611-TD-557-001

**EOSDIS Core System Project**

# M&O Procedures: Section 8 - Problem Management Procedures

Interim Update

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Raytheon Systems Company
Upper Marlboro, Maryland

# Preface

This document is an interim update to the Mission Operations Procedures Manual for the ECS Project, document number 611-CD-500-001, Chapter 8 Problem Management Procedures. This document has not been submitted to NASA for approval, and should be considered unofficial.

This document is a complete replacement of the prior Chapter 8 representing the ECS Release 5B version of problem management.

Any questions should be addressed to Ken Cockerill or Rodney Creecy:

Data Management Office
The ECS Project Office
Raytheon Systems Company
1616 McCormick Drive
Upper Marlboro, Maryland 20774-5301

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# 8. Problem Management Procedures

ECS Problem Management is administered through system-level and site-level control board reviews. These control boards oversee the analysis, recommendations, and actions taken to resolve ECS system/site problems concerning hardware, software, documentation, and procedures. The M&O and the site-level maintenance organization resolve routine maintenance issues at the system-level and site-level, respectively, using the Trouble Ticket System for tracking maintenance changes. Trouble Tickets (TT) may evolve into Non Conformance Reports (NCR), as required, which may then be utilized to generate Configuration Change Requests (CCR) to effect changes to the approved baseline. To ensure controlled change, NCRs are tracked using the DDTS in the EDF and CCRs manually by Systems Engineering.

The Trouble Ticket System is the first vehicle used to record and report problems with the operational system. Trouble Tickets can be generated by operations, maintenance, development, and customer personnel as well as users. The Trouble Ticket System is an automated database that tracks the resolution activities associated with each trouble ticket. Documentation that is related to the problem, and is not in electronic form, or is in electronic form at the DAAC, is distributed by the local CM Administrator (CMA), and is listed as an attachment to the trouble ticket.

The CM Administrator at each site serves as Trouble Ticket System administrator. Trouble Tickets initially generated at a site, the resolution of which require changes to the system level baseline, are forwarded to the SMC, where they are reviewed and *translated* into NCRs. Additionally, Trouble Tickets and CCRs that are generated at the sites, which are repaired locally, and result in site-unique extensions to the system level baseline, are forwarded to the SMC for tracking across the ECS baseline. The SMC CMA is responsible for tracking ECS level TTs after they have been received from the sites, and for propagating system problem resolutions for site visibility.

CMAs also support the activities of the local Trouble Ticket Review Board. This includes generating status reports, and implementing resolutions, instructions, and changes as directed by the Board. User Services Representatives monitor trouble tickets to notify users concerning problem resolution and status. Maintenance engineers at respective levels will record all activities in the trouble ticket. This information can be used to determine critical maintenance concerns related to frequency of occurrence, criticality level, and the volume of problems experienced. The maintainability analysis will guide critical changes, volume and type of support components to be utilized, and will focus further ECS release development.

This section provides an overview of the Trouble Ticketing process and defines the M&O procedures for processing and resolving trouble ticket submissions. In addition, this section provides instructions for diagnosing network problems.

## 8.1 The Problem Resolution Process — An Overview

### 8.1.1 ECS Internal Process

Any ECS user may submit Trouble Tickets using the local Trouble Ticketing System (TTS) at any site. TT submission triggers an internal review by the site's review board. Primary objectives of the internal review are to quickly identify and correct problems that fall within the site's capability to maintain, review and validate the priority of the problem, and to elevate to the system level those problems that either exceed their capability to repair, or that require a change to the system level baseline.

Problems passed from the sites to the ECS system level, are passed by transferring the trouble ticket from the local TTS to the SMC TTS. Here they are reviewed by the M & O Trouble Ticket Review Board (TTRB), which hosts daily teleconferences, known as the TT Telecon.

The permanent membership of the Trouble Ticket Review Board is as follows:

a. Chair: ECS M&O Manager or designee

b. Each DAAC: one member representative

c. SMC: one member representative

d. ECS Integrated Logistics Support: one member representative

e. Secretary: SMC CM Administrator

f. Sustaining engineering Lead or designee

g. Systems Engineering Department: one member representative

h. ESDIS M&O: one member representative

The roles and responsibilities of the participants in the TT Telecon are to:

a) Follow a nominal agenda that includes the following discussions:

   i) new trouble tickets

   ii) deferred trouble tickets

   iii) current high priority trouble tickets

b) Review each new TT to assure that the problem is a system level problem

c) Review each TT for adequate information to

   i) describe the problem

   ii) provide the operational baseline against which the problem was written

   iii) provide the operating mode (if applicable) within which the problem was written

iv) provide the machine(s) on which the problem occurred

v) provide the portion of the system (i.e. subsystem) within which the problem occurred

vi) indicates the operational impact on critical functions within the ECS

vii) indicate an approximate frequency of occurrence

viii) provide a satisfactory description of a workaround (if applicable).

The TTRB performs a preliminary review of each trouble ticket to confirm the priority assigned by the site, the completeness of information and data relevant to the problem, and whether it requires a change to the system level operational baseline.

The TTRB may forward TTs to the appropriate organizations or individuals for further analysis and technical investigation, resolution proposal, and NCR preparation, when required. The CM Administrator at the SMC provides administrative support to the TTRB by publishing minutes of teleconference meetings, tracking TTs and action items, and by translating TTs to NCRs.

The TTRB has the authority to direct resolutions to trouble ticket problems that do not change, or in any way affect, the ECS operational baseline and baseline documentation. An NCR is required when the Technical Investigation (TI) determines that the operational baseline must be changed in order to correct the problem identified in the trouble ticket.

The TTRB is not a voting board; the membership is appointed for the purpose of providing timely, direct technical support to the Chair, who has the decision making responsibility and authority.

