

420-WP-011-001

# SMC Unattended Operations Scenarios for the ECS Project

White Paper

White Paper--Not intended for formal review or  
government approval.

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# Abstract

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This white paper presents an operations concept by way of operations scenarios for unattended operations support provided by the System Monitoring Center (SMC). The scenarios presented demonstrate the feasibility of SMC providing support to the DAACs during periods of unattended operations. This paper responds to the recommendations presented in the RID issued at the Release B CDR, RID 86, unattended operations. The scenarios presented are Meant to be representative of what the current design of the ECS is capable of supporting for unattended operations. All of the scenarios are based on the concept of monitoring managed objects and remotely logging into a DAAC for corrective action. These scenarios are intended to be included in the update of the Release B SDPS/CSMS Operations Scenarios for the ECS Project, 605-CD-002-001, prior to Release B's RRR in 1997. As such, they follow the document's form and format.

**Keywords:** system, monitoring, center, SMC, operations, unattended, operations, RID

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## **Abbreviations and Acronyms**

# 1. Introduction

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## 1.1 Purpose

This white paper presents an operations concept by way of operations scenarios for unattended operations support provided by the System Monitoring Center (SMC). This paper responds to the recommendations presented in the RID issued at the Release B CDR, RID 86, unattended operations. The scenarios presented are meant to be representative of what the current design of the ECS is capable of supporting for unattended operations. All of the scenarios are based on the concept of monitoring managed objects and remotely logging into a DAAC for corrective action. These scenarios are intended to be included in the update of Release B SDPS/CSMS Operations Scenarios for the ECS Project document, 605-CD-002-001, prior to Release B's RRR in 1997. Therefore they follow the document's form and format.

## 1.2 Organization

This paper is organized as follows:

- Section 1 of this paper defines the purpose and outlines the content
- Section 2 provides a listing of the related documents, which were used as source information for this document.
- Section 3 provides the representative unattended operations scenarios.
- The section Abbreviations and Acronyms contains an alphabetized list of the definitions for abbreviations and acronyms used in this document.

## 1.3 Review and Approval

This White Paper is an informal document approved at the Office Manager level. It does not require formal Government review or approval; however, it is submitted with the intent that review and comments will be forthcoming

The concepts presented are expected to migrate into the following formal CDRL delivery:

605-CD-002-001, Release B SDPS/CSMS Operations Scenarios for the ECS Project

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## 2. Related Documentation

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### 2.1 Parent Documents

The parent documents are the documents from which the scope and content of this Release B SDPS/CSMS Operations Scenarios document are derived.

423-10-01-0	Goddard Space Flight Center, Earth Observing System Data and Information System (EOSDIS) Project--Level 2 Requirements, Volume 0
423-10-01-1	Goddard Space Flight Center, Earth Observing System Data and Information System (EOSDIS) Project--Level 2 Requirements, Volume 1
423-41-01	Goddard Space Flight Center, Earth Observing System Data and Information System (EOSDIS) Core System, Statement of Work
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System

### 2.2 Applicable Documents

The following documents are referenced within this Release B SDPS/CSMS Operations Scenarios document, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document.

305-CD-002-002	Science Data Processing Segment (SDPS) Design Specification for the ECS Project
305-CD-003-002	Communications and System Management (CSMS) Design Specification for the ECS Project, Preliminary
305-CD-020-002	Release B SDPS/CSMS Design Overview Specification for the ECS Project
305-CD-021-002	Release B SDPS Client Subsystem Design Specification for the ECS Project
305-CD-022-002	Release B SDPS Interoperability Subsystem Design Specification for the ECS Project
305-CD-023-002	Release B SDPS Data Management Subsystem Design Specification for the ECS Project
305-CD-024-002	Release B SDPS Data Server Subsystem Design Specification for the

ECS Project

305-CD-025-002	Release B SDPS Ingest Subsystem Design Specification for the ECS Project
305-CD-026-002	Release B SDPS Planning Subsystem Design Specification for the ECS Project
305-CD-027-002	Release B SDPS Data Processing Subsystem Design Specification for the ECS Project
305-CD-028-002	Release B CSMS Communications Subsystem Design Specification for the ECS Project
305-CD-029-002	Release B CSMS System Management Subsystem Design Specification for the ECS Project
305-CD-030-002	Release B GSFC DAAC Design Specification for the ECS Project
305-CD-031-002	Release B LaRC DAAC Design Specification for the ECS Project
305-CD-032-001	Release B MSFC DAAC Design Specification for the ECS Project
305-CD-033-002	Release B EDC DAAC Design Specification for the ECS Project
305-CD-034-002	Release B ASF DAAC Design Specification for the ECS Project
305-CD-035-002	Release B NSIDC DAAC Design Specification for the ECS Project
305-CD-036-002	Release B JPL PO.DAAC Design Specification for the ECS Project
305-CD-037-002	Release B ORNL DAAC Design Specification for the ECS Project
305-CD-038-002	Release B System Monitoring and Coordination Center (SMC) Design Specification for the ECS Project
305-CD-039-002	Release B Data Dictionary for the ECS Project Subsystem Design Specification
305-CD-040-001	Flight Operations Segment (FOS) Design Specification for the ECS Project (Segment Level Design) Overview
305-CD-041-001	Flight Operations Segment (FOS) Planning and Scheduling Design Specification for the ECS Project
305-CD-042-001	Flight Operations Segment (FOS) Command Management Design Specification for the ECS Project
305-CD-043-001	Flight Operations Segment (FOS) Resource Management Design Specification for the ECS Project
305-CD-044-001	Flight Operations Segment (FOS) Telemetry Design Specification for the ECS Project

