name for this TTPro server connection.
Username	Selection	*	Required	User's TTPro login id.
Password	Selection	*	Required	User's TTPro password.

***Note:** the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

The Login screen has the following buttons:

- **Setup…** Opens the Edit TestTrack Pro Server GUI for defining server connections
- **Connect** Submits user's credentials to determine which projects the user can access
- **Cancel** Closes the screen and ends the login sequence.

If using TTPro for the first time, the Add TestTrack Server GUI will appear so you can define a TTPro server connection (see Figure 4.3.6-2). Your TTPro administrator can help you set up the connection.

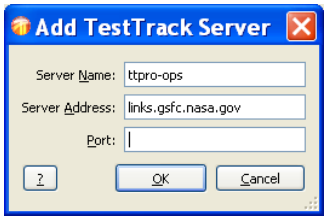


Figure 4.3.6-2. Add TestTrack Server GUI

Table 4.3.6-3 provides a description of the Add TestTrack Server screen's fields.

Table 4.3.6-3. Add TestTrack Server Field Descriptions

Field Name	Data Type	Size	Entry	Description
Server Name	Character	> 200	Required	Name of TTPro server connection.
Server Address	Character	> 200	Required	Fully qualified domain name of the TTPro server.
Port	Integer	5	Required	Port on which TTPro clients communicate with the TTPro server.

The TestTrack Project Selection screen has the following buttons:

- **OK** Adds the new server definition to the user's configuration
- **Cancel** Closes the screen without accepting entered data.

Upon username and password verification, the TestTrack Project Selection GUI appears (see Figure 4.3.6-3). Use this screen to specify which project to log in to. The Project picklist displays only the projects to which the user has access. If the picklist is empty or indicates that projects are loading, click **Refresh** after a few moments to retrieve a new list. You can set the **Always login to this project** checkbox to use this project as your default in the future.

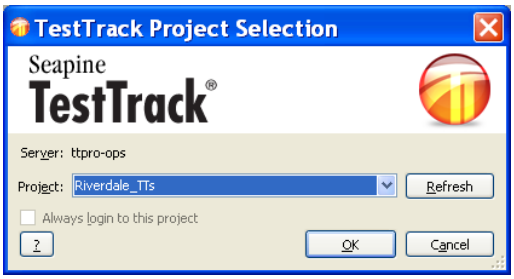


Figure 4.3.6-3. TestTrack Project Selection GUI

Table 4.3.6-4 provides a description of the TestTrack Project Selection screen's fields.

Table 4.3.6-4. TestTrack Project Selection Field Descriptions

Field Name	Data Type	Size	Entry	Description
Project	Selection	*	Required	Name of the project to logon to. Lists only the projects the user is authorized to access.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

The TestTrack Project Selection screen has the following buttons:

- **Refresh** Retrieves the latest list of available TestTrack projects the user is authorized to access.
- **OK** Logs the user into the selected project.
- **Cancel** Cancels the logon request.

The sections that follow describe the screens displayed by the Windows, Linux, and Mac clients. The Web Client provides the same functionality and fields, but the displays and user interactions are necessarily somewhat different.

4.3.6.2 Main Screen

TTPro's main screen is shown in Figure 4.3.6-4. From here Trouble Tickets can be submitted, queried, modified, and escalated. The GUI can manage multiple windows concurrently, and it offers a menu bar and a complement of movable toolbars for easily navigating system screens.

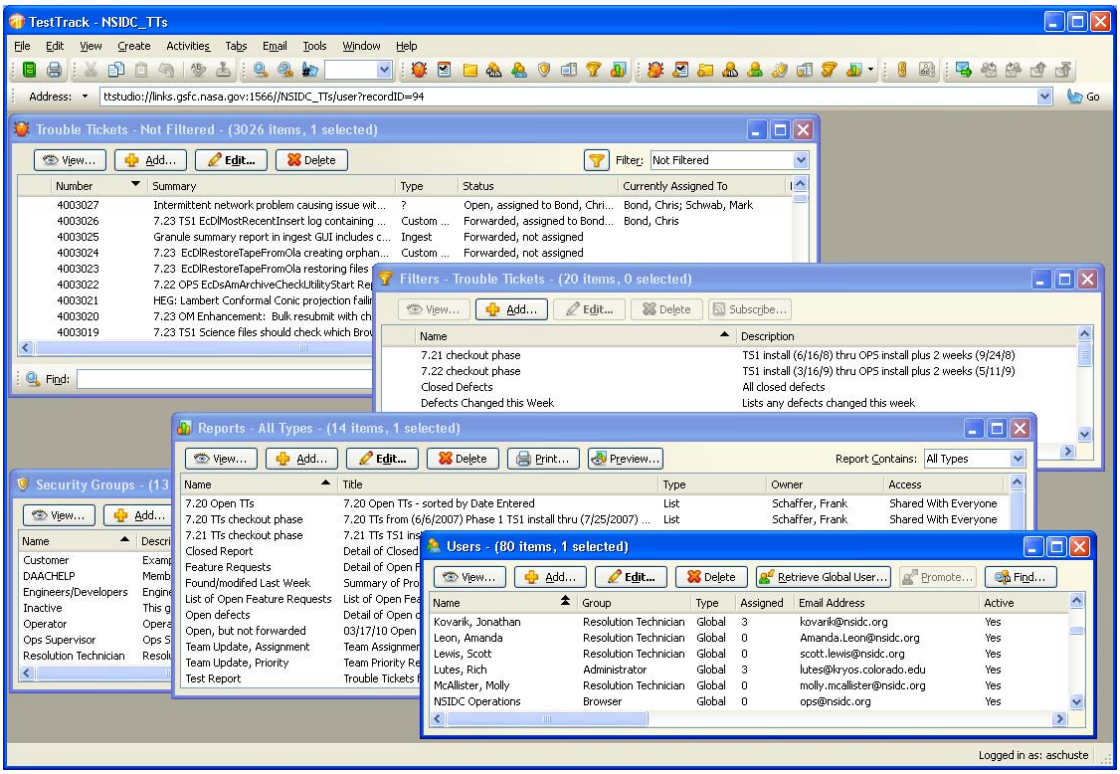


Figure 4.3.6-4. Main GUI

4.3.6.2.1 Trouble Ticket List Screen

Operators and users use the Trouble Ticket List screen (see Figure 4.3.6-5) to browse, select, and open one or more Trouble Tickets. Use the Filter pull down menu to retrieve the records you want. Initiate action on a Trouble Ticket by clicking on a row then on one of the action buttons. Initiate action on multiple records by dragging your mouse over several rows before pressing the action button.

The screen can be configured to display data as you prefer. Insert or remove columns of data by right-clicking on the column heading. Adjust the width of a column by dragging the bar in the column heading that separates it from its neighbor, or double-click on the bar to size it automatically. Sort the data by clicking on a column heading; add a secondary sort by holding the Shift key and clicking on a second column heading.

Important: Exit the screen by selecting **`File → Logout and Disconnect`** from the TTPro menu bar. On the Web client, use the **Logout** hyperlink. Otherwise, the system may not release the license immediately.

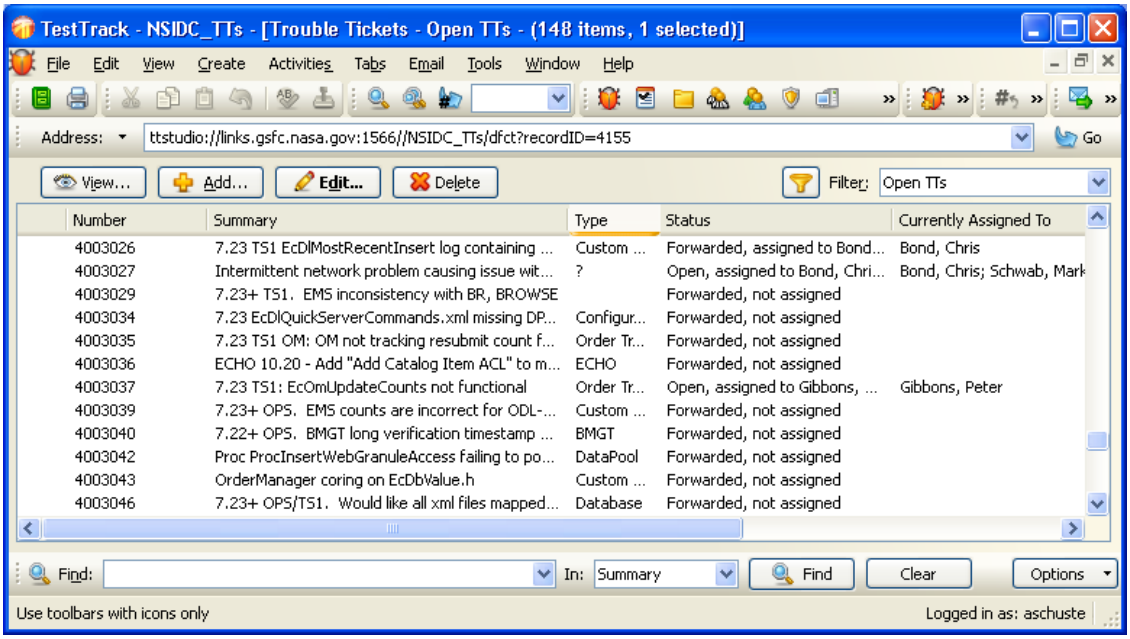


Figure 4.3.6-5. Trouble Tickets List GUI

Table 4.3.6-5 provides a description of the Trouble Ticket List screen's field.

Table 4.3.6-5. Trouble Tickets List Field Descriptions

Field Name	Data Type	Size	Entry	Description
Address	String	n/a	Optional	TTPro address for the current list window or open item. Can display ttstudio or http addresses.
Filter	Selection	*	Optional	Name for the set of criteria to be used by the system to determine which Trouble Tickets to display.
Find	String		Optional	Value to search for.
In	Selection	*	Optional	Field in which to search for the value.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

The Trouble Tickets List screen has the following buttons:

- **View…** Opens a Trouble Ticket for viewing only.
- **Add…** Opens the Add Trouble Ticket screen for submitting a new Trouble Ticket.
- **Edit…** Opens a Trouble Ticket for modification.
- **Delete** Removes a Trouble Ticket from the database

- **Find** Initiates a search for records that meet the criteria specified by values in the Find and In fields
- **Clear** Clears the find results
- **Options** Opens a menu of advanced conditions for tailoring a record search

4.3.6.2.2 Add Trouble Ticket Screen

The Add Trouble Ticket screen (Figures 4.3.6-6 thru 4.3.6-8) is used for reporting an operational issue or problem in ECS. Depending on how a user's options are configured, the screen will display in either vertical tab (see Figure 4.3.6-6) or single page (see Figures 4.3.6-7 thru 4.3.6-8) format. Clicking **Add** on this screen creates the Trouble Ticket and commits the data to the database.