The M&O CCB has the authority and responsibility to approve Class II changes to the operational baseline. Specific responsibilities include:

a. Review, approve and schedule; review and backlog; or reject each NCR's proposed resolution, or cost and schedule input from the Responsible Engineer (RE).

b. Approve the schedule for the deployment of configuration changes in the form of a 'drop' to the SMC.

c. Approve the content of each block.

d. Manage and adjust the schedule and contents of each block in accordance with ECS SDPS Program priorities and the progress of NCR work-off.

e. Review the status of all backlogged NCRs on a periodic basis. Schedule NCRs for a future block as appropriate

f. Collect and report on NCR statistics.

The permanent membership of the M&O CCB is as follows:

a. Chair: ECS M&O Manager of designee.

b. Each DAAC: one representative.

c. SMC: one representative.

d. System Engineering Department: one representative

e. Development Department: one representative.

f. The Patch IPT (or Test Department): one representative.

g. ECS Integrated Logistics Support Department: one representative.

h. Secretary: TBD

The M&O CCB reviews each NCR as received from the TTRB for technical merit, completeness, priority and complexity. It may direct additional technical investigation and analysis, or assign immediately for resolution. The Responsible Engineer prepares a proposal which will include:

a. A short, narrative description of the change that identifies the object or objects, configuration files, COTS SW, documentation, or scripts that require change. The nature of the change must also be included in the narrative.

b. A cost estimate where:

    1. LOW requires fewer than 5 staff-days of effort

    2. MEDIUM requires 6 to 20 Staff-days of effort

    3. HIGH requires more than 20 staff-days of effort

c. The date by which the change could be ready for integration and deployment, given the RE's knowledge of tasking, priorities, development activities, etc.

The M&O CCB is not a voting board. The CCB Chair has the singular authority for decision making. Other board members are appointed to provide direct and timely technical support to the CCB's decision making process.

In accordance with ECS Configuration Management procedures, the RE, as directed by the CCB, makes the necessary changes to the system baseline, including the ECS baseline documentation changes to support the resolution. These changes are then integrated into an M&O block by the Patch IPT.

The Patch IPT integrates and tests each block to verify that the system still meets functional and performance requirements, that the integrated block corrects the NCR(s), and that new features execute properly. The status of each block passing through integration and test is reported to the CCB regularly by the Patch IPT.

Upon satisfactory completion of the test program, the M&O CCB may authorize deployment of the block to the DAACs. The SMC pulls the block from the EDF and saves it to a locked-down directory. The SMC then notifies the DAACs that the block is available for transfer. Each

DAAC desiring the block notifies the SMC of the transfer path, and the SMC pushes the block as requested. DAACs may then install the block and keep the SMC apprised of the state of each mode.

### 8.1.2 Interface with ESDIS

The EOSDIS Sciences Systems Configuration Management Board CCB must approve all ECS Class I CCRs before work is authorized to commence. (See the *Sciences Systems Configuration Management Board (PCMB) Configuration Management Plan (level 3)* for discussion of change classification.)

Should the RE recommend, and the M&O CCB concur, that a CCR is an enhancement rather than a maintenance change, the M&O CCB will place the CCR in backlog after reviewing and approving the technical solution, cost and schedule impact. The CCR is then sent to the PCMB for approval. When approved by the PCMB and returned to the M&O CCB, the CCR is assigned to an RE for implementation.

When the PCMB or the ESDIS CCB forwards a new CCR as an enhancement to the M&O CCB, the CCR is assigned to an RE by the CCB. The CCB approved technical, cost and schedule assessments of the RE are sent by the M&O CCB back to the PCMB.

## 8.2 Problem Management Procedures

The Trouble Ticket System is comprised of the Remedy Action Request System, a Commercial Off-The-Shelf (COTS) product that provides a distributed trouble ticketing service which provides a common environment and means of classifying, tracking, and reporting problem occurrence and resolution to both ECS users and operations personnel. The trouble ticketing service:

- Provides a GUI for operations personnel to access all Trouble Ticket services.
- Provides a common Trouble Ticket entry format.
- Stores Trouble Tickets.
- Retrieves Trouble Tickets via ad hoc queries.
- Allows operations personnel to forward problems from one DAAC to another.
- Produces stock and common reports.
- Provides an interface to user's and operator's e-mail to provide automatic notification.
- Offers an application programming interface through which applications can submit trouble tickets.
- Provides summary information to the SMC from each DAAC to allow trend reports regarding trouble tickets.

- Defines a consistent “life cycle” for trouble tickets.
- Allows each DAAC a degree of customization through definition of further re-prioritization and action rules.

In addition to the functionality provided by Remedy’s Action Request System, the Trouble Ticketing Service utilizes a set of custom HTML pages ("screens") to provide registered users with the ability to submit new trouble tickets and query the current status of any of their previous entries. Access to the Trouble Ticketing System through this technique provides users an easy method for reporting problems in an environment with which most are already familiar. Additionally, as another means of trouble ticket entry, the Trouble Ticket System provides a text e-mail template through which automated entry of trouble tickets is possible. Support staff members are able to enter Trouble Tickets through the TTS interface for problems received via other methods (for example, phone calls).

The Remedy Action Request System also functions as the User Contact Log. Remedy’s Action Request System is configured to have a separate schema that contains the entries that User Services personnel enter for each contact that they receive from a user. The User Contact Log allows a trouble ticket to be initiated from a log entry: with the push of a button — the Trouble Ticket will be populated with information from the contact log.

Users submit trouble tickets to the User Services Desk. External users submit trouble tickets through the Internet [using a series of hypertext mark-up language (HTML) screens]. Site personnel submit trouble tickets via the Trouble Ticket System (Remedy).