305-CD-045-001	Flight Operations Segment (FOS) Command Design Specification for the ECS Project
305-CD-046-001	Flight Operations Segment (FOS) Real-Time Contact Management Design Specification for the ECS Project
305-CD-047-001	Flight Operations Segment (FOS) Analysis Design Specification for the ECS Project
305-CD-048-001	Flight Operations Segment (FOS) User Interface Design Specification for the ECS Project
305-CD-049-001	Flight Operations Segment (FOS) Data Management Design Specification for the ECS Project
305-CD-050-001	Flight Operations Segment (FOS) Planning and Scheduling Program Design Language (PDL) for the ECS Project
305-CD-051-001	Flight Operations Segment (FOS) Command Management Program Design Language (PDL) for the ECS Project
305-CD-052-001	Flight Operations Segment (FOS) User Interface Design Specification for the ECS Project
305-CD-053-001	Flight Operations Segment (FOS) Telemetry Program Design Language (PDL) for the ECS Project
305-CD-054-001	Flight Operations Segment (FOS) Real-Time Contact Management Program Design Language (PDL) for the ECS Project
305-CD-055-001	Flight Operations Segment (FOS) Analysis Program Design Language (PDL) for the ECS Project
305-CD-056-001	Flight Operations Segment (FOS) User Interface Program Design Language (PDL) for the ECS Project
305-CD-057-001	Flight Operations Segment (FOS) Data Management Program Design Language (PDL) for the ECS Project
313-CD-006-002	Release B SDPS/CSMS Internal Interface Control Document for the ECS Project
604-CD-002-003	Operations Concept for the ECS project: Part 2B -- ECS Release B
605-CD-002-001	Release B SDPS/CSMS Operations Scenarios for the ECS Project
607-CD-001-002	ECS Maintenance and Operations Position Descriptions
611-CD-002-001	Mission Operation Procedures for the ECS Project
210-TP-001-006	Technical Baseline for the ECS Project, Technical Paper

## 2.3 Information Documents Not Referenced

The following documents, although not referenced herein and/or not directly applicable, do amplify and clarify the information presented in this document. These documents are not binding on the content of this Release B SDPS/CSMS Operations Scenarios document.

209-CD-001-003	Interface Control Document Between EOSDIS Core System (ECS) and the NASA Science Internet
209-CD-002-003	Interface Control Document Between EOSDIS Core System (ECS) and ASTER Ground Data System
209-CD-003-003	Interface Control Document Between EOSDIS Core System (ECS) and the EOS-AM Project for AM-1 Spacecraft Analysis Software
209-CD-004-003	Data Format Control Document for the Earth Observing System (EOS) AM-1 Project Data Base, 2/96
209-CD-005-005	Interface Control Document (ICD) Between EOSDIS Core System (ECS) and Science Computing Facilities (SCF)
209-CD-006-005	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC) for the ECS Project
209-CD-007-003	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and TRMM Science Data and Information System (TSDIS) for the ECS Project
209-CD-008-004	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the Goddard Space Flight Center (GSFC) Distributed Active Archive Center (DAAC) for the ECS Project
209-CD-010-002	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the Langley Research Center (LaRC) Distributed Active Archive Center (DAAC) for the ECS Project
209-CD-011-004	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the Version 0 System for Interoperability
209-CD-013-003	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the Landsat 7 System [for the ECS Project]
209-CD-021-002	Interface Control Document (ICD) Between the EOSDIS Core System (ECS) and the Alaska SAR (Synthetic Aperture Radar) Facility (ASF) Distributed Active Archive Center (DAAC) for the ECS Project
209-CD-022-002	Interface Control Document (ICD) Between EOSDIS Core System (ECS) and the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC) for the ECS Project

209-CD-025-002 Interface Control Document (ICD) Between EOSDIS Core System (ECS) and the Spacecraft Software Development and Validation Facilities (SDVF)

209-CD-027-001 Interface Control Document (ICD) Between EOSDIS Core System (ECS) and the Stratospheric Aerosol and Gas Experiment (SAGE-III) Project

305-CD-004-001 Overview of Release A SDPS and CSMS System Design Specification for the ECS Project

305-CD-005-001 Release A SDPS Client Subsystem Design Specification for the ECS Project

305-CD-006-001 Release A SDPS Interoperability Subsystem Design Specification for the ECS Project

305-CD-007-001 Release A SDPS Data Management Subsystem Design Specification for the ECS Project

305-CD-008-001 Release A SDPS Data Server Subsystem Design Specification for the ECS Project

305-CD-009-001 Release A SDPS Ingest Subsystem Design Specification [for the ECS Project]

305-CD-010-001 Release A SDPS Planning Subsystem Design Specification for the ECS Project

305-CD-011-001 Release A SDPS Data Processing Subsystem Design Specification for the ECS Project

305-CD-012-001 Release A CSMS Communications Subsystem Design Specification for the ECS Project

305-CD-013-001 Release A CSMS Systems Management Subsystem Design Specification for the ECS Project, Final

305-CD-014-001 Release A GSFC DAAC Design Specification for the ECS Project

305-CD-015-001 Release A LaRC DAAC Design Specification for the ECS Project

305-CD-016-001 Release A MSFC DAAC Design Specification for the ECS Project

305-CD-017-001 Release A EDC DAAC Design Specification for the ECS Project

305-CD-018-001 Release A Data Dictionary for Subsystem Design Specification for the ECS Project

305-CD-019-001 Release A System Monitoring and Coordination Center Design Specification for the ECS Project

313-CD-004-001	Release A CSMS/SDPS Internal Interface Control Document for the ECS Project
601-CD-001-004	Maintenance and Operations Management Plan for the ECS Project
604-CD-001-004	Operations Concept for the ECS Project: Part 1-- ECS Overview
604-CD-003-002	Operations Concept for the ECS Project: Part 2A -- ECS Release A
604-CD-004-001	Operations Concept for the ECS Project: Part 2 – FOS
194-TP-548-001	User Scenario Functional Analysis [for the ECS Project]

## 3. SMC Unattended Operations Scenarios

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The SMC monitors DAAC operations during periods of manned and unmanned operations. Through the use of the ECS Management Services, the SMC can remotely monitor the execution of all managed objects at a DAAC. All of the scenarios presented are based on the concept of monitoring managed objects and, using ktelnet, remotely logging into a DAAC for corrective action. The scenarios presented are meant to be representative of what the current design of the ECS is capable of supporting for unattended operations.

The reader is directed to read Section 5, The System Management Environment, Release B SDPS/CSMS Operations Scenarios for the ECS Project, 605-CD-002-001, for further discussion of managed applications.

### 3.1 Autosys Abends

#### 3.1.1 Autosys Abends Description

During the course of operations, the NSIDC DAAC may choose to perform reprocessing during periods of unattended operations. The COTS Autosys software is used to support operational activities surrounding production processing. It provides job monitoring, scheduling, fault notification and restart capabilities. This scenario describes a failure with Autosys and demonstrates how HPOV is used to identify the managed object that caused the alarm, and how SMC can resolve the problem.

More details on the underlying components of Autosys software are contained in Section 4.6, CSCI Structure, Release B SDPS Data Processing Subsystem Design Specification for the ECS Project, 305-CD-027-002. More information about the Autosys Operator Console is contained in Section 4.7.2, Operator Interfaces, Release B SDPS Data Processing Subsystem Design Specification for the ECS Project, 305-CD-027-002.

While this scenario is basically applicable to any software product that has been designated a managed object, it may not be practical for all of them.