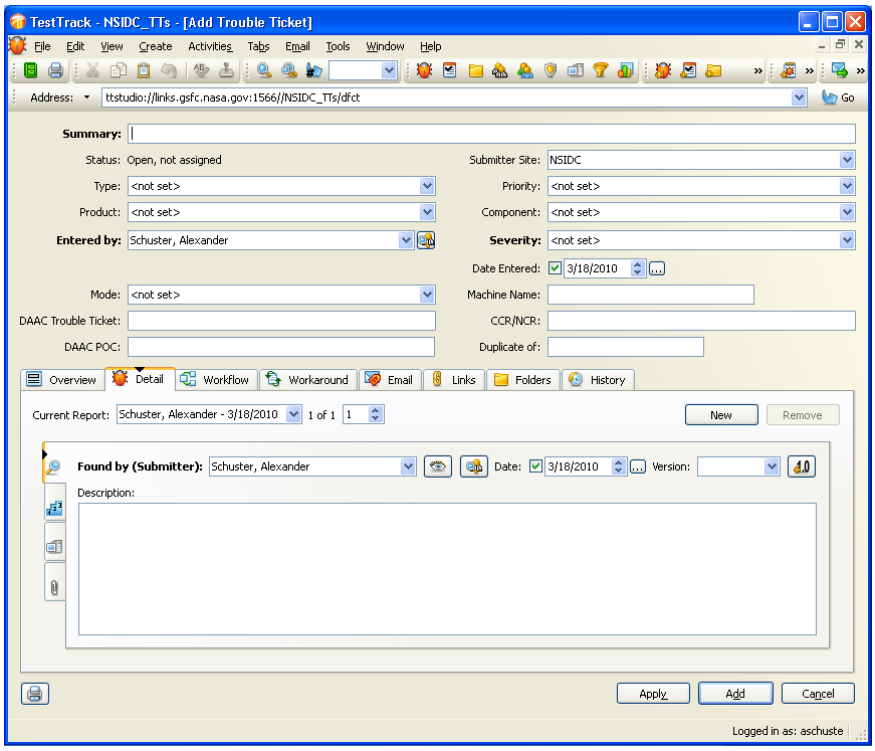


Figure 4.3.6-6. Add Trouble Ticket GUI – Vertical Tab View

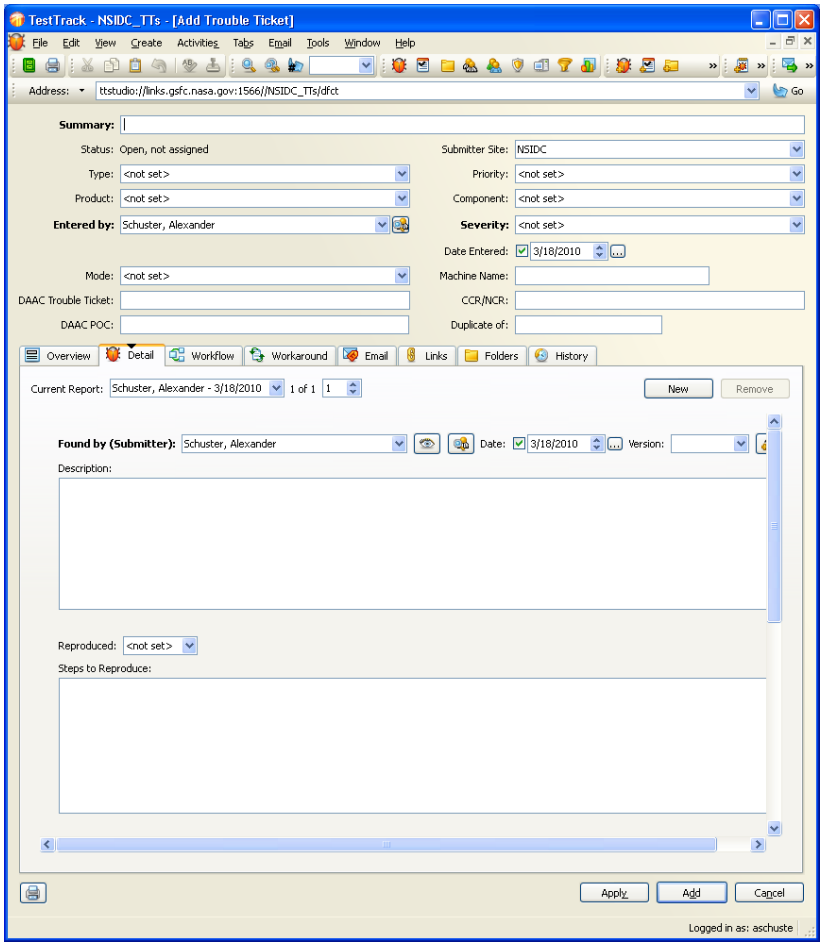


Figure 4.3.6-7. Add Trouble Ticket GUI – Single Page View - Top of Page

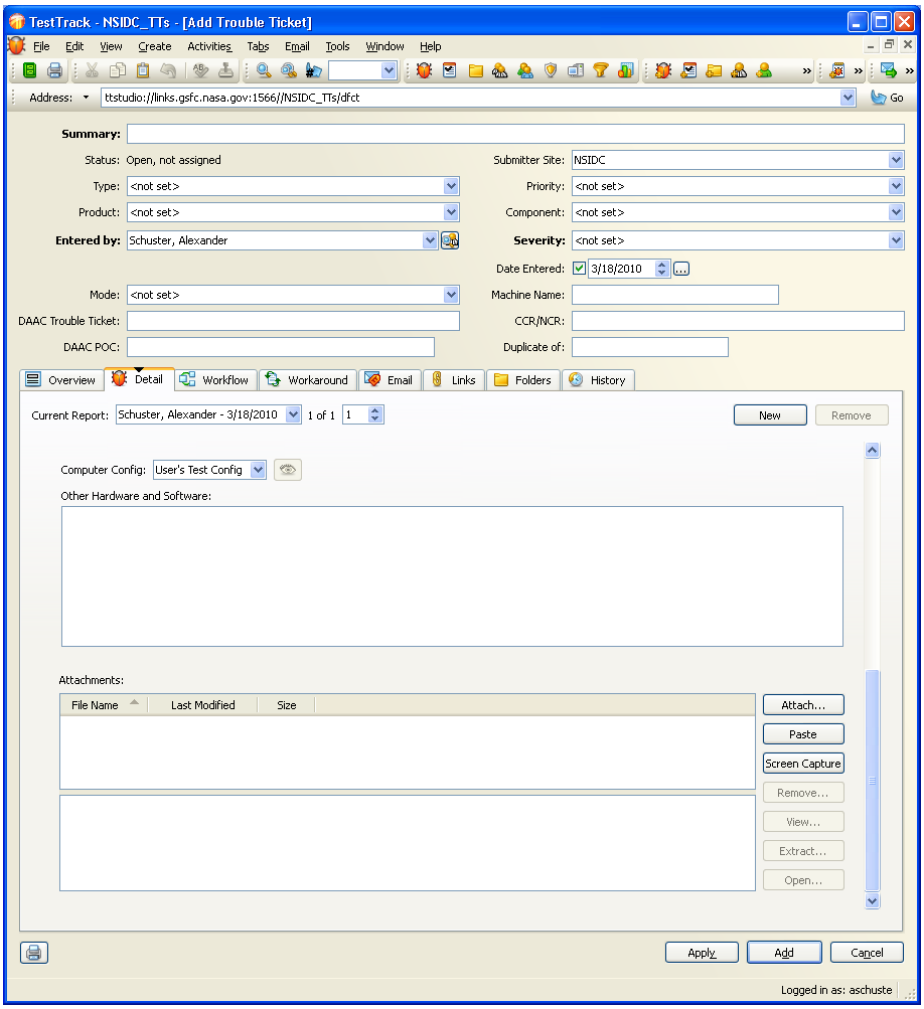


Figure 4.3.6-8. Add Trouble Ticket GUI – Single Page View - Bottom of Page

Table 4.3.6-6 provides a description of the Add Trouble Ticket screen's fields.

Table 4.3.6-6. Add Trouble Ticket Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Summary	Character	154	Required	Short Description of the problem.
Status	Character	n/a	System generated	Status of the Trouble Ticket (a combination of state and assignment status).
Submitter Site	Selection	*	Optional	Trouble ticket's originating site.

Table 4.3.6-6. Add Trouble Ticket Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Type	Selection	*	Optional	Type of problem or issue (e.g., Configuration Error, Hardware Problem, Software Problem).
Priority	Selection	*	Optional	Priority of Trouble Ticket assigned at the site.
Product	Selection	*	Optional	Product exhibiting the problem or issue.
Component	Selection	*	Optional	Product's component exhibiting the problem or issue. In legacy (Remedy) tickets, it is the name of the configuration item with which the problem is associated.
Entered by	Selection	*	Required	Name of the person who created the Trouble Ticket.
Severity	Selection	*	Required	Impact of the problem to the submitter.
Date Entered	Date	n/a	Optional	Date Trouble Ticket was created.
Mode	Selection	*	Optional	Run mode in which problem was detected.
Machine Name	Character	n/a	Optional	Name of machine on which problem was detected.
DAAC Trouble Ticket	Character	n/a	Optional	Legacy identifier of Trouble Ticket (from Remedy ARS).
CCR/NCR	Character	n/a	Optional	Identifier of a related CCR or NCR. If more than one, separate each by a space or semicolon for readability.
DAAC POC	Character	n/a	Optional	Name of the issue's point of contact at the DAAC. Used when escalating Trouble Tickets to the ECS PRB for advice or resolution.
Duplicate of	Character	n/a	Optional	Identifier of an earlier Trouble Ticket addressing the same issue.
Current Report	Selection	*	Optional	Submitter and date of an occurrence of the problem or issue. Helps browse through multiple reports of the same issue.
1 of n	Selection	*	System Generated	Identifier that distinguishes among multiple instances or reports of the same problem or issue.
Found by (Submitter)	Selection	*	Required	Full Name of the Submitter.
Date	Date	n/a	Optional	Date issue or problem occurred.
Version	Selection	*	Optional	Product version exhibiting the issue.
Description	Character	4060	Optional	Detailed description of the problem.

*** Note**: The size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

The Add Trouble Ticket screen has the following buttons:

- **New** Adds another Found By record to the trouble ticket.
- **Remove** Removes the displayed Found By record from the trouble ticket.
- **Edit User** (eye icon) Opens the Found By user's profile record for editing.
- **Find Customer** (customer icon) Opens a menu of advanced conditions for tailoring a record search.
- **Printer** Generates a detail report of the open item.
- **Apply** Opens a Trouble Ticket for viewing only.
- **Add** Saves the trouble ticket and adds it to the project.
- **Cancel** Exits the screen without saving data.