User Services personnel process trouble tickets through the Trouble Ticket System for problem resolution in accordance with local policy. Trouble tickets are first evaluated to determine the severity of the problem and assignment of on-site responsibility. Every trouble ticket is logged into the database for record keeping purposes. Trouble tickets that can be resolved locally are assigned and tracked at the local center. The Operations Supervisor reviews each trouble ticket for priority verification and problem description; and assigns it to an appropriate Maintenance Engineer for resolution.

Matters that require external or higher level assistance; and problems, the repair of which require changes to the system baseline; are escalated to M&O via the Trouble Ticket Review Board (TTRB) Telecon for discussion and disposition. The telecon is held to coordinate trouble ticket activities within the M&O organization as well as with development, customer, and user organizations.

The SMC CM Administrator is responsible for preparing and disseminating the agenda and the minutes for the TTRB. Electronic dissemination via the web or e-mail is preferred. Agenda items may be supplemented or replaced by hardcopy or softcopy reports. Material from this meeting is distributed within each ECS organization and to customer and user organizations as required. A typical agenda might include:

- Review and prioritize each trouble ticket opened at each center.
- Review and re-prioritize older trouble tickets (as required).

- Assign trouble ticket work-off responsibility to one organization.
- Review distribution of trouble tickets by organization, priority and age.
- Discuss trouble ticket issues with development organizations.

## 8.3 Using the Trouble Ticket System

1. User or Operator discovers a problem with ECS (hardware, software, documentation, procedure) and documents this problem for later resolution. The submitter forwards a trouble ticket to User Services by: calling up the Trouble Ticket System via the Internet; going on-line with the Trouble Ticket System; phoning User Services; or sending an e-mail message to the Trouble Ticket System.
2. The trouble ticket is logged into the system. TTS automatically assigns "New" status to the trouble ticket and notifies the Operations Supervisor for assignment and prioritization. TTS notifies the Operations Supervisor via email, or through Remedy's notification tool, or both. The status of each trouble ticket, as it progresses through the resolution process, is recorded by the CMA.
3. The trouble ticket log is prioritized according to a triage system of maintenance priorities which determines priorities in relation to the effect of a problem on mission success, and is differentiated by scope of impact, frequency of occurrence, and the availability of an adequate work-around. The *Performance Assurance Requirements* document, NASA 420-05-03, identifies problem categories which correspond to the triage system of maintenance priorities:

   **Priority 1: System/Service cannot perform critical function or imposes major safety hazard. (TTS Priority: High)**

   A High priority trouble ticket is a persistent problem for which no workaround exists or a trouble ticket for which no workaround can be accommodated by DAAC operators given a detailed workaround procedure is documented but the procedure is inadequate based upon the complexity of the procedure, the abilities of an adequately trained and experienced operator, or both; and the consequence of the occurrence causes:

   - the unrecoverable loss of data,
   - the system to be unable to ingest, archive, process or distribute data
   - the system to be unable to support user searches for available data, or the operator to be unable to startup, shutdown or determine the status of system components.
   - significant impact to major DAAC test activities

**Priority 2: System/Service substantially impaired. (TTS Priority: Medium)**

A Medium priority trouble ticket has a workaround exists but the frequency of occurrence is expected to be more than approximately once per day, the occurrence cannot be anticipated, and the impact is such that system performance is degraded to a point that there is reasonable risk that 24 hours of work cannot be accommodated within a 24 hour period.

**Priority 3: System/Service slightly impaired. (TTS Priority: Low)**

Causes minor or no substantial impact to development, operations, services, or data processing functions. Support may be degraded, but mission can still be accomplished.

The Trouble Ticket System (TTS) has coded these three priorities as HIGH, MEDIUM, and LOW. All trouble ticket submittals are required to designate a priority level for the problem. However, the formal priority is assigned by the Operations Supervisor and maintained by the CM Administrator. M&O applies these additional priorities:

**Priority 4: Nuisance Problem**: Problems that do not impair the capability of the ECS, but rather could simplify the it's use, such as the arrangement of video screens, color, and so on.

**Priority 5: Enhancement:** Problems, the resolution of which result in enhanced system capability, or are out-of scope (Class I problem).

4. All affected Operations Supervisors at the sites (SMC, DAACs, EOC, EDF) are notified by e-mail of the problem and solicited for inputs to problem assessment (impact) and resolution.

5. The Trouble Ticket database is updated by the Operations Supervisor, and the trouble ticket may be modified to reflect this new information/coordination activity.

6. The Operations Supervisor assigns the problem to a Problem Investigator for further follow-up.

7. The Problem Investigator coordinates input from SEO, developers, vendors, and external organizations to effect the local resolution. The Problem Investigator presents significant issues at the TTRB Telecon.

8. The Problem Investigator updates the trouble ticket database.

9. The Problem Investigator forwards any information regarding proposed/implemented fixes to the established notification list.

10. In those cases where the problem resolution will result in a change to the operational baseline, or where the local site wishes to elevate the TT to M&O for advice or for resolution, the site CMA forwards the TT to the SMC.

11. The proposed resolution is then presented to the Trouble Ticket Review Board (and Government Failure Review Board for Priority 1 and Priority 2 problems) for review, ratification, or revision.

12. Changes that do not affect controlled configuration items may be approved and implemented by the Failure Review Board/Trouble Ticket Review Board and closed.

13. All system level changes are proposed in Non Conformance Reports (NCRs). The SMC is the custodian of a translation utility which, when invoked, opens an NCR in the Change Request Manager, and closes the trouble ticket in TTS. Emergency fixes (Priority 1) can be made locally with the approval of the local CCB, and then reported to M&O after the crisis is resolved. The M&O CCB may approve, reject, defer or revise the NCR.

14. The off-site problem resolution process is monitored by the M&O Trouble Ticket Review Board, which may also revise the proposed solution because of any system-level effect(s).

15. The NCR may be escalated to higher level CCBs for system and/or external elements that may be involved in the resolution process.