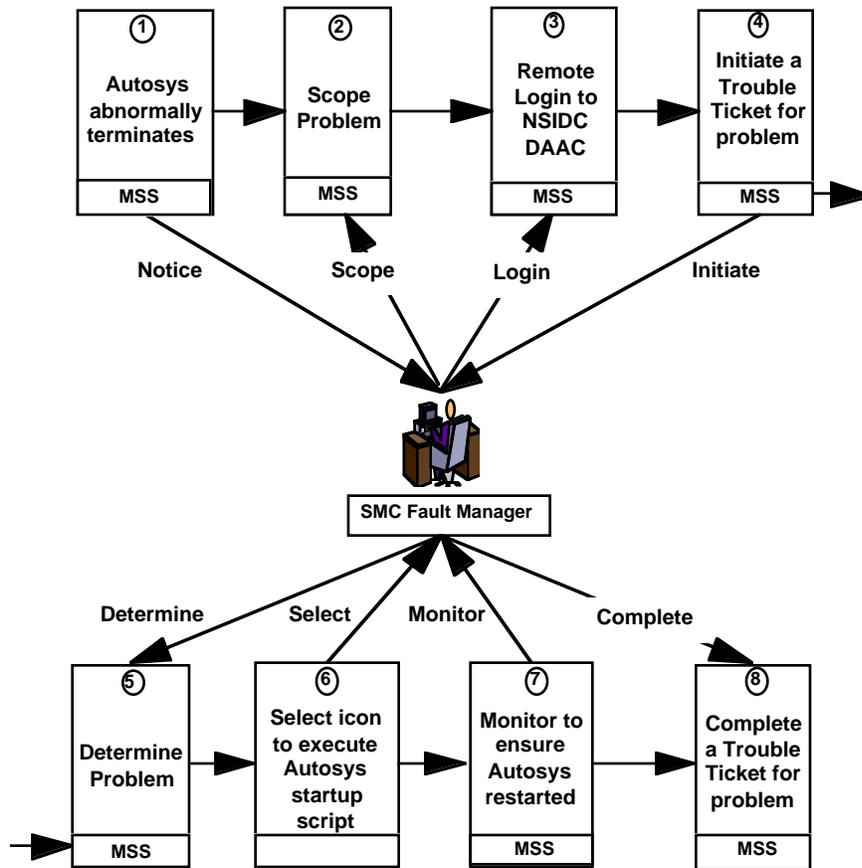
**Assumptions:**

NSIDC operations is staffed Monday through Sunday, 10:00 a.m. to 7:00 p.m. ET.

HPOV is running on a SMC workstation simultaneously displaying statuses of all the DAACs.

SMC personnel are logged into the SMC system at a different workstation and have a Desktop running. There is an icon for each DAAC that will bring up the Desktop that the SMC personnel can use to perform unattended operations. The Desktop will display only those icons SMC personnel may use.

SMC limits of authorities are defined in agreements with the DAACs, and the procedures are defined in the Mission Operation Procedures for the ECS Project, 611-CD-002-001.



**Figure 3.1.1-1. Autosys Abends Functional Flow**

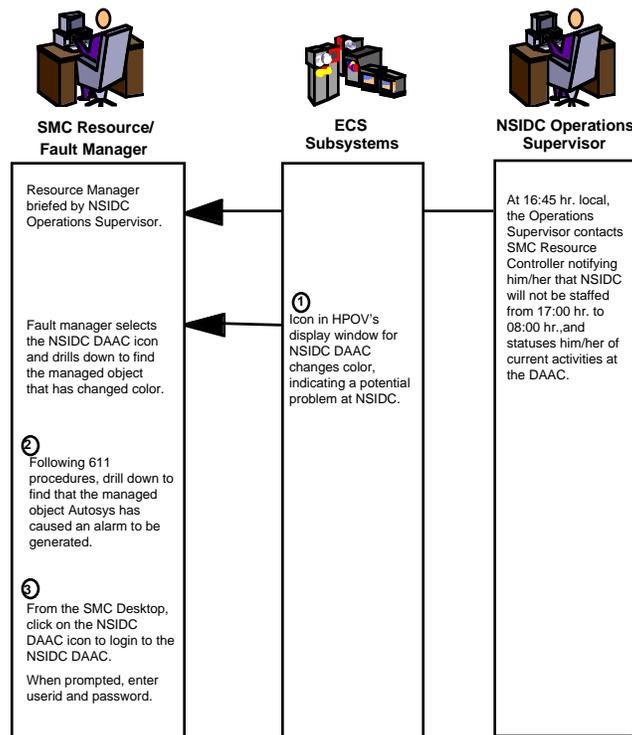
### 3.1.2 Autosys Abends Operator Roles

The SMC Fault Manager (SMF) provides a focal point for inter-ECS site problems and performs fault analysis including isolation, location, identification and characterization. The SMF is responsible for interacting with external systems regarding inter-system problems. Also, the SMF supports fault diagnostic testing for hardware, software, resource-to-resource connectivity, and supports other centers' fault management activities.

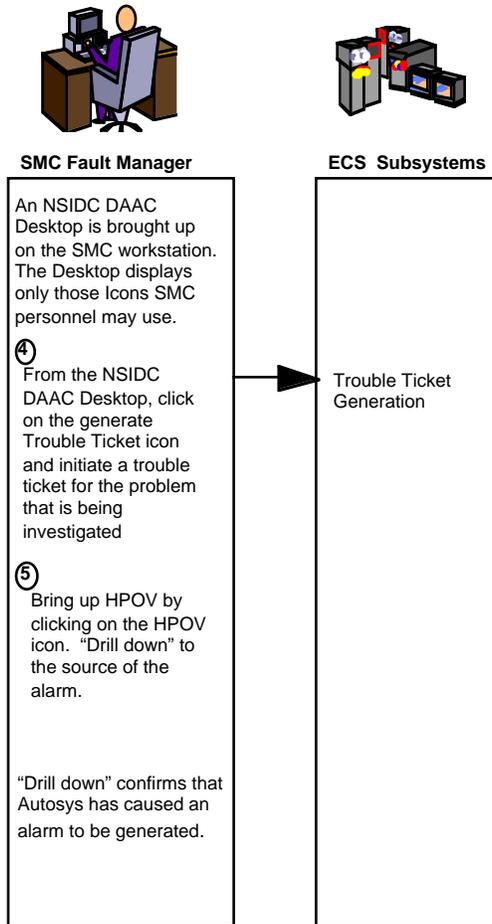
The SMC Resource Controller (SRC) is responsible for all ECS hardware utilization, performance and configuration. The SRC develops plans and coordinates scheduling for system-wide events and activities, and provides impact assessment for SMC and system-wide configuration changes. Also, the SRC provides on-line leadership, direction and coordination to DAAC Resource Managers for ECS system level resource problem resolution, prioritization and configuration, and cross-DAAC production planning adjudication.