4.3.6.2.3 Edit Trouble Ticket Screen

The Edit Trouble Ticket (see Figure 4.3.6-9) screen is used to update an existing Trouble Ticket and advance it through its lifecycle states. The latter is done by selecting an appropriate item on the Activities menu or clicking the appropriate Activities icon (in this view, the second row of icons on the toolbar), either of which opens an Activity screen (see Section 4.3.6.2.4).

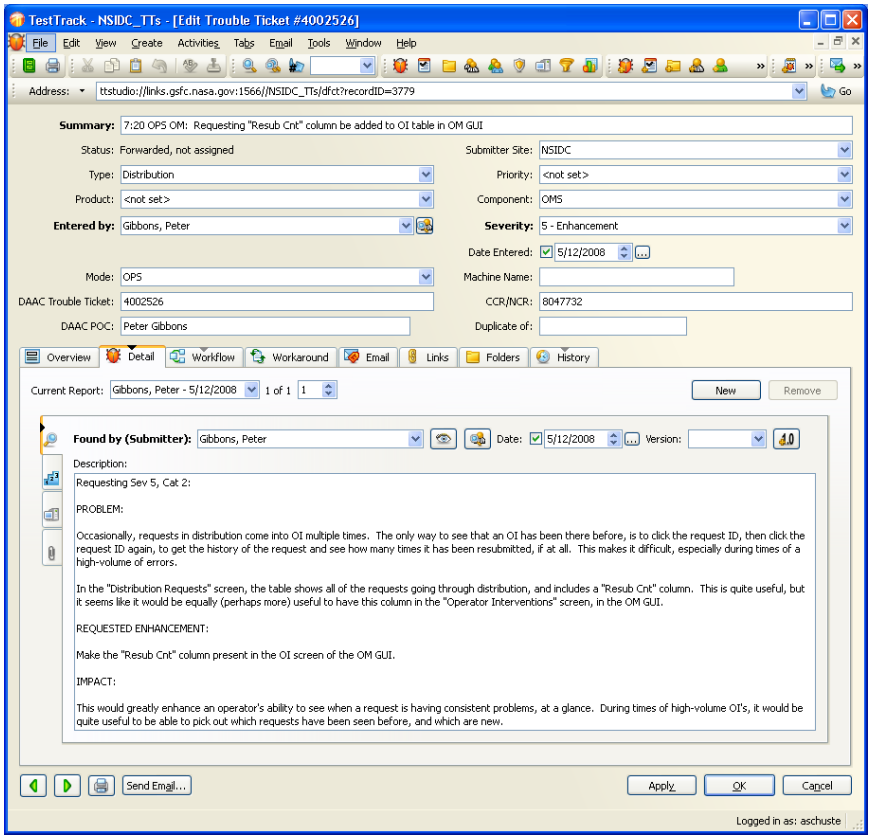


Figure 4.3.6-9. Edit Trouble Ticket GUI

The Edit Trouble Ticket screen's fields are the same as those for the Add Trouble Ticket screen (see Table 4.3.6-6 above).

This screen has four buttons that differ from those on the Add Trouble Ticket screen:

- **Left arrow** Commits changes to the database and displays the previous Trouble Ticket in the Trouble Ticket list.
- **Right arrow** Commits changes to the database and displays the next Trouble Ticket in the Trouble Ticket list.
- **Send Email…** Opens a screen for composing and sending email to one or more TTPro users. Senders can use an email template to include data about the open trouble ticket.
- **OK** Commits changes to the database.

4.3.6.2.4 Activity Screens

The screens in this section advance Trouble Tickets through their lifecycle states.

Each activity screen has the following buttons:

- **OK** Accepts entered data and **c**loses the screen.
- **Cancel** Closes the screen without accepting entered data.

Important: Clicking **OK** does not update the database. The database is updated only when subsequently closing the calling Add Trouble Ticket or Edit Trouble Ticket screens.

4.3.6.2.4.1 Assign Screen

The Assign screen (see Figure 4.3.6-10) is used for recording that a staff member has been assigned to work on the issue described by the Trouble Ticket.

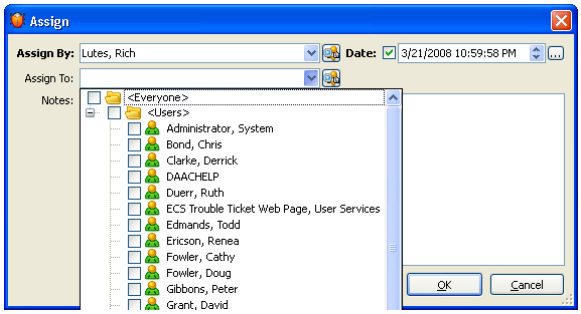


Figure 4.3.6-10. Assign GUI

Table 4.3.6-7 provides a description of the Assign screen's fields.

Table 4.3.6-7. Assign Field Descriptions

Field Name	Data Type	Size	Entry	Description
Assign By	Selection	*	Required	The person who is making the assignment.
Date	Date/Time	n/a	Required	Date assignment is made.
Assign To	Selection	*	Optional	Name of the assignee.
Notes	Text		Optional	Message for the assignee.

***Note**: The size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.4.2 Propose Solution Screen

The Propose Solution screen (see Figure 4.3.6-11) is used for documenting how to resolve the issue described by the Trouble Ticket. Clicking **OK** on this screen advances the Trouble Ticket to the Solution Proposed state.

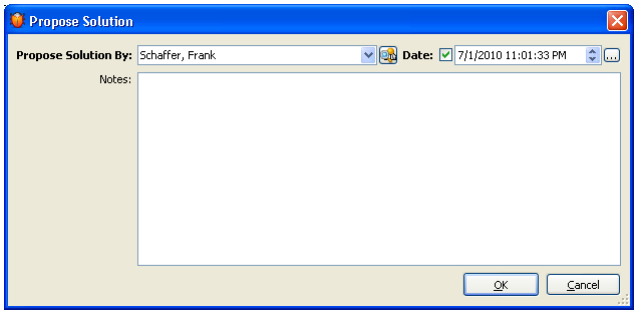


Figure 4.3.6-11. Propose Solution GUI

Table 4.3.6-8 provides a description of the Propose Solution screen's fields.

Table 4.3.6-8. Propose Solution Field Descriptions

Field Name	Data Type	Size	Entry	Description
Propose Solution By	Selection	*	Required	The person who is proposing the solution.
Date	Date/Time	n/a	Required	Date solution is proposed.
Notes	Text	n/a	Optional	The proposed solution.

***Note:** the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.4.3 Start to Implement Screen

The Start to Implement screen (see Figure 4.3.6-12) is used for documenting work towards implementing the solution to the problem described in the Trouble Ticket. Clicking OK on this screen advances the Trouble Ticket to the Start to Implement state.

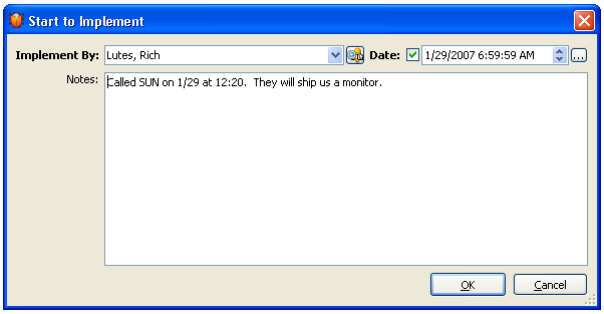


Figure 4.3.6-12. Start to Implement GUI

Table 4.3.6-9 provides a description of the Start to Implement screen's fields.

Table 4.3.6-9. Start to Implement Field Descriptions

Field Name	Data Type	Size	Entry	Description
Implement By	Selection	*	Required	The person who is implementing the solution.
Date	Date/Time	n/a	Required	Date work started towards a solution.
Notes	Text	n/a	Optional	Details on progress towards solution.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.4.4 Fix Screen

The Fix screen (see Figure 4.3.6-13) is used for reporting that the issue described in the Trouble Ticket has been solved. Clicking **OK** on this screen advances the Trouble Ticket to the Fixed state.

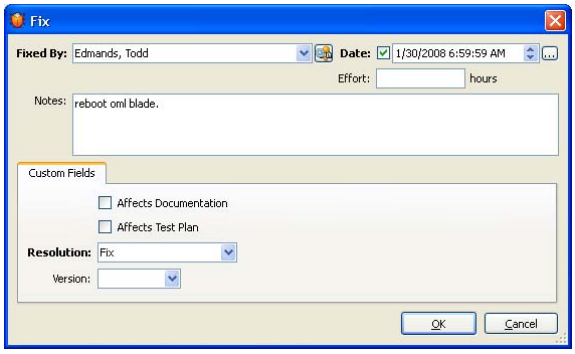


Figure 4.3.6-13. Fix GUI

Table 4.3.6-10 provides a description of the Fix screen's fields.

Table 4.3.6-10. Fix Field Descriptions

Field Name	Data Type	Size	Entry	Description
Fixed By	Selection	*	Required	The person who fixed the problem.
Date	Date/Time	n/a	Required	Date solution was implemented.
Effort	Decimal		Optional	Hours it took to resolve the issue.
Notes	Text		Optional	Details of how the issue was resolved.
Affects Documentation	Check box	n/a	Optional	Is a documentation change req'd?
Affects Test Plan	Check box	n/a	Optional	Is a test plan change req'd?
Resolution	Selection	*	Required	Type of resolution.
Version	Selection	*	Optional	Product version first containing fix.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.4.5 Escalate Screen

The Escalate screen (see Figure 4.3.6.14) is used for forwarding an issue to the ECS Problem Review Board (PRB) for advice or resolution. Clicking **OK** on this screen advances the Trouble Ticket to the Forwarded state.

Note: A cron job runs periodically to extract the data from escalated Trouble Tickets in order to create corresponding ECS non-conformance reports (NCRs).

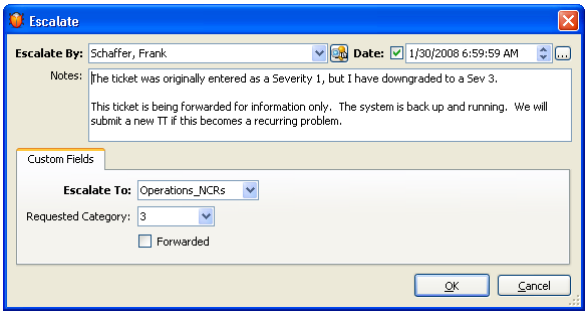


Figure 4.3.6-14. Escalate GUI

Table 4.3.6-11 provides a description of the Escalate screen's fields.

Table 4.3.6-11. Escalate Field Descriptions (1 of 2)

Field Name	Data Type	Size	Entry	Description
Escalate By	Selection	*	Required	The person who is escalating the problem.
Date	Date/Time	n/a	Required	Date Trouble Ticket is escalated.