***Table 8.3-1. Trouble Ticket System - Activity Checklist***

| Order | Role | Task | Section |
|---|---|---|---|
| 1 | ECS users | Access the Trouble Ticket System | 8.3.1, 8.4.1 |
| 2 | ECS users | Submit Trouble Ticket | 8.3.2 |
| 3 | Maintenance Engineer | Modify Open Trouble Ticket | 8.3.3 |
| 4 | Operations Supervisor, Maintenance Engineer | Forward Trouble Ticket | 8.3.4 |
| 5 | Database Administrator | Add Users to TTS | 8.3.5 |
| 6 | CMA | Modify TTS User Privileges | 8.3.6 |
| 7 | CMA | Modify TTS' Configuration | 8.3.7 |
| 8 | Maintenance Engineer, CMA | Generate Reports | 8.3.8 |
| 9 | Maintenance Engineer | Maintain Escalation Time Table | 8.3.9 |

### 8.3.1 Accessing the Trouble Ticket System

The Trouble Ticket System may be accessed through either HTML or Remedy. The Trouble Ticket HTML is used by both User Services and the end user to submit trouble tickets without going through Remedy. It is accessed through the web. Through HTML, the user can submit,

obtain a list, and view details of trouble tickets. Complete and detailed instuctions for Remedy may be found in the current DID 609-CD and *Remedy's Action Request System Users's guide.*

Through Remedy, the User clicks on the User Tool icon, which opens the RelB-Trouble Tickets schema to submit, query, or work a Trouble Ticket. The Main Remedy Trouble Ticket screen is used to select the appropriate schema for submitting, modifying, or displaying a trouble ticket. The Main Page data fields are identified in Table 8.3.1-1.

The Remedy Action Request System provides a distributed Trouble Ticketing Service that furnishes DAACs a common environment and the means of classifying, tracking, and reporting problem occurrences and resolutions to both ECS users and operations personnel. The Trouble Ticketing Service:

· provides a GUI for operations personnel to access all Trouble Ticket services
· provide a common Trouble Ticket entry format
· stores Trouble Tickets
· retrieves Trouble Tickets via ad-hoc queries
· allows operations personnel to forward problems from one DAAC to another
· generates reports and statistics
· interfaces with user's and operator's e-mail to provide automatic notification
· offers an application programming interface through which applications can submit Trouble Tickets
· provides summary information to the SMC from each DAAC to allow trend reports regarding Trouble Tickets
· enables operations personnel to forward a copy of a "closed" trouble ticket to the SMC for insertion into the ECS Closed Trouble Ticket Database
· defines a consistent "life-cycle" for Trouble Tickets
· allows each DAAC a degree of customization through definition of further escalation and action rules.

Several time-saving features are available through Remedy: the Admin Tool, GUI Import tool, the Hardware Information schema, and the GUI Notification tool. Brief descriptions are provided in Sections 8.3.1.1 through 8.3.1.4.

***Table 8.3.1-1. RelB-Trouble Ticket Field Description (1 of 2)***

| Field Name | Data Type | Size | Entry | Description |
|---|---|---|---|---|
| Ticket-Id | Character | 15 | System generated | Ticket number which is set and maintained by the system |
| Ticket Status | Selection | 4 | Required | Status of the Trouble Ticket |
| Assigned-Priority | Selection | 4 | Required | Priority of Trouble Ticket assigned at the site (HIGH, MEDIUM, LOW) |
| Short Description | Character | 128 | Required | Short Description of the problem |
| Submitter Impact | Selection | 4 | Optional | Impact of the problem to the submitter (HIGH, MEDIUM, LOW) |
| Long-Description | Character | 4060 | Optional | Long Description of the problem |
| Resolution Log (End User Sees) | Diary | Unlim | Optional | General steps in the resolution of the problem |
| Detailed Resolution Log | Diary | Unlim | Optional | Detailed steps in the resolution of the problem |
| Submitter ID | Character | 30 | Required | User Id of the Submitter. |
| Submitter Name | Character | 30 | Optional | Full Name of the Submitter |
| Submitter Phone | Character | 30 | Optional | Phone number of the Submitter |
| Submitter e-mail | Character | 64 | Optional | E-mail address of the Submitter |
| Submitter Home DAAC | Character | 60 | Optional | Home DAAC of the Submitter |
| History | Diary | Unlim | Optional | Upon submission or modification, the person assigned to the ticket and the ticket status will be indicated in the History field.<br>Due to a limitation in Remedy, this information will only be written when the Assigned-to and Status fields are modified |
| CI | Character | 30 | Required | Name of the Configuration Item to which the problem is associated |
| Assigned-To | Character | 30 | Optional | Person that Trouble Ticket has been assigned to |
| Last-modified-by | Character | 30 | System generated | Person that last modified the Trouble Ticket |
| Create-date | Date/Time | 4 | System generated | Date Trouble Ticket was created at the present site |
| Last-Modified-date | Date/Time | 4 | System generated | Date the Trouble Ticket was last modified |
| Related CCR | Character | 60 | Optional | ID of a related CCR |