### 3.1.3 Detailed Points of View

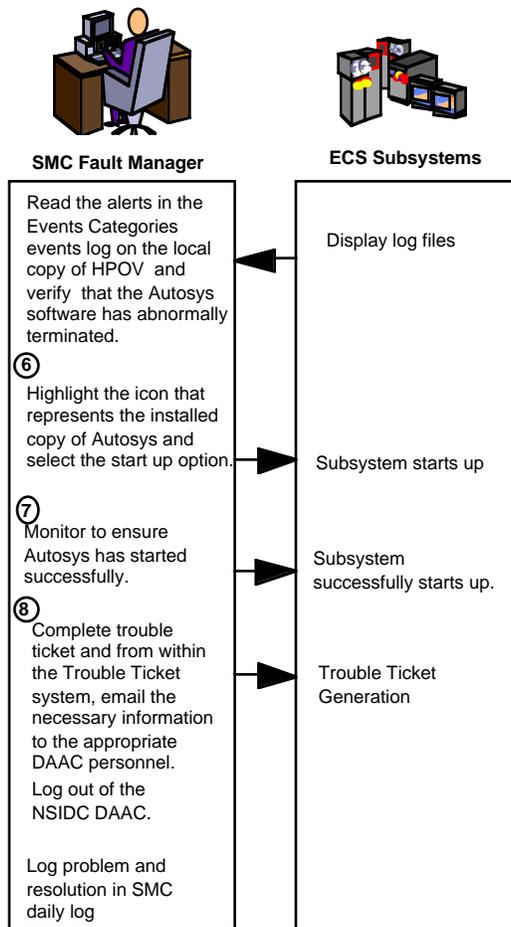
This Points of View provides an overview of the steps involved in responding to an alert that an application has abended. It also emphasizes how a COTS product, HPOV, assists in the investigation of the error and, from a desktop, remotely restarts the application.



**Figure 3.1.3-1. Autosys Abends Points of View (1 of 3)**

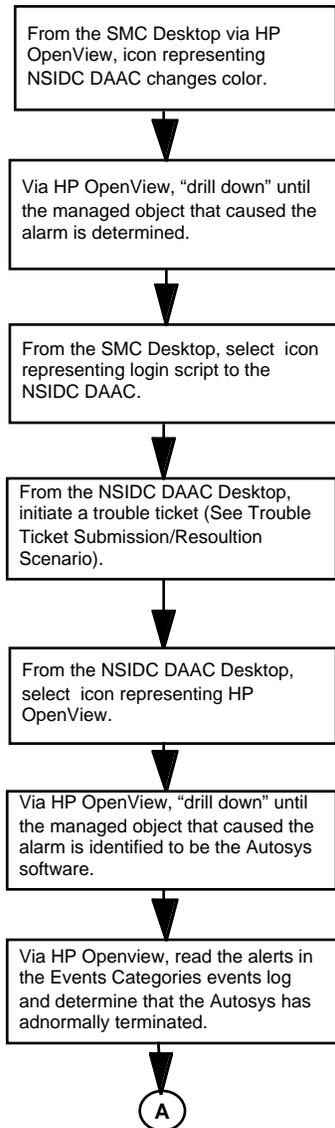


**Figure 3.1.3-1. Autosys Abends Points of View (2 of 3)**

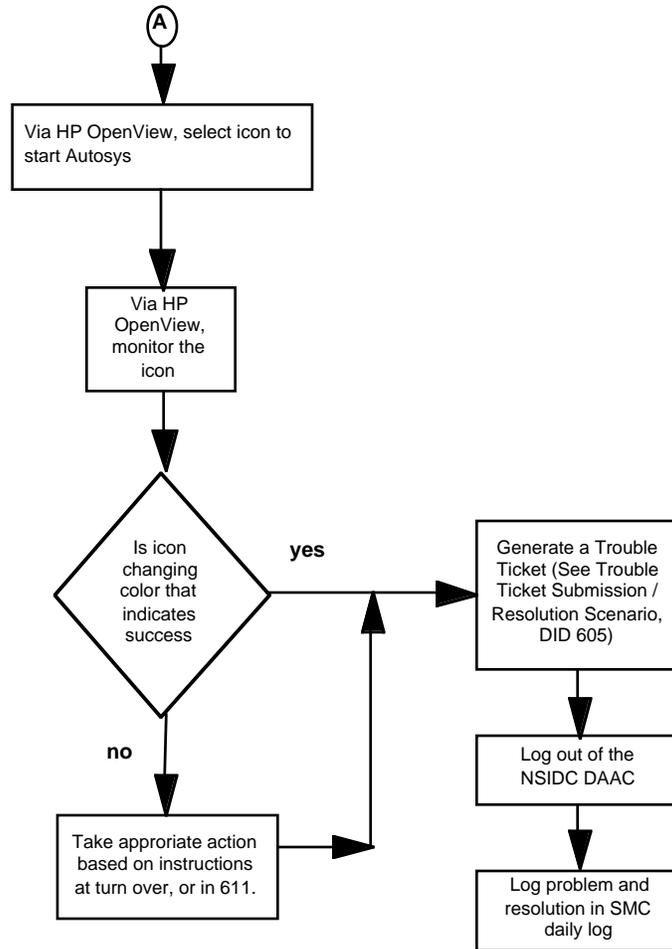


**Figure 3.1.3-1. Autosys Abends Points of View (3 of 3)**

### 3.1.4 Autosys Abends Workflow



**Figure 3.1.4-1. Autosys Abends Workflow (1 of 2)**



**Figure 3.1.4-1. Autosys Abends Workflow (2 of 2)**

## 3.2 COTS Hardware Failure

### 3.2.1 COTS Hardware Failure Description

This scenario describes a hardware failure with the FDDI Switch at the JPL DAAC. It demonstrates how HPOV is used to identify the managed object that caused the alarm, and how SMC can resolve the problem.

While this scenario is basically applicable to any hardware item that has been designated a managed object, it may not be practical for all of them.