Table 4.3.6-11. Escalate Field Descriptions (2 of 2)

Field Name	Data Type	Size	Entry	Description
Notes	Text		Optional	Details of how the issue was resolved.
Escalate To	Selection	*	Required	Name of target NCR project.
Requested Category	Selection	*	Optional	A measure of how soon the escalator would like the fix.
Forwarded	Check box	n/a	System	Whether or not the Trouble Ticket has been forwarded to the EDF.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.4.6 Close Screen

The Close screen (see Figure 4.3.6-15) is used to document that the issue described in the Trouble Ticket has been rejected or abandoned, or that work has been completed. Clicking **OK** on this screen advances the Trouble Ticket to the Closed state.

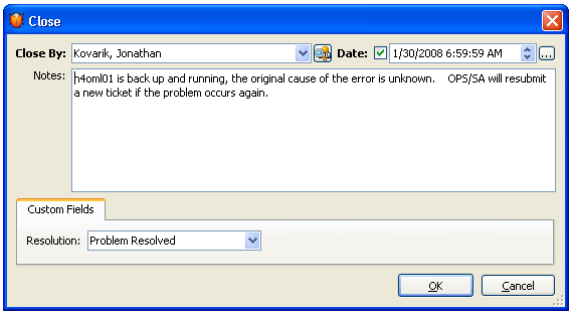


Figure 4.3.6-15. Close GUI

Table 4.3.6-12 provides a description of the Close screen's fields.

Table 4.3.6-12. Close Field Descriptions

Field Name	Data Type	Size	Entry	Description
Close By	Selection	*	Required	The person who closed the Trouble Ticket.
Date	Date/Time	n/a	Required	Date the Trouble Ticket was closed.
Notes	Text		Optional	Supporting information for closing the Trouble Ticket.
Resolution	Selection	*	Required	Why the Trouble Ticket can be closed.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.4.7 Comment Screen

The Comment screen (see Figure 4.3.6-16) is used for recording miscellaneous notes related to the Trouble Ticket. It does not change the ticket's life cycle state.

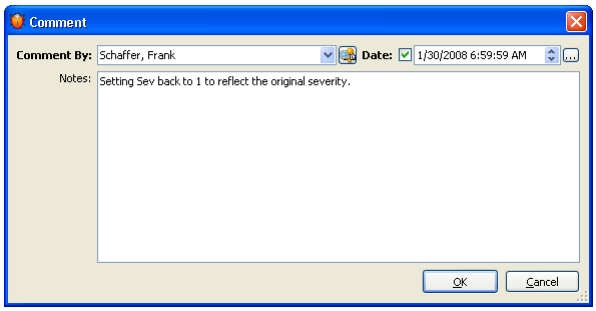


Figure 4.3.6-16. Comment GUI

Table 4.3.6-13 provides a description of the Comment screen's fields.

Table 4.3.6-13. Comment Field Descriptions

Field Name	Data Type	Size	Entry	Description
Comment By	Selection	*	Required	The person who is recording the comment.
Date	Date/Time	n/a	Required	Date the comment is recorded.
Notes	Text		Optional	The comment.

***Note**: the size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

4.3.6.2.5 Reports Screen

The Reports screen (see Figure 4.3.6-17) is used for generating pre-defined and ad hoc Trouble Ticket reports. Four types of reports are possible: list, detail, trend, and distribution. (See Section 4.3.6.8.1 for an example of each.) TTPro uses style sheets as templates for generating reports.

The TestTrack User Guide and the TestTrack Web User Guide provide details about the subordinate screens used to define new reports, including how to specify or edit stylesheets, page breaks, sort columns, timeframes, totals, and charts.

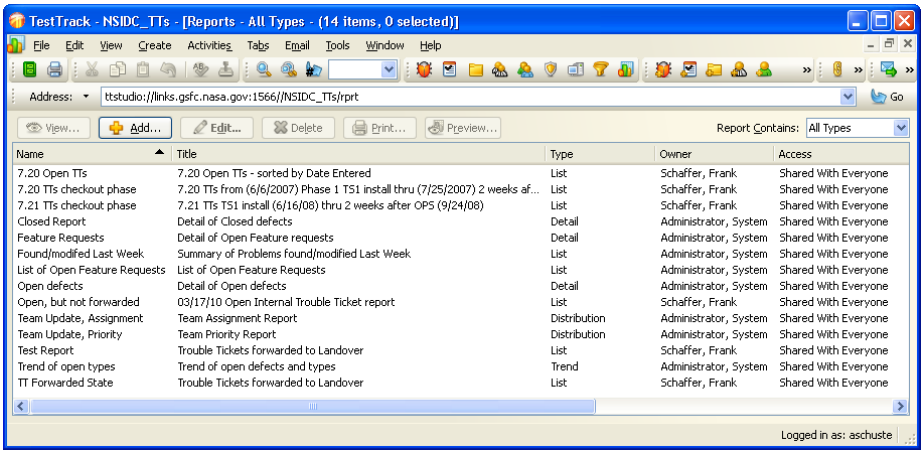


Figure 4.3.6-17. Reports GUI

The Reports screen has the following buttons:

- **View…** Opens a screen for viewing the configuration of the report.
- **Add…** Opens a screen for defining a new report.
- **Edit…** Opens a screen for editing the configuration of a pre-defined report.
- **Delete** Deletes an operator-selected report.
- **Print** Runs the report, directing output to a selected printer (Windows client only)
- **Preview** Runs the report and presents it via the user's default web browser

The Print Options screen (see Figure 4.3.6-18) provides another means of printing adhoc reports containing one or more items from any TTPro list window, including trouble tickets. This screen is invoked by selecting items to print and then clicking **File → Print…** on TTPro's menu bar.

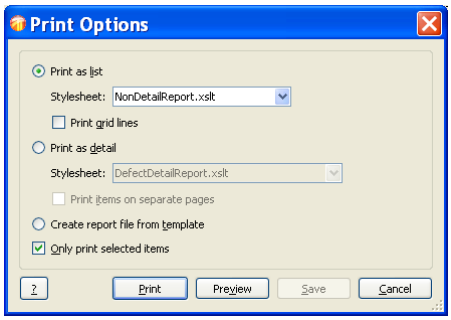


Figure 4.3.6-18. Print Options GUI

Table 4.3.6-14 provides a description of the Print Options screen's fields.

Table 4.3.6-14. Print Options Field Descriptions

Field Name	Data Type	Size	Entry	Description
Print as list	Boolean		Optional	Print columns from list window, one item per line.
Stylesheet	Selection		Required	Definition of the document's appearance.
Print gridlines	Boolean		Optional	Prints lines between cells.
Print as detail	Boolean		Optional	Prints all information about the item.
Print items on separate pages	Boolean		Optional	Inserts a page separator between items.
Create report from template	Boolean		Optional	Prints a report based on a previously created template.
Only print selected items	Boolean	*	Optional	Prints only the items selected on the list window.

The Print Options screen has the following buttons:

- **Print** Generates a report, directing output to a selected printer (Windows client only)
- **Preview** Generates the report and presents it via the user's default web browser
- **Save** Saves the report as a text document
- **Cancel** Cancels the print request.

4.3.6.2.6 Security Groups Screen

The Security Groups screen (see Figure 4.3.6-19) is used to manage profiles that define TTPro user roles and the system privileges granted to each role. Each TTPro project has its own set of security groups. Users authorized access to a project must be assigned to one (and only one) security group.

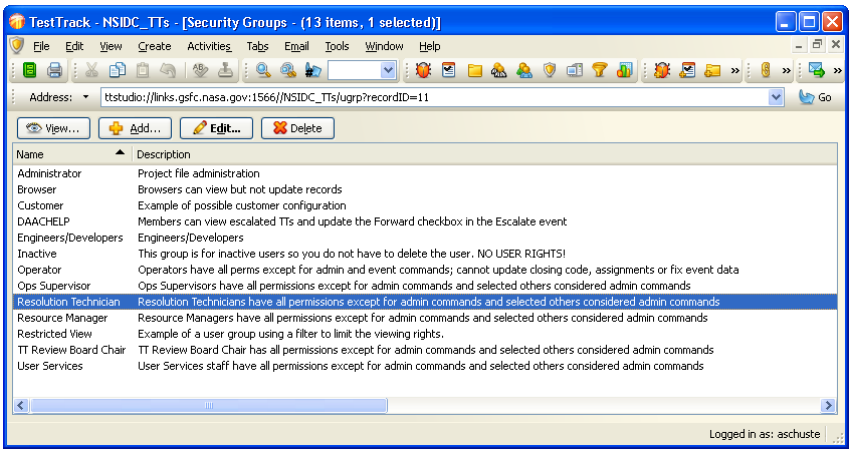


Figure 4.3.6-19. Security Groups GUI

This screen has no data entry fields other than Address described earlier in Table 4.3.6-5.

The Security Groups screen has the following buttons:

- **View…** Opens a screen for viewing selected groups' privileges within the project.
- **Add…** Opens a screen for adding a new group and its privileges to the project.
- **Edit…** Opens a screen for updating selected groups' privileges within the project.
- **Delete** Deletes selected security groups. Users who were members of the deleted group(s) are no longer assigned to any project. They cannot access the project nor can they receive project-issued e-mail notifications.

See the TestTrack manuals for descriptions of the Add Security Group, Edit Security Group, and View Security Group screens.

4.3.6.2.7 Users Screen

The Users screen (see Figure 4.3.6-20) is used to manage profiles that define who can access the project's Trouble Tickets. Double-clicking on one or more users in the list opens either the View User or Edit User screens, depending on the client's user options settings.

Profiles can be global or local. Global user profiles can be shared among all TTPro projects on the network. Local user profiles are known only within the project in which they are defined, but they can be promoted to a global user profile if the user's name is unique among all projects.

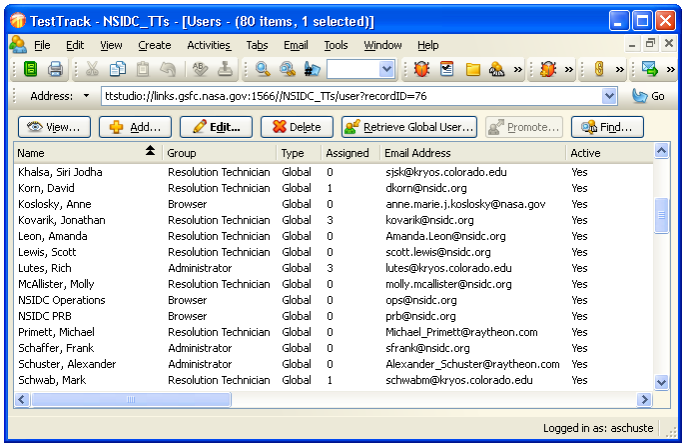


Figure 4.3.6-20. Users GUI

This screen has no data entry fields other than Address described earlier in Table 4.3.6-5.