***Table 8.3.1-1. RelB-Trouble Ticket Field Description (2 of 2)***

| Field Name | Data Type | Size | Entry | Description |
|---|---|---|---|---|
| Key Words | Character | 255 | Optional | Key words to help identify this Trouble Ticket |
| Problem Type | Character | 30 | Required | Type of problem addressed by this Trouble Ticket |
| Closing Code | Character | 60 | Required | Disposition of the closed trouble ticket |
| Closed-by | Character | 60 | System generated | Person that closed this Trouble Ticket |
| Close-date | Date/Time | 4 | System generated | Date this Trouble Ticket was closed |
| Software Resource | Character | 60 | Optional | Software Resource that the problem came from |
| Hardware Resource | Character | 60 | Optional | Hardware Resource that this problem came from |
| Duplicate Master Id | Character | 25 | Optional | The Master Ticket-ID of this Trouble Ticket |
| Forward-to | Character | 60 | Optional | Site that this Trouble Ticket was last forwarded to |
| Forwarded-from | Character | 60 | Optional | Site that forwarded this Trouble Ticket |
| Forwarded-by | Character | 60 | Optional | Contact person at the forwarding site |
| Forward-date | Date/Time | 4 | Optional | Date Trouble Ticket was forwarded |
| Unique-Identifier | Character | 20 | Optional | Unique identifier which is established at the origination site<br>This identifier should NEVER be changed once set |
| Forwarded-to-1 | Character | 60 | Optional | First site to have been forwarded this Trouble Ticket |
| Forwarded-to-2 | Character | 60 | Optional | Second site to have been forwarded this Trouble Ticket |
| Forwarded-to-3 | Character | 60 | Optional | Third site to have been forwarded this Trouble Ticket |
| Forwarded-to-4 | Character | 60 | Optional | Fourth site to have been forwarded this Trouble Ticket |
| Associated Contact Log Id | Character | 30 | Optional | ID number of the Associated Contact Log |

### 8.3.1.1 Remedy's GUI Admin Tool

The Admin Tool is used to set user permissions for accessing Remedy schemas. This tool is accessed by clicking on the Admin Tool to open the correct schema, filter, escalation or active link. (Problem escalation is discussed in Section 8.3.9)

For more information on the Admin Tool, refer to the Remedy Administration Manual.

#### 8.3.1.2 Remedy's GUI Import Tool

The GUI Import tool is used to import existing entries rather than retyping information manually. It also enables the user to import entries into a schema from a file generated by the Admin tool. This tool is accessed by clicking on the Remedy Import Tool icon. For more information on the Import tool, refer to the Remedy User Guide.

#### 8.3.1.3 Remedy's Hardware Information Schema

Detailed hardware information can be provided beyond what can be entered on the Trouble Tickets schema by using the Hardware Information schema. The User Tools Hardware Information schema provides the vehicle to add a description of a hardware problem that corresponds to a trouble ticket. Through this schema, the user can enter detailed information about failed hardware components (e.g., part and serial numbers) and the actions taken to correct the problem. This schema is accessed by clicking on the User Tool icon and opening RelB-Hardware Information schema, or via Hardware Information link from Trouble Tickets schema.

#### 8.3.1.4 Remedy's GUI Notification Tool

The GUI Notification Tool is used as an alternative to email notification to notify the user of a Remedy event. This tool is accessed by clicking on the Remedy Notification Tool icon. It allows properties and options to be modified via pull-down menus. Examples of GUI notification include a beep, a pop-up window, a flashing message. In addition, both an email and a GUI notification can be sent if the site so desires.

### 8.3.2 Submit a Trouble Ticket

When a problem is either found by or reported to User Services, follow the procedure applicable to your system, to create and log trouble tickets. Trouble tickets can be submitted via HTML or via Remedy's user tool – RelB-Trouble Tickets schema. Remedy's Contact Log schema is used to classify, track, and report contacts of ECS users and operators and also to submit a trouble ticket from a log entry. E-mail is another method of submitting a trouble ticket. The template is available from your System Administrator.

1. For HTML submission:
    a) Access HTML Trouble Ticketing Main page.
    b) Select Submit link which opens the Submit page.
    c) Fill out the impact, short description, and detailed description fields.
    d) Select Submit.
2. For submission through Remedy (See the Remedy User Guide, Chapter 3, “Submitting an Action Request” for the general steps):
    a) Access Remedy User Tool (See the Remedy User Guide, Chapter 2, “Getting Started with the User Tool”, page 2-3, section on “Starting the User Tool”).

b) Access RelB-Trouble Ticket schema (See the Remedy User Guide, Chapter 2, “Getting Started with the User Tool”, page 2-18, section on “Using Schemas”).

c) Select Open Submit from the File menu.

d) Fill in those fields as specified in Table 8.3.1-1 "RelB-Trouble Ticket Field Description".

f) Select Apply.

3. For submission from a Remedy Contact Log entry:

a) Click on User Tool icon and open RelB-Contact Log schema.

b) Fill out Contact Log ID and Contact Information. If the contact is a registered Remedy user, the contact information is filled out automatically.

c) Fill in Short Description (limit is 128 characters).

d) Click on **Create TT** button.

4. For submission via E-mail:

a) Obtain Template from your System Administrator.

b) Address the message to arsystem@_____._____._____.

c) Copy template into message area. DO NOT INCLUDE AS AN ATTACHMENT. DO NOT ALTER TEMPLATE. The template is presented in Figure 8.3.2-1. The # sign indicates comments, which are not read by Remedy. **Enter data as indicated in Figure 8.3.2-1.** Send message.