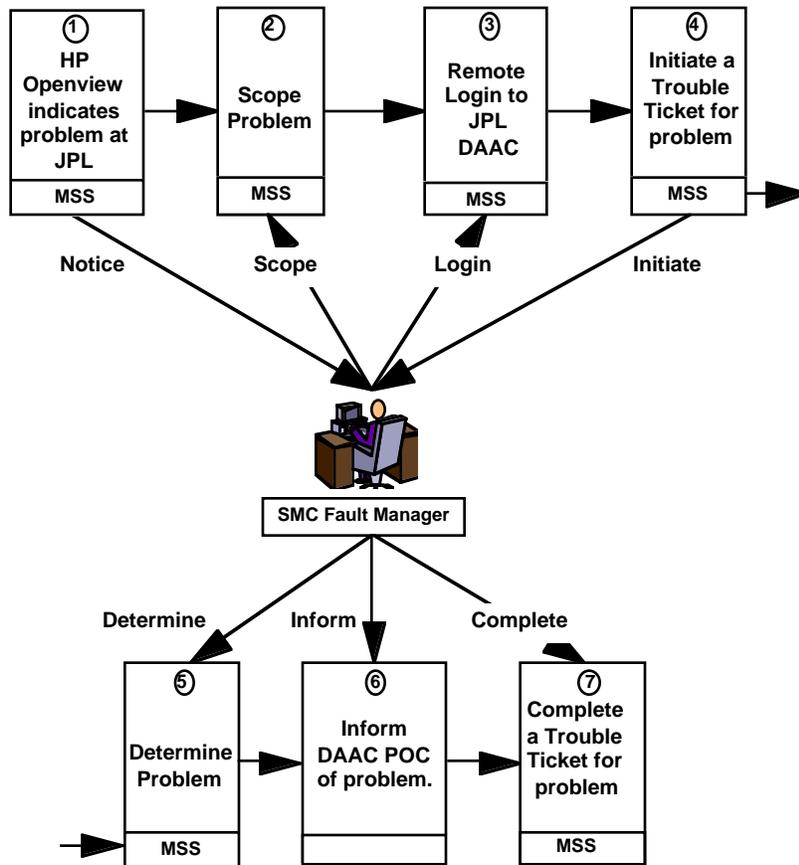
**Assumptions:**

JPL operations is staffed Monday through Friday, 11:00 a.m. to 8:00 p.m. ET.

HPOV is running on a SMC workstation simultaneously displaying statuses of all the DAACs.

SMC personnel are logged into the SMC system at a different workstation and have a Desktop running. There is an icon for each DAAC that will bring up the Desktop that the SMC personnel can use to perform unattended operations. The Desktop will display only those icons SMC personnel may use.

SMC limits of authorities are defined in agreements with the DAACs, and the procedures are defined in the Mission Operation Procedures for the ECS Project, 611-CD-002-001.



**Figure 3.2.1-1. Hardware Failure Functional Flow**

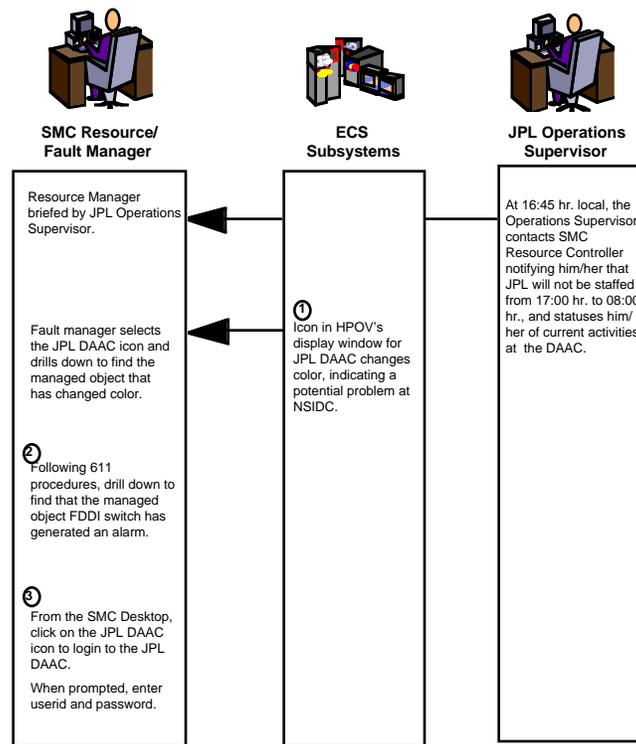
### 3.2.2 COTS Hardware Failure Operator Roles

The SMC Fault Manager (SMF) provides a focal point for inter-ECS site problems and performs fault analysis including isolation, location, identification and characterization. The SMF is responsible for interacting with external systems regarding inter-system problems. Also, the SMF supports fault diagnostic testing for hardware, software, resource-to-resource connectivity, and supports other centers' fault management activities.

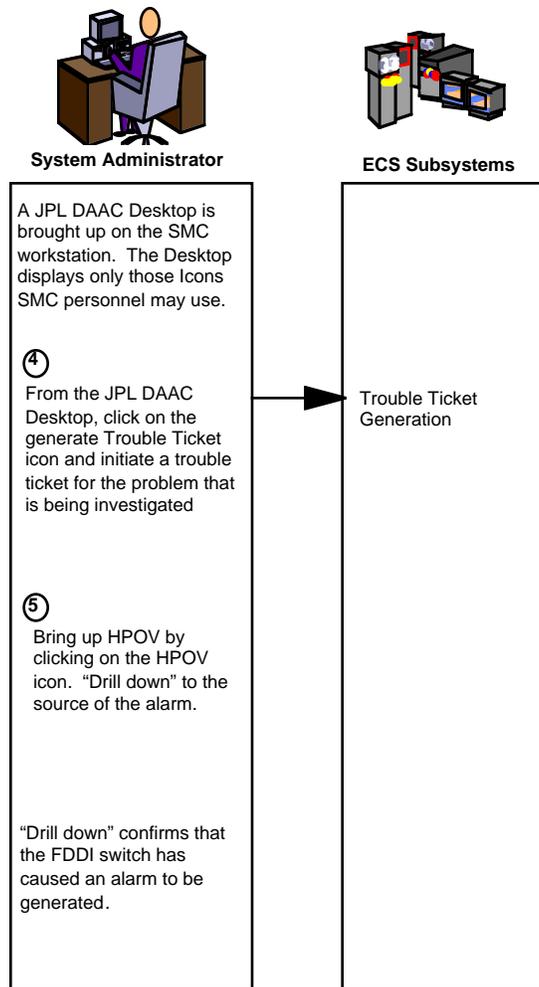
The SMC Resource Controller (SRC) is responsible for all ECS hardware utilization, performance and configuration. The SRC develops plans and coordinates scheduling for system-wide events and activities, and provides impact assessment for SMC and system-wide configuration changes. Also, the SRC provides on-line leadership, direction and coordination to DAAC Resource Managers for ECS system level resource problem resolution, prioritization and configuration, and cross-DAAC production planning adjudication.