The Users screen has the following buttons:

- **View…** Opens a screen for viewing selected users' profiles within the project.
- **Add…** Opens a screen for adding a new user profile to the project.
- **Edit…** Opens a screen for updating selected user profiles within the project.
- **Delete** Deletes selected user profiles. Deleting a user removes all references to hat user from the project's Trouble Tickets.
- **Retrieve Global User** Adds a user to the project by retrieving the user's profile from the TTPro license server's global user records.
- **Promote** Adds selected, local user profiles to the TTPro license server's global user database.
- **Find** **Opens a screen for specifying advanced criteria for locating matching user records.**

See the TestTrack manuals for descriptions of the Add User and View User screens. The Edit User screen is described in the next section.

4.3.6.2.8 Edit User Screen

Use the Edit User screen (see Figure 4.3.6-21) to update user profiles for the project. Its fields are identical to those of the Add User and View User screens.

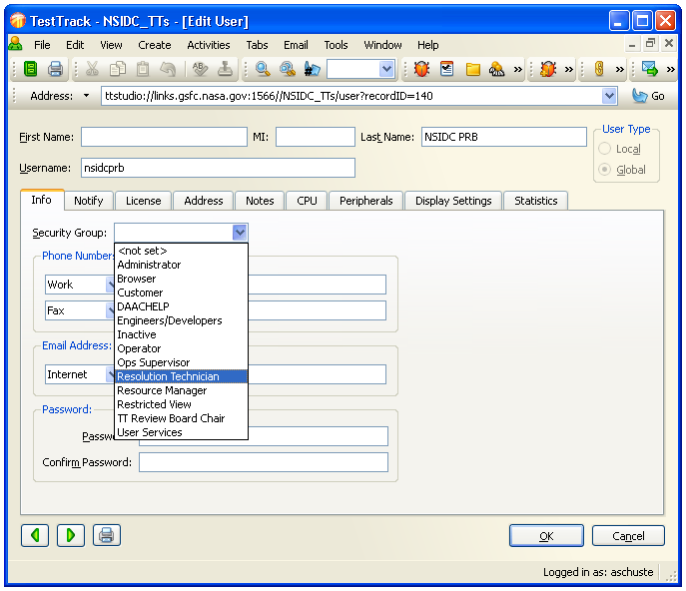


Figure 4.3.6-21. Edit User GUI

Table 4.3.6-15 provides a description of the Edit User screen's fields (Info tab only).

Table 4.3.6-15. Edit User Field Descriptions (Info Tab only)

Field Name	Data Type	Size	Entry	Description
First Name	Character	32	Optional	User's first name. (Optional only if a last name is specified.)
MI	Character	8	Optional	
Last Name	Character	32	Optional	User's surname. (Optional only if a first name is specified.)
Username	Character	32	Optional	User's logon ID
Security Group	Selection	*	Required	User's assigned security group
Phone Number (Type)	Selection	*	Optional	User's phone type (work, home, fax, pager, mobile)
Phone Number (Type)	Selection	*	Optional	User's phone type (work, home, fax, pager, mobile)
Email Address (Type)	Character	32	Optional	User's email type (Internet, MAPI, other).
Email Address	Character	32	Optional	User's e-mail address to use for notifications
Password	Character	n/a	Optional	User's Password
Confirm Password	Character	n/a	Optional	User's Password

***Note**: The size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

In addition to the fields described in the above table, the Edit User screen contains the following buttons:

- **User Type** designates whether the user is to be registered with the TTPro license server's global user database shared by all projects it services.
- **Left arrow** Commits changes to the database and displays the previous Trouble Ticket in the Trouble Ticket list.
- **Right arrow** Commits changes to the database and displays the next Trouble Ticket in the Trouble Ticket list.

4.3.6.2.10 Setup <Field> Names Screen

The Setup <*Field*> Names screen (see Figure 4.3.6-22) is used to pre-define values that can be entered via pull down menus attached to specific TTPro fields. On TTPro's Trouble Ticket screens, clicking the down arrow icon next to any of these fields displays the choices from which a user can select. This screen is reached by clicking Tools → Configure List Values → <*field-name*> Values… on the TTPro menu bar.

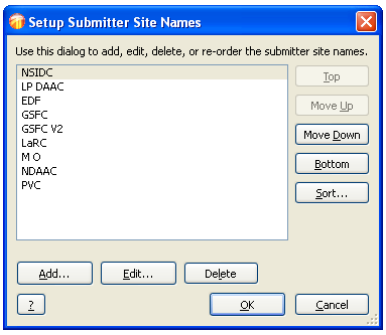


Figure 4.3.6-22. Setup <Field> Name GUI

This screen has no data entry fields.

The Setup <*Field*> Names screen contains the following buttons:

- **Add…** Opens a screen for adding a new value to the pull down menu list.
- **Edit…** Opens a screen for editing the selected value in the pull down menu list.
- **Delete** Deletes the selected value from the pull down menu.
- **Top** Moves the value to the top of the pull down menu's list.
- **Move Up** Move the value one position higher in the pull down menu's list.
- **Move Down** Moves the value one position lower in the pull down menu's list.
- **Bottom** Moves the value to the bottom of the pull down menu's list.
- **Sort…** Sorts the pull down menu's list of values alphabetically, either ascending or descending as specified on a supporting data entry screen.

4.3.6.2.11 Configure Automation Rules Screen

The Configure Automation Rules screen (see Figure 4.3.6-23) is used for defining the conditions for TTPro to perform certain actions automatically. A separate tab controls each of three types of rules: notification, trigger, and escalation.

Notification rules email users about Trouble Ticket changes. Notifications can be issued for all or any subset of records, using a pre-defined or a custom e-mail template, to anyone authorized access to the project.

Trigger rules prevent users from performing an activity, create a workflow event, modify data, or run a server-side executable whenever a user attempts to save a record.

Escalation rules enter a workflow event, modify record fields, send email, or run a server-side executable based on a schedule.

This screen is invoked by clicking `Tools` → `Administration` → `Automation Rules` on TTPro's menu bar.

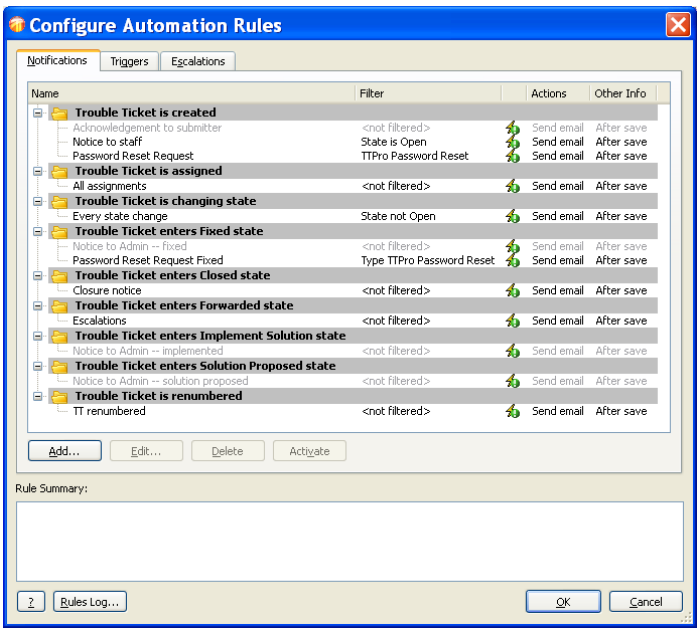


Figure 4.3.6-23. Configure Automation Rules GUI

This screen has no data entry fields.

The Configure Automation Rules screen contains the following unique buttons:

- **Add** Opens a screen for adding rules for the selected Trouble Ticket events. See the TestTrack manuals for a description of this screen and how to use it.

- **Add Default** (Triggers tab only) Opens a screen for adding rules to perform actions on records that are not acted on by other triggers. See the TestTrack manuals for a description of this screen and how to use it.
- **Edit…** Opens a screen for adding rules for the selected Trouble Ticket events. See the TestTrack manuals for a description of this screen and how to use it.
- **Delete** Removes the selected rule.
- **Activate** Enables the selected rule.
- **Rules Log…** Exports the log for the selected rule to a text file for analysis or for use with other tools.

4.3.6.2.10 User Options screen

The User Options screen (see Figure 4.3.6-24) lets users specify personal preferences about how TTPro behaves. These cover displays, notifications, a personal dictionary, spell checking, and a few, other, more general features. This screen is invoked by clicking `Tools` → `User Options` on TTPro's menu bar.

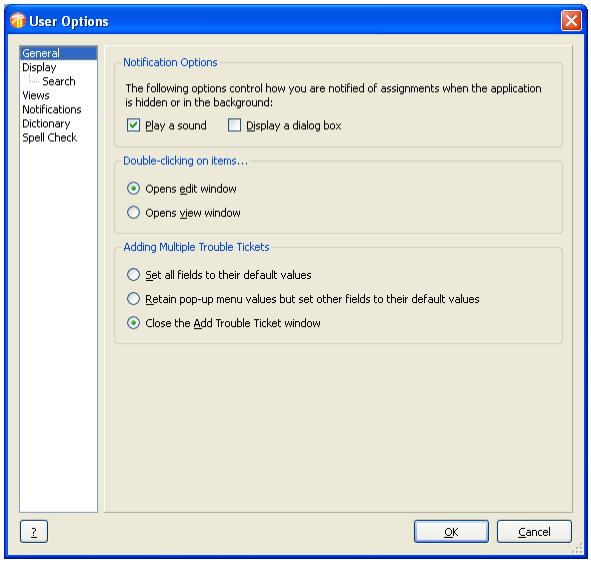


Figure 4.3.6-24. Configure User Options GUI

Most panes on the screen present a series of radio buttons or check boxes. The Dictionary pane, though, provides a dialog for specifying the main dictionary to be used when spell checking and for adding custom words to the dictionary.

See the TestTrack manuals for more details about using this screen.

4.3.6.2.12 License Server Admin Utility

The License Server Admin Utility screen (see Figure 4.3.6-25) is the gateway to the collection of screens for managing TTPro license server operations. The GUI can be started only from the command line on the TTPro server machine, and access is generally limited to central TTPro system administrators.

Start the utility by typing, " **<*TTPro-root*>/splicsvr/bin/lsadmin &", and then log in**.

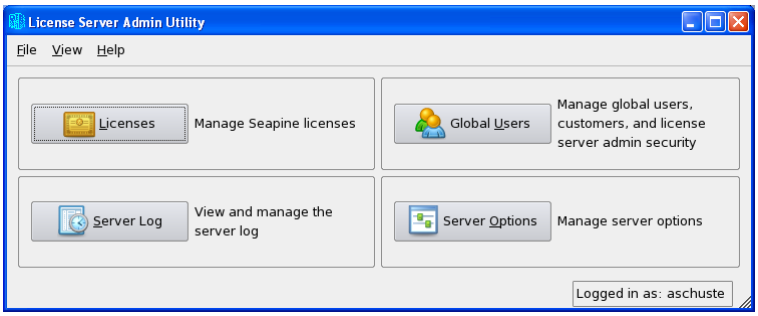


Figure 4.3.6-25. License Server Admin Utility GUI

This screen has no data entry fields.