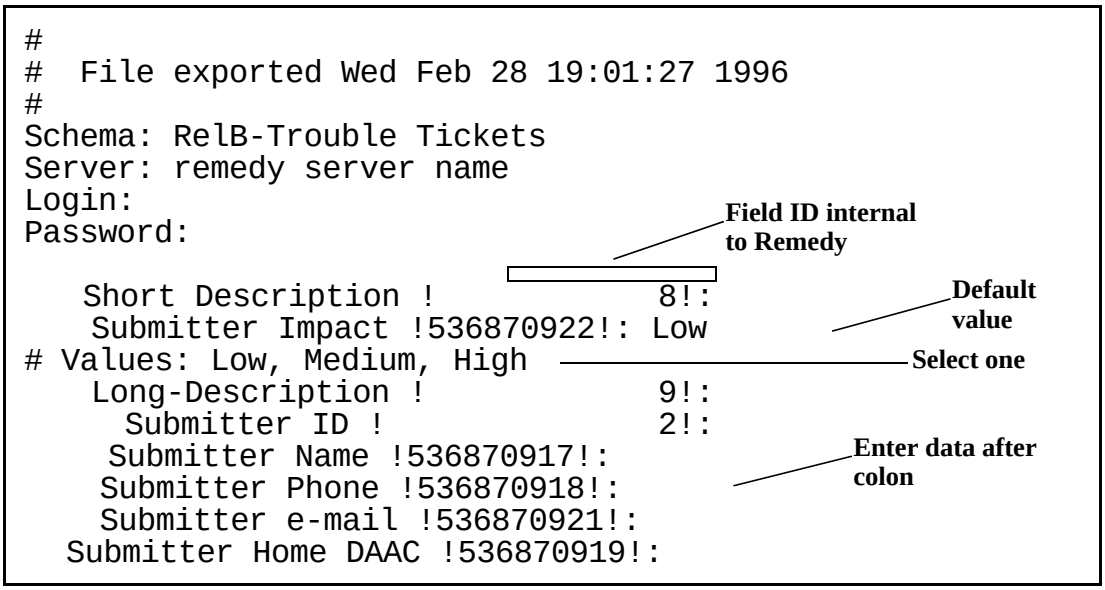


***Figure 8.3.2-1. Trouble Ticket E-mail Template***

### 8.3.3 Reviewing and Modifying Open Trouble Tickets

Trouble tickets may need to be modified based on better understanding of the nature of problems defined and revised resolutions from the Maintenance Engineer investigations, Sustaining Engineering inputs, Developer inputs, Trouble Ticket Review Board decisions, Change Control Board decisions, and/or Failure Review Board decisions. The results will be factored into revisions and/ or additions to the Trouble Ticket log.

1. For HTML Review and Modification of Trouble Tickets:

   a) Access HTML Trouble Ticketing Main (see Section 8.4). Trouble Tickets can be ***submitted, queried or modified***.

   b) Select List link which opens the List page and shows each Trouble Ticket's Identification, Short Description, and Status.

   c) Select the Trouble Ticket Id to get a more detailed description of that particular Trouble Ticket.

2. For Reviewing and Modifying Trouble Tickets through Remedy (See the Remedy User Guide, Chapter 4, "Reviewing and Modifying Action Request" for the general steps):

   a) Access Remedy User Tool (See the Remedy User Guide, Chapter 2, "Getting Started with the User Tool", page 2-3, section on "Starting the User Tool").

   b) Access Release B-Trouble Ticket schema (See the Remedy User Guide, Chapter 2, "Getting Started with the User Tool", page 2-18, section on "Using Schemas").

c) Select List from the Query menu.

d) From the List pick the Trouble Ticket(s) that you would like to Review/Modify.

e) Select Modify Individual from the Query menu of the List window to review and modify the Trouble Ticket.

### 8.3.4 Forwarding Trouble Tickets

Trouble ticket administrative reports are forwarded for local and system-wide usage. The trouble ticket contains all forwarding information; once forwarded, it goes to the RelB-TT-ForwardToSite holding area (transparent to the user). The RelB-TT-Sites schema is used to indicate the site name and email address to be used in forwarding. To forward a trouble ticket:

1. Click on User Tool icon and open RelB-Trouble Ticket schema.
2. Set the status to "Forwarded".
3. Select a value for the Forward-to field from its picklist.
4. Select the Forward button.
5. Select Apply.

If necessary, a site name and email address can be modified, added, or deleted to update the picklist of Release B sites by authorized Remedy users: DAACs, SMC, NSI, EBnet. To modify picklist:

1. Click on User Tool icon and open RelB-TT-Sites schema.
2. Modify data.

### 8.3.5 Adding Users to Remedy

The database administrator uses the RelB-User schema to grant access to the Remedy tool. See Remedy Administrator's Guide for OSF/ Motif, Chapter 3, "Setting Up Users and Groups", page 3-11, section on "Adding Users". Users who change jobs can be deleted.

### 8.3.6 Changing Privileges in Remedy

This procedure is used by the CM Administrator to control privileges of those who have been granted access. For more information, refer to the Remedy Administrator's Guide.

**NOTE:** No group should be modified without proper configuration change approval.

To change Privileges in Remedy:

1. See Remedy Administrator's Guide, Chapter 3, "Setting Up Users and Groups", page 3-2, section on "Understanding Access Control".
2. See Remedy Administrator's Guide, Chapter 3, "Setting Up Users and Groups", page 3-4, section on "Access Control Groups".

3. Groups have already been created to accommodate all privileges needed by Remedy Users for Release B. These groups are identified in see Table 8.3.6-1.

***Table 8.3.6-1. Table of Access Control Groupings***

| Groups | Description | Access Type |
|---|---|---|
| Operator | Submits trouble ticket internally. | Change |
| User Services | Submits trouble ticket internally for user. | Change |
| Operations Supervisor | Assigns problem priority and resolution responsibility. Can forward trouble ticket to another site. | Change |
| Resource Manager | Assigns problem priority and resolution responsibility. Can forward trouble ticket to another site. | Change |
| Resolution Technician | Attempts to resolve problem. | Change |
| Trouble Ticket Review Board Chair Person | Reviews proposed solutions | Change |
| Administrator | Adds groups and users. Changes permissions. Sets escalation times. Sets menu items. Etc. | Change |
| Sub-Administrator | Same functions as Administrator but only with certain Schemas. | Change |
| Browser | Read only permission. | Read |
| Customize | Can use all features of the customize facility. | Change |
| Submitter | Place holder for anyone that submits a trouble ticket. | NA |
| Assignee | Place holder for anyone that is assigned a trouble ticket. | NA |
| Public | Read only permission. Guest users are automatically put in this group. | Read |
| NotifyNewEscal | Everyone that will be notified on an escalation due to trouble ticket being in “New” status. | Read |
| NotifyAssignedEscal | Everyone that will be notified on an escalation due to trouble ticket being in “Assigned” status. | Read |
| NotifySolPropEscal | Everyone that will be notified on an escalation due to TT being in “Solution Proposed” status. | Read |
| NotifyImpSolEscal | Everyone that will be notified on an escalation due to trouble ticket being in “Implement Solution” status. | Read |
| NotifySolImpEscal | Everyone that will be notified on an escalation due to TT being in “Solution Implemented” status. | Read |

### 8.3.7 Modifying Remedy's Configuration

RelB-Trouble Ticket schemas' pulldown menus can be customized. Customization is achieved through the User Tool by modifying the RelB-Menu-Closing Codes, RelB-Menu-Hardware Resources, RelB-Menu-Software Resources, RelB-Menu-Key Words, RelB-Menu-Problem Type, Sites schemas.