### 3.2.3 Detailed Points of View

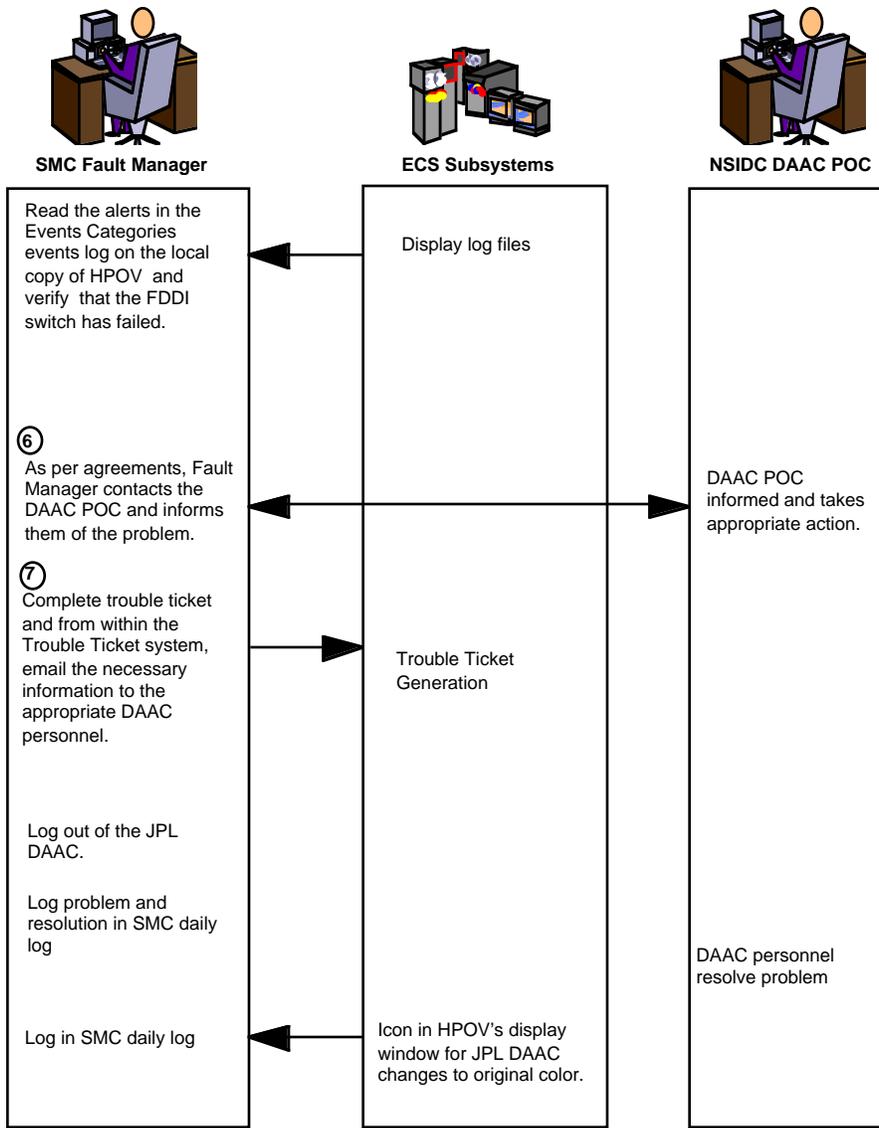
This Points of View provides an overview of the steps involved in responding to an alert that a COTS hardware has abended. It also emphasizes how a COTS product, HPOV assists in the investigation of the error.



**Figure 3.2.3-1. Hardware Failure Points of View (1 of 3)**

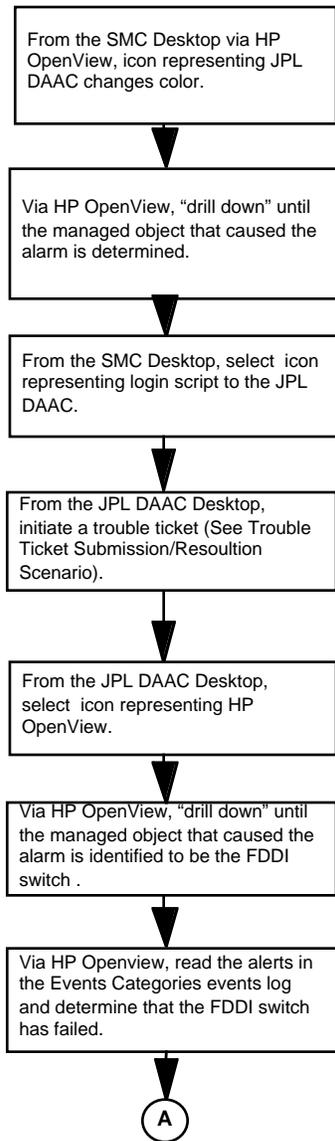


**Figure 3.2.3-1. Hardware Failure Points of View (2 of 3)**

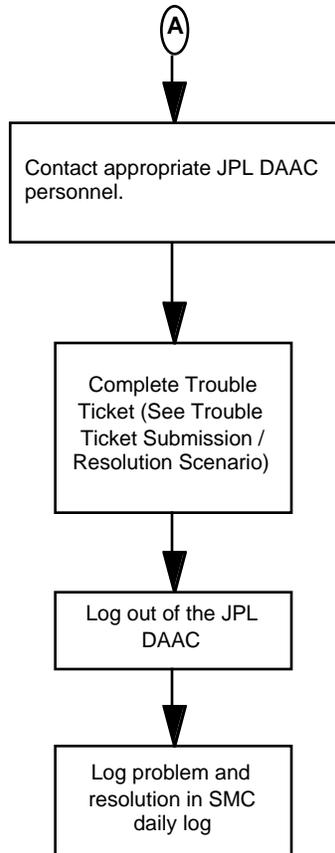


**Figure 3.2.3-1. Hardware Failure Points of View (3 of 3)**

### 3.2.4 Hardware Failure Work Flow



**Figure 3.2.4-1. Hardware Failure Workflow (1 of 2)**



**Figure 3.2.4-1. Hardware Failure Workflow (2 of 2)**

### **3.3 Data Management Server Saturation**

As presented in Section 6.2.4, Data Management Server Saturation, Release B SDPS/CSMS Operations Scenarios for the ECS Project, 605-CD-002-001, situations of unusually high ECS demand may occur where the normally available processing resources may be overloaded. The current solution that ECS operators have involves restricting the number of concurrent accesses to the Web server, which would limit the number of users accessing the system.