The License Server Admin Utility screen contains the following unique buttons:

- **Licenses** Opens a screen for adding, editing, and deleting TTPro licenses, as well as for associating users with single-user, "named" licenses when applicable. From this screen, administrators can navigate to the Floating Licenses Used screen to view who is currently using TTPro floating licenses network-wide.
- **Global Users** Opens a screen for adding, editing, and deleting user profiles, see Section 4.3.6.2.13, Global Users Screen, below.
- **Server Log** Opens a screen for viewing, filtering, deleting and exporting license server log entries.
- **Server Options** Opens a screen for configuring log, license server, server database, LDAP, and password options. Password options cover requirements, restrictions and history.

See the Seapine License Server Admin Guide, Version 2009, for a thorough description of the screen mentioned above.

4.3.6.2.13 Global Users Screen

The Global Users screen (see Figure 4.3.6-26) lets TTPro administrators conveniently manage the user profiles of individuals who need to access TTPro. Double-clicking on any row in the

list opens the profile for the selected user. This screen is invoked by clicking on the Global Users button on the License Server Admin Utility GUI (see Section 4.3.6.2.11)

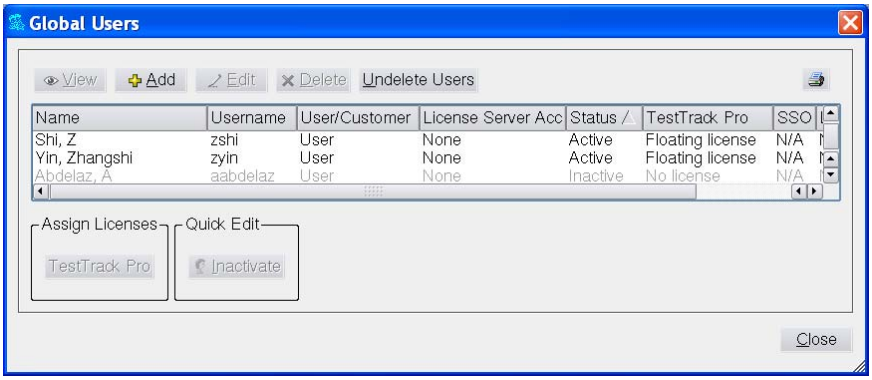


Figure 4.3.6-26. Global Users GUI

This screen has no data entry fields.

The Global Users screen contains the following buttons:

- **View** Opens a screen for reading a user's record in the license server database.
- **Add** Opens a screen for adding a new global user to the license server database.
- **Edit** Opens a screen for changing a user's record in the license server database.
- **Delete** Removes the selected user from the license server database.
- **Undelete** Opens a screen for restoring a previously deleted user's profile.

See the Seapine License Server Admin Guide, Version 2009, for a thorough description of the screen mentioned above.

4.3.6.2.14 TestTrack Pro Web Client's Trouble Ticket Screen

TestTrack Pro has a Web client that has all the features of the Windows client, including submission, querying, and modification of Trouble Tickets via an Internet Explorer 6.0 or higher, Netscape 7.0 or higher, or Firefox 2.0 or higher Web browsers. To reach the Web client, start the browser and enter the appropriate secure URL and port number. For example: https://<*host*>.gsfc.nasa.gov:<*port_number*>. The TTPro login window is then displayed as shown in Figure 4.3.6-27.

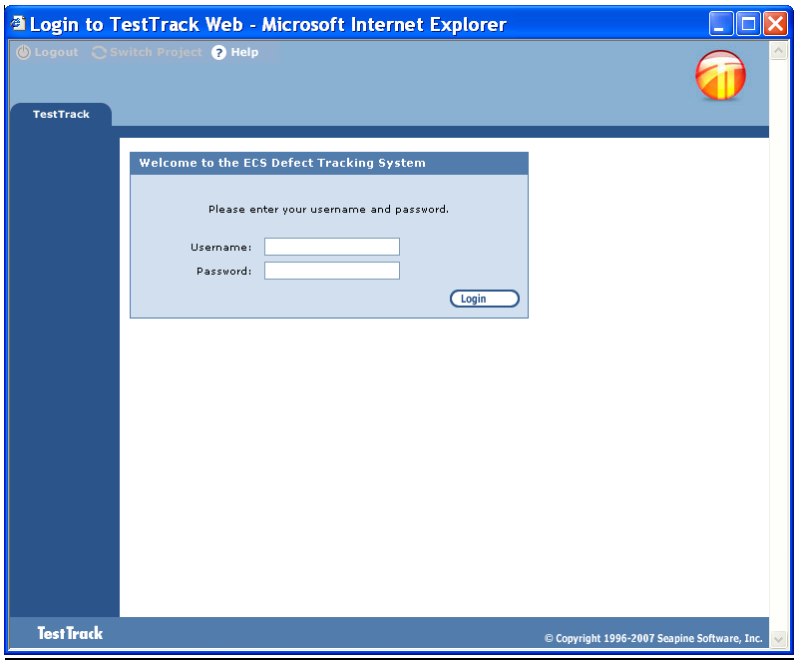


Figure 4.3.6-27. Web Login Window

The Project Selection window is used to choose which TTPro project.

Upon username and password verification, the TestTrack Project Selection window appears (see Figure 4.3.6-28). Use this screen to specify which project to log in to. The Project picklist displays only the projects to which the user has access. If the picklist is empty or indicates that projects are loading, click **Refresh** after a few moments to retrieve a new list.

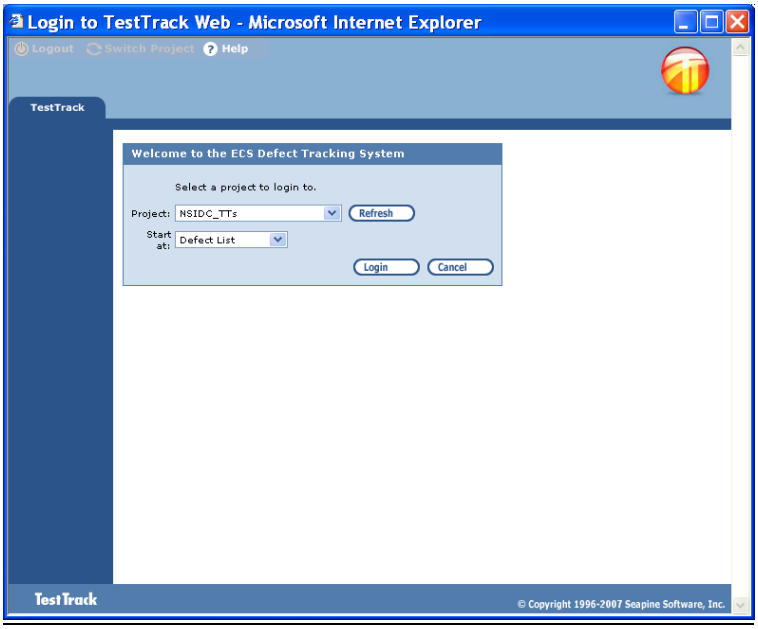


Figure 4.3.6-28. Project Selection Window

Table 4.3.6-16 provides a description of the TestTrack Project Selection window's fields.

Table 4.3.6-16. TestTrack Project Selection Field Descriptions

Field Name	Data Type	Size	Entry	Description
Project	Selection	*	Required	Name of the project to logon to
Start at	Selection	*	Required	Name of list page to display initially

***Note**: The size of a field with a "selection" data type can vary and the size is automatically adjusted to the size of the item selected from the selection list.

The TestTrack Project Selection screen has the following buttons:

- **Refresh** Retrieves the latest list of available TestTrack projects the user is authorized to access.
- **Login** Logs the user into the selected project.
- **Cancel** Cancels the login request.

Upon successful login, the Trouble Tickets List page is displayed as shown in Figure 4.3.6-29. As with the Windows client, the Trouble Tickets list page identifies all Trouble Tickets returned by the filter the user selects. Rather than a menu bar, however, the web page has tabs and a series of action links on the left side of the page to help users navigate and perform actions. To access a Trouble Ticket, users must select (click on) one or more Trouble Tickets, then click the View,

Edit, or Delete buttons. A Logout button closes the user's connection to the database properly and frees the user's license.

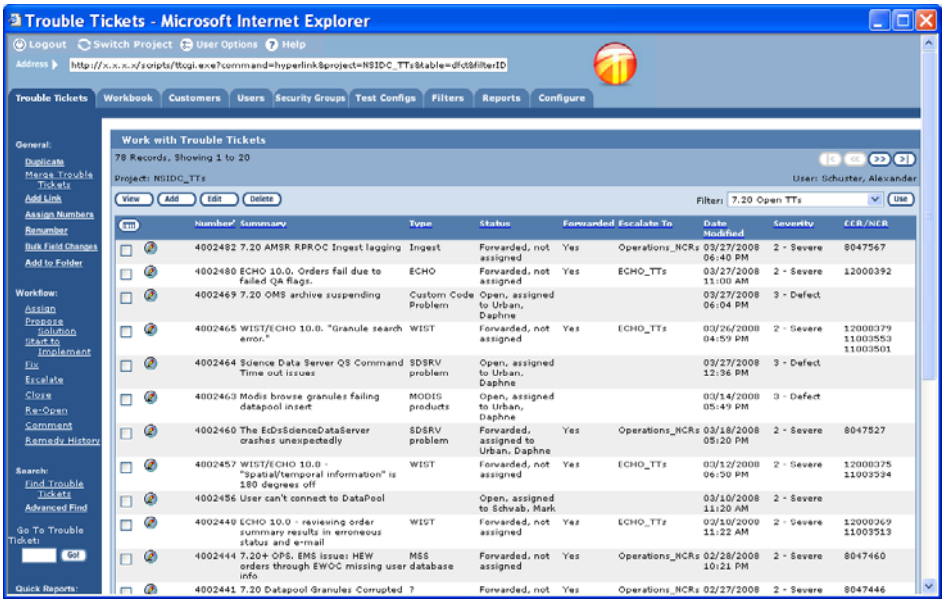


Figure 4.3.6-29. Work with Trouble Tickets Web Page

4.3.6.3 Required Operating Environment

The TestTrack server runs on a Linux-based machine; Linux-, Windows-, Mac-, and Web-based clients are available for the DAACs. Appropriate information on operating environments, tunable parameters, environment variables, and a list of vendor documentation can be found in the EEB Release Notes document 914-TDA-449. To find the documentation for TestTrack Pro, refer to the Release Notes posted on the ECS Baseline Information System web page at your local site. The Release Notes document as well as the vendor manuals were distributed to ECS sites with TTPro.

4.3.6.3.1 Interfaces and Data Types

TTPro's Trouble Tickets are escalated into NCRs. Table 4.3.6-17 identifies this interface.