To modify the Remedy environmental variables, refer to the Remedy User's Guide and Remedy Administrator's Guide as indicated.

1. See Remedy User's Guide, Chapter 7, "Customizing the Environment."
2. See Remedy Administrator's Guide, Chapter 1, "Using the Administrator Tool."

   **NOTE:≠** No administrative configuration should be made without proper configuration change approval.

### 8.3.8 Generating Trouble Ticket Reports

A set of predefined reports will be placed in a public directory that should be downloaded to your personal configuration directory (see the Remedy User Guide, Chapter 2, "Getting Started with the User Tool," page 2-31, section "Sharing Macros, User Commands and Custom Reports," sub-section "Copying Files"). These reports are trouble ticket administrative reports generated for local and system-wide usage. See Remedy User's Guide, Chapter 5, "Reports."

### 8.3.9 Re-prioritization of Dated Trouble Ticket Logs

Remedy provides automated prioritization of trouble tickets based on delinquency status of out-dated trouble ticket logs. The File Tickler System automatically assigns higher priority to promote timely resolution.

1. Access Remedy User Tool (See the Remedy User Guide, Chapter 2, "Getting Started with the User Tool," page 2-3, section on "Starting the User Tool").
2. Access RelB-Times schema (See the Remedy User Guide, Chapter 2, "Getting Started with the User Tool", page 2-18, section on "Using Schemas").
3. Select List from the Query menu.
4. From the List pick the Time(s) that you would like to Review/Modify.
5. Select Modify Individual from the Query menu of the List window to review and/or modify the Time (in seconds).

## 8.4 Using Hypertext Mark-up Language (HTML) Screens

The hypertext mark-up language (HTML) Trouble Ticket Main Screen ("ECS Trouble Ticketing: Menu") provides an introduction on how to use the Trouble Ticketing HTML, and is used by registered ECS users to go to either the Submit page or List page.

Selecting **Submit a Trouble Ticket** will bring up the Trouble Ticketing Submit screen.

Selecting **List the [username] Trouble Tickets** will bring up the Trouble Ticketing List screen.

Help on the Trouble Ticket HTML screens is available by clicking on the Trouble Ticket Help icon at the bottom of the screen .

### 8.4.1 ECS Trouble Ticketing HTML Submit Screen

The HTML Trouble Ticket Submit screen is used by registered ECS users to submit a Trouble Ticket.

Table 8.4.1-1 below provides a description of the Trouble Ticket HTML Submit Screen fields.

***Table 8.4.1-1. Trouble Ticket HTML Submit Screen Field Description***

| Field Name | Data Type | Size | Entry | Description |
|---|---|---|---|---|
| ID | character | 30 | System generated | Submitter Id |
| Name | character | 30 | System generated | Submitter Name |
| E-mail address | character | 64 | System generated | Submitter E-mail Address |
| Phone | character | 30 | System generated | Submitter Phone Number |
| Home DAAC | character | 60 | System generated | Submitter Home DAAC |
| Impact | selection | 4 | Required | Impact to Submitter |
| Short description | character | 125 | Required | Short description of problem |
| Detailed problem description | character | 245 | Optional | Long description of problem |

When the information is completed, the user can submit the Trouble Ticket by clicking on the **Submit** button on the lower half of the screen. The Problem Information Fields can be cleared by clicking on the **Reset** button. The user also has the choice of returning to the Trouble Ticketing Homepage or going to the Trouble Ticket Help screen by clicking on the respective icons at the bottom of the page.

### 8.4.2 ECS Trouble Ticketing HTML Success Screen

The HTML Trouble Ticket Success screen is used by registered ECS users to ensure successful submission and report Trouble Ticket Id.

From this screen, the user is provided with the following information/options:

- Confirmation that the trouble ticket was successfully submitted, the trouble ticket identification number, and who submitted the trouble ticket.

- Notification that an E-mail message has been sent to the user indicating that a Trouble Ticket has been submitted and when it was closed. Selecting this Trouble Ticket will open the Trouble Ticket Detailed Screen.

- Instructions telling the user how to check the progress of Trouble Ticket resolution.

The user also has the choice of returning to the Trouble Ticketing Homepage or going to the Trouble Ticket Help screen by clicking on the respective icons at the bottom of the page.

### 8.4.3 ECS Trouble Ticketing HTML List Screen

The HTML Trouble Ticket List screen is used by registered ECS users to List Trouble Tickets for a user and links the listed Trouble Ticket Number to the Trouble Ticket Detailed Screen.

Table 8.4.3-1 below provides a description of the Trouble Ticket HTML List Screen fields.

***Table 8.4.3-1. Trouble Ticket HTML List Screen Field Description***

| Field Name | Data Type | Size | Entry | Description |
|---|---|---|---|---|
| Trouble Ticket Number | character | 15 | System generated | Trouble Ticket Id |
| Problem Short Description | character | 125 | System generated | Short Description of Problem |
| Status | character | 20 | System generated | Status of Trouble Ticket |

The user also has the choice of returning to the Trouble Ticketing Homepage or going to the Trouble Ticket Help screen by clicking on the respective icons at the bottom of the page.