During attended operations, the Resource Manager will restrict access to the Data Management Server (Web access). However, during periods of unattended operations, the SMC Fault Manager would assume this task.

#### **3.3.1 Data Management Server Saturation Description**

This scenario assumes a dramatic increase in the number of users attempting to access the system and submit queries.

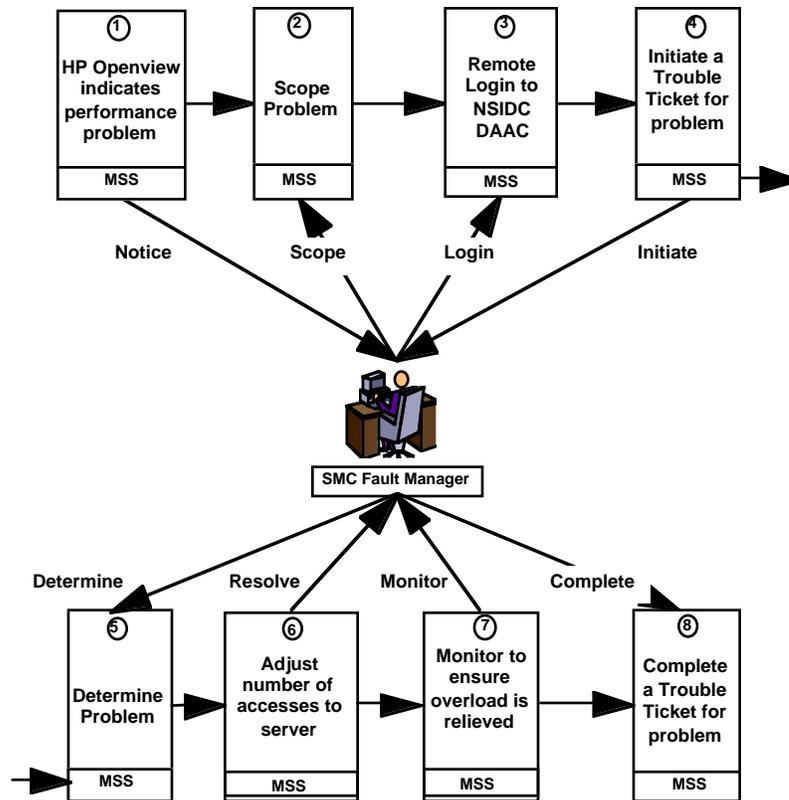
##### **Assumptions:**

NSIDC operations is staffed Monday through Sunday, 10:00 a.m. to 7:00 p.m. ET.

HPOV is running on a SMC workstation simultaneously displaying statuses of all the DAACs.

SMC personnel are logged into the SMC system at a different workstation and have a Desktop running. There is an icon for each DAAC that will bring up the Desktop that the SMC personnel can use to perform unattended operations. The Desktop will display only those icons SMC personnel may use.

SMC limits of authorities are defined in agreements with the DAACs, and the procedures are defined in the Mission Operation Procedures for the ECS Project, 611-CD-002-001.



**Figure 3.3.1-1. Data Management Server Saturation Points of View**

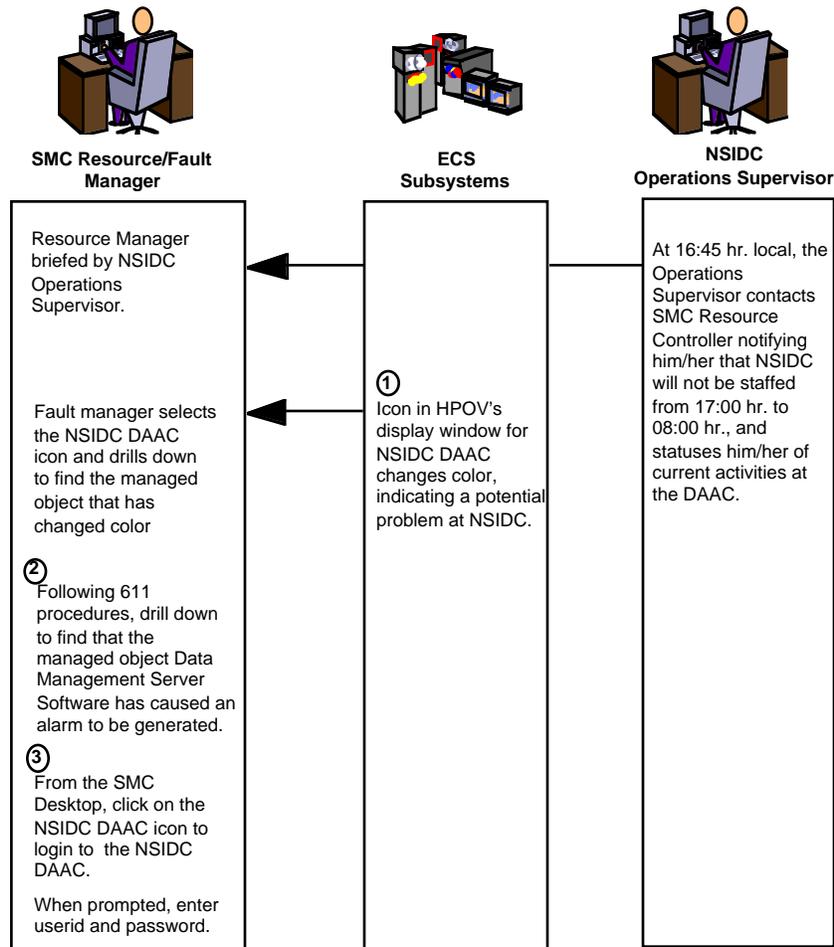
### 3.3.2 Data Management Server Saturation Operator Roles

The SMC Fault Manager (SMF) provides a focal point for inter-ECS site problems and performs fault analysis including isolation, location, identification and characterization. The SMF is responsible for interacting with external systems regarding inter-system problems. Also, the SMF supports fault diagnostic testing for hardware, software, resource-to-resource connectivity, and supports other centers' fault management activities.

The SMC Resource Controller (SRC) is responsible for all ECS hardware utilization, performance and configuration. The SRC develops plans and coordinates scheduling for system-wide events and activities, and provides impact assessment for SMC and system-wide configuration changes. Also, the SRC provides on-line leadership, direction and coordination to DAAC Resource Managers for ECS system level resource problem resolution, prioritization and configuration, and cross-DAAC production planning adjudication.