Table 4.3.6-17. External Interface Protocols

Interface (facility)	Type of Primary Interface Protocols	Type of Backup Interface Protocols	Comments
tt2ncr	SOAP	Manual	Escalates Trouble Tickets to the EDF
tt_licenseUsage	SOAP	Manual	Logs the number of TestTrack floating licenses in use at, typically, 30 minute intervals
tt_resetpasswd	SOAP	Manual	Automated help for resetting a user's password upon submission of special trouble ticket by a TTPro administrator

4.3.6.4 Databases

TTPro uses a native database management system bundled with the product. A distinct Trouble Ticketing database, also known as a project, exists for each ECS site. The Trouble Ticketing databases are:

- ECHO_SA_TTs
- ECHO_TTs
- LaRC_TTs
- LPDAAC_TTs
- NSIDC_TTs
- Riverdale_TTs

4.3.6.5 Special Constraints

Note that while most TTPro screens are accessible to all operators, only TTPro administrators have permissions to modify user permissions, security groups, project workflow, dropdown lists, and system notifications. Privileges are set according to DAAC policy.

4.3.6.6 Outputs

Client output from TestTrack Pro (other than that displayed on GUIs) consists primarily of pre-defined and ad hoc reports in HTML format that are prepared on demand. TTPro launches the operator's browser of choice to display the reports. Reports can also be printed or saved to a file. See Section 4.3.6.8 for a description of the various reports available.

Server output consists primarily of email notices sent to designated recipients when trouble tickets a created, assigned, updated, and closed.

TTPro also issues prompts when operator input is required, and writes a variety of error and informational messages to project and license server logs (see Section 4.3.6.7). Using the Server Options screen of the TestTrack Server Admin Utility and the License Server Admin Utility, TTPro administrators can control the amount of logging performed.

Users may also export selected TTPro records in either XML or tab- or comma-delimited text format. This is done via GUIs accessible by clicking `File → Export → XML File Export` or `File → Export → Text File Export` on the Trouble Ticket List screen's menu bar.

4.3.6.7 Event and Error Messages

TestTrack Pro does not have an error message guide. Below, however, is a sampling of the information typically logged by TTPro (see Tables 4.3.6-18 through 4.3.6-20.)

Table 4.3.6-18. TTPro Startup.log File Messages Example

```
Thu 03 Jul 2008 12:55:47 PM EDT <Info>     Web Session Timeout
    DbDir=/usr/ecs/OPS/COTS/ttpro2008/TTServDb/TTDbs/Operations_NCRs/
    UserName=Abdul Khan
```

Table 4.3.6-19. TestTrack Server Admin Utility Log File Messages Example

```
7/3/2008 3:30:17 AM     Error 0     The TestTrack Server was unable to
establish a connection with License Server on initialization.     7/3/2008
1:11:17 PM  Error 0     Error polling on socket from client at
[152.61.42.223] POLLHUP - Hang up.        <not logged in>
7/3/2008 1:38:11 PM     Unusual Activity  0     Attempting to login as
"nrp0209735" using the Web client from 127.0.0.1 failed due to an invalid
username and/or password.           nrp0209735
```

Table 4.3.6-20. License Server Admin Utility Log File Messages Examples

```
06/27/2008 06:35:22 AM  Error 0     Socket  error  when  reading  request  from
[127.0.0.1]: -191554640; Unrecognized Buffer Format.  Server    Session    Not
Logged In
06/27/2008 08:23:26 AM  Unusual Activity  0     A user's attempt  to  log  into
the database from [127.0.0.1] failed due to an invalid password.  Blscott
```

4.3.6.8 Reports

TTPro can produce detail, list, distribution, and trend reports. Table 4.3.6-21 describes a sample of each.

Table 4.3.6-21. Reports

Report Type	Report Description	When and Why Used
Detail of Open Defects	A full report of every Trouble Ticket not in a Closed state, sorted by Trouble Ticket number (see Figure 4.3.6-25).	When and if someone wants a copy of all open Trouble Tickets.
Summary of Problems	A list of the Trouble Tickets found or modified during the week prior to the report, containing only key details and sorted by Trouble Ticket number (see Figure 4.3.6-26).	When and if someone wants a list of the Trouble Tickets opened or updated during the past week.
Team Assignment Report	A distribution report identifying the Trouble Tickets found or modified during the week prior to the report, containing only key details and sorted by Trouble Ticket number (see Figure 4.3.6-27).	When and if someone wants to know how evenly work is distributed among the staff.
Trend of Open Defects and Types	A trend report identifying the number of Trouble Tickets of each problem type in the Open state over time, grouped and ordered by month (see Figure 4.3.6-28).	When and if someone wants to review (or forecast) trends among the types of problems reported.

4.3.6.8.1 Sample Reports

Figure 4.3.6-30 through 4.3.6-33 provides samples of the reports described in Table 4.3.6-21.

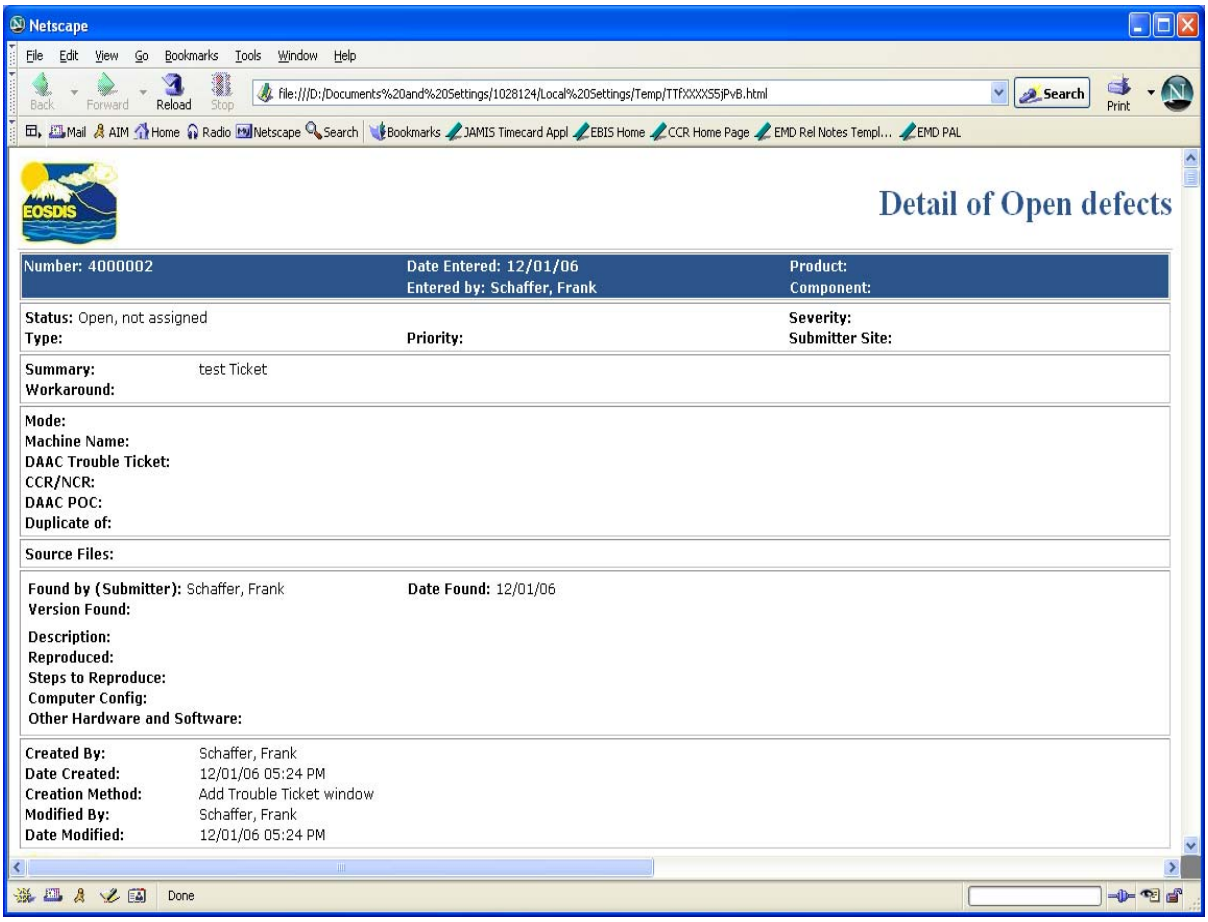
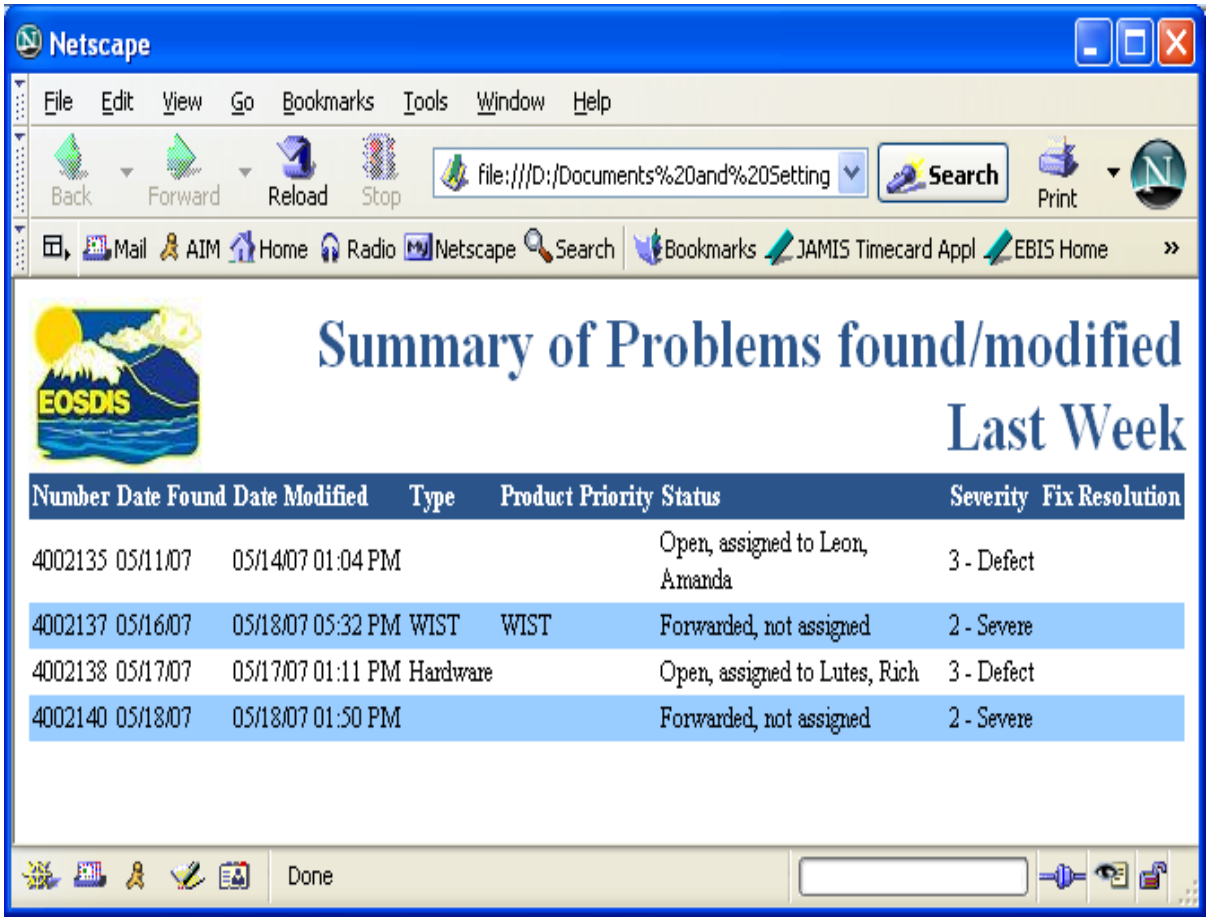
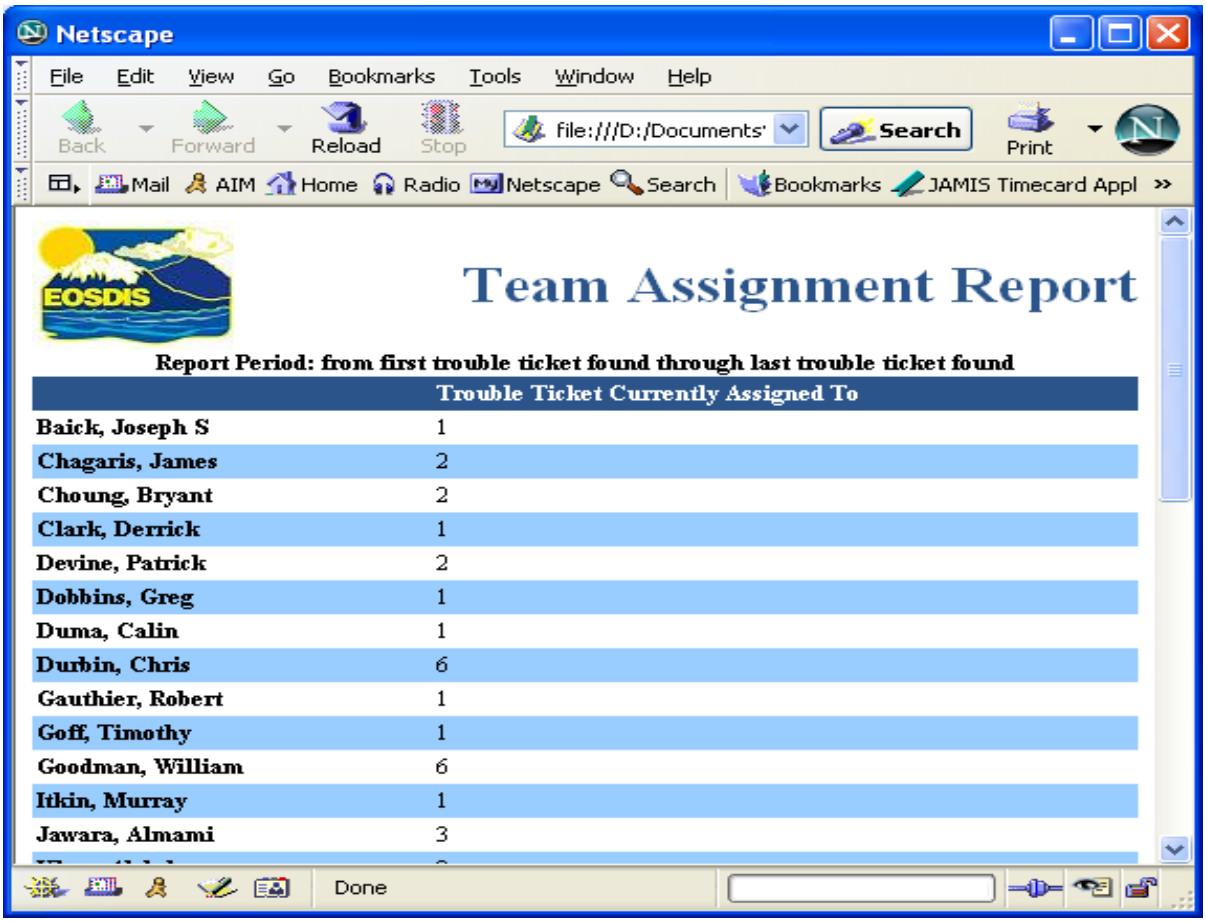