### 8.4.4 ECS Trouble Ticketing HTML Detailed Screen

The HTML Trouble Ticket Detailed screen is used by registered ECS users to see a more detailed output of a Trouble Ticket.

Table 8.4.4-1 below provides a description of the Trouble Ticket HTML Detailed Screen fields.

***Table 8.4.4-1. Trouble Ticket HTML Detailed Screen Field Description***

| Field Name | Data Type | Size | Entry | Description |
|---|---|---|---|---|
| ID | character | 30 | System generated | Submitter Id |
| Name | character | 30 | System generated | Submitter Name |
| E-mail address | character | 64 | System generated | Submitter E-mail Address |
| Phone | character | 30 | System generated | Submitter Phone Number |
| Home DAAC | character | 60 | System generated | Submitter Home DAAC |
| Status | selection | 4 | System generated | Status of Trouble Ticket |
| Impact | selection | 4 | System generated | Impact to Submitter (low, medium, high) |
| Short description | character | 125 | System generated | Short description of problem |
| Detailed problem description | character | 245 | System generated | Long description of problem |
| Log | character | unlim. | System generated | Diary of problem resolution |

The user also has the choice of returning to the Trouble Ticketing Homepage or going to the Trouble Ticket Help screen by clicking on the respective icons at the bottom of the page.

### 8.4.5 ECS Trouble Ticketing HTML Help Screen

The HTML Trouble Ticket Help screen is used by registered ECS users to get help with the HTML screens.

This screen provides general information on the following:

- Index -- links that scroll the screen to the Introduction, Submit Page, and List Page sections listed below.
- Introduction – provides information about the Trouble Ticket Help page
- Menu Page – describes the Trouble Ticketing Menu page.
- Submit Page – describes the Trouble Ticket Submit page.
- Success Page – describes the Trouble Ticket Success page.
- List Page – describes the Trouble Ticket List page.

- Detailed Page - describes the Trouble Ticket Detailed page.

## 8.5 Emergency Fixes

Emergencies may be in real time with the understanding that the Trouble Ticket System must be brought up-to-date as soon as possible after implementing the repair. The example presented below, involves a hardware failure. The problem needs to be resolved quickly to bring a system back into operation. The resolution requires emergency replacement of a component that is of a later version than is contained in the original equipment. The scenario is summarized in Table 8.5-1.

**Scenario — An Example of an Emergency Change Procedure**

It is 7:00 on a Saturday evening. The DAAC operator detects a problem with the automated tape library (ATL) and reports the problem to the Trouble Ticket System. The trouble ticket is routed to the System Administrator, who confirms that the system will not operate and notifies the site Maintenance Engineer. After running further diagnostics, the Maintenance Engineer reports the problem and symptoms to the OEM's maintenance desk. The original equipment manufacturer (OEM) maintenance representative arrives and concludes that a controller card has failed. The only card the OEM has immediately available is of a later version and no spares are available on site. It will be Monday at the earliest before a replacement board of the same revision level can be located. The site maintenance engineer reports this to the operations Crew Chief (i.e., shift leader) for a decision.

The DAAC cannot afford to have the ATL down until Monday. The Crew Chief calls the DAAC manager at home, apprises him of the situation, and obtains approval to replace the board with the later version if tests conclude that it works properly. The OEM's maintenance representative installs the board. The site's sustaining engineer tests the new controller board, finds that it works properly, and brings the ATL back on-line. The sustaining engineer updates the trouble ticket to document the configuration change and the authority for the change, and forwards it to the site CMA. The site Maintenance Engineer updates the property record with the model, version, and serial number of the new board.

The site CM Administrator reviews the trouble ticket, and presents it to the local CCB for approval. The CMA then updates the Baseline Manager with the new configuration and TT number authorizing the change. At this point, the site is operational at variance from the system baseline, i.e., site unique, and is at risk of loosing maintenance support from M&O.

The site CMA forwards the trouble ticket to the SMC, presented to the TTRB for priority review and is solved or translated into an NCR. The M&O TTRB reviews all emergency TTs to assess whether there may be impacts to the ECS and/or applicability to other sites. The M&O CCB monitors all open NCR promotion and approves them for closure.

In the event that it is later discovered that the new version controller board has adverse impacts when operating in the ECS configuration, a board of the original version will have to be obtained to replace the newer version. In such cases, the action will be recorded on a new trouble ticket, citing the previous CCR.

Table 8.5-1 summarizes emergency procedures that might be taken during an after-hours, over-the-weekend emergency hardware failure.

***Table 8.5-1. Example of Emergency Change Procedure***

| Operator/User | System |
|---|---|
| Operator prepares trouble ticket to report ATL controller failure. | Trouble ticket recorded. |
| System Administrator and Maintenance Engineer confirm ATL controller failure, call ATL maintenance vendor, report call and time in Trouble ticket. | Diagnosis and vendor call recorded in trouble ticket. |
| Maintenance vendor isolates failure to the controller card. The later version card is the only card available. | |
| Crew Chief notified of situation and decision needed to bring ATL up to full operating capability. Approves use of the newer version card, records decision in the trouble ticket, forwards trouble ticket to Sustaining Engineer. | |
| Maintenance vendor installs card, tests using hardware diagnostics. Crew Chief authorizes controller to be brought back on-line. | |
| Maintenance Engineer records card installation by model/version into the trouble ticket. | Trouble ticket action recorded. |
| Sustaining Engineer reads trouble ticket and prepares for discussion at 8:30 am meeting. Updates the TT. | Install action recorded in TT. TT routed to the CMA. |
| CMA updates site baseline, forwards TT to the CCB. When CCB approves the action, CMA forwards to SMC. | Site ATL baseline updated in Baseline Manager. |
| M&O reviews emergency NCR, checks for applicability to other sites, opens new NCR if other sites require change. | |

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