Figure 4.3.6-30. Detail of Open Defects Report



Number	Date Found	Date Modified	Type	Product	Priority	Status	Severity	Fix Resolution
4002135	05/11/07	05/14/07 01:04 PM				Open, assigned to Leon, Amanda	3 - Defect	
4002137	05/16/07	05/18/07 05:32 PM	WIST	WIST		Forwarded, not assigned	2 - Severe	
4002138	05/17/07	05/17/07 01:11 PM	Hardware			Open, assigned to Lutes, Rich	3 - Defect	
4002140	05/18/07	05/18/07 01:50 PM				Forwarded, not assigned	2 - Severe	

Figure 4.3.6-31. Summary of Problems found/modified Last Week Report

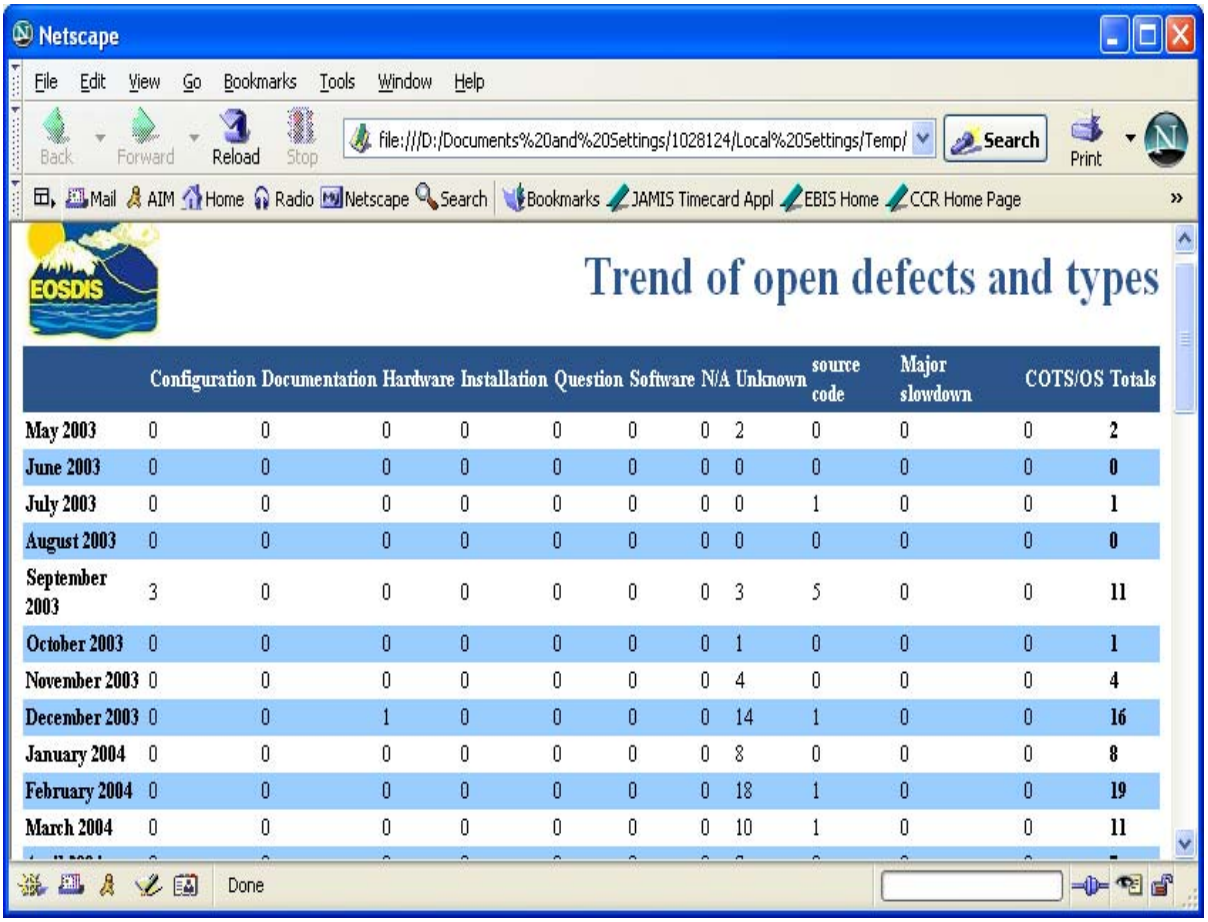


Team Assignment Report

Report Period: from first trouble ticket found through last trouble ticket found

	Trouble Ticket Currently Assigned To
Baick, Joseph S	1
Chagaris, James	2
Choung, Bryant	2
Clark, Derrick	1
Devine, Patrick	2
Dobbins, Greg	1
Duma, Calin	1
Durbin, Chris	6
Gauthier, Robert	1
Goff, Timothy	1
Goodman, William	6
Itkin, Murray	1
Jawara, Almami	3

Figure 4.3.6-32. Number of Tickets by Submitter Report



Netscape

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop file:///D:/Documents%20and%20Settings/1028124/Local%20Settings/Temp/ Search Print

Mail AIM Home Radio Netscape Search Bookmarks JAMIS Timecard Appl EBIS Home CCR Home Page

EOSDIS

Trend of open defects and types

	Configuration	Documentation	Hardware	Installation	Question	Software	N/A	Unknown	source code	Major slowdown	COTS/OS	Totals
May 2003	0	0	0	0	0	0	0	2	0	0	0	**2**
June 2003	0	0	0	0	0	0	0	0	0	0	0	**0**
July 2003	0	0	0	0	0	0	0	0	1	0	0	**1**
August 2003	0	0	0	0	0	0	0	0	0	0	0	**0**
September 2003	3	0	0	0	0	0	0	3	5	0	0	**11**
October 2003	0	0	0	0	0	0	0	1	0	0	0	**1**
November 2003	0	0	0	0	0	0	0	4	0	0	0	**4**
December 2003	0	0	1	0	0	0	0	14	1	0	0	**16**
January 2004	0	0	0	0	0	0	0	8	0	0	0	**8**
February 2004	0	0	0	0	0	0	0	18	1	0	0	**19**
March 2004	0	0	0	0	0	0	0	10	1	0	0	**11**

Done

Figure 4.3.6-33. Trend of Open Defects and Types Report

4.3.6.8.2 Report Customization

Reference the Seapine TestTrack User Guide or Seapine TestTrack Web User Guide for information on creating and customizing reports. The manuals are installed along with the product. They can be accessed separately or by selecting Help on any TTPro screen.

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