### 3.3.3 Data Management Server Saturation Detailed Points of View

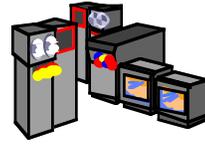
This Points of View provides an overview of the steps involved in responding to an alert that the Data Management Server performance is degraded. It also emphasizes how a COTS product, HPOV, assists in the investigation of the problem and to remotely limit the number of sessions on a Web server.



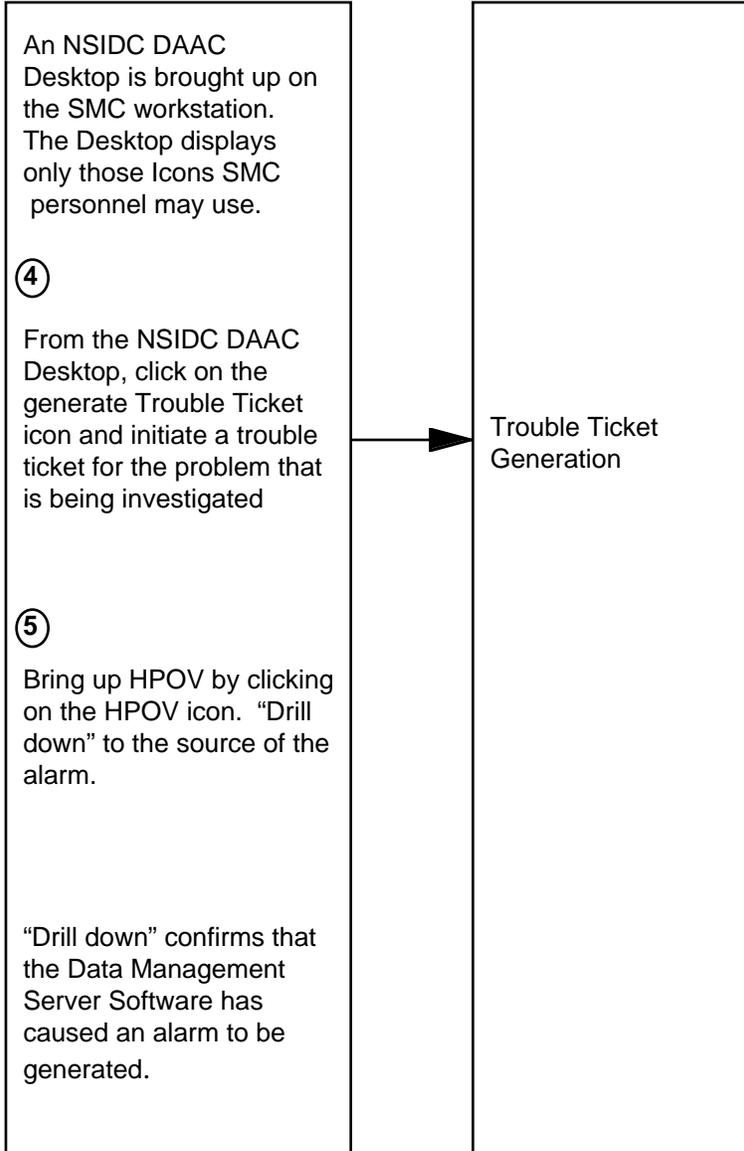
**Figure 3.3.3-1. Data Management Server Saturation Points of View (1 of 4)**



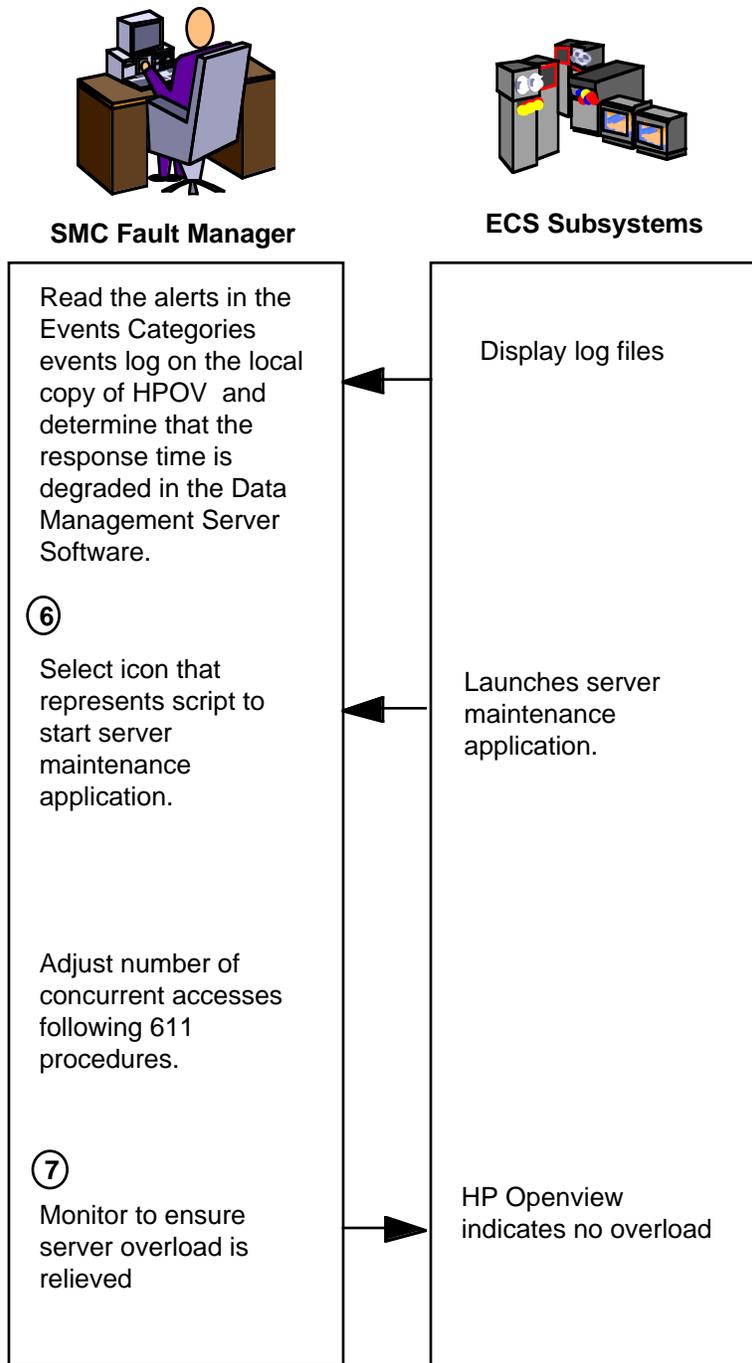
**SMC Fault Manager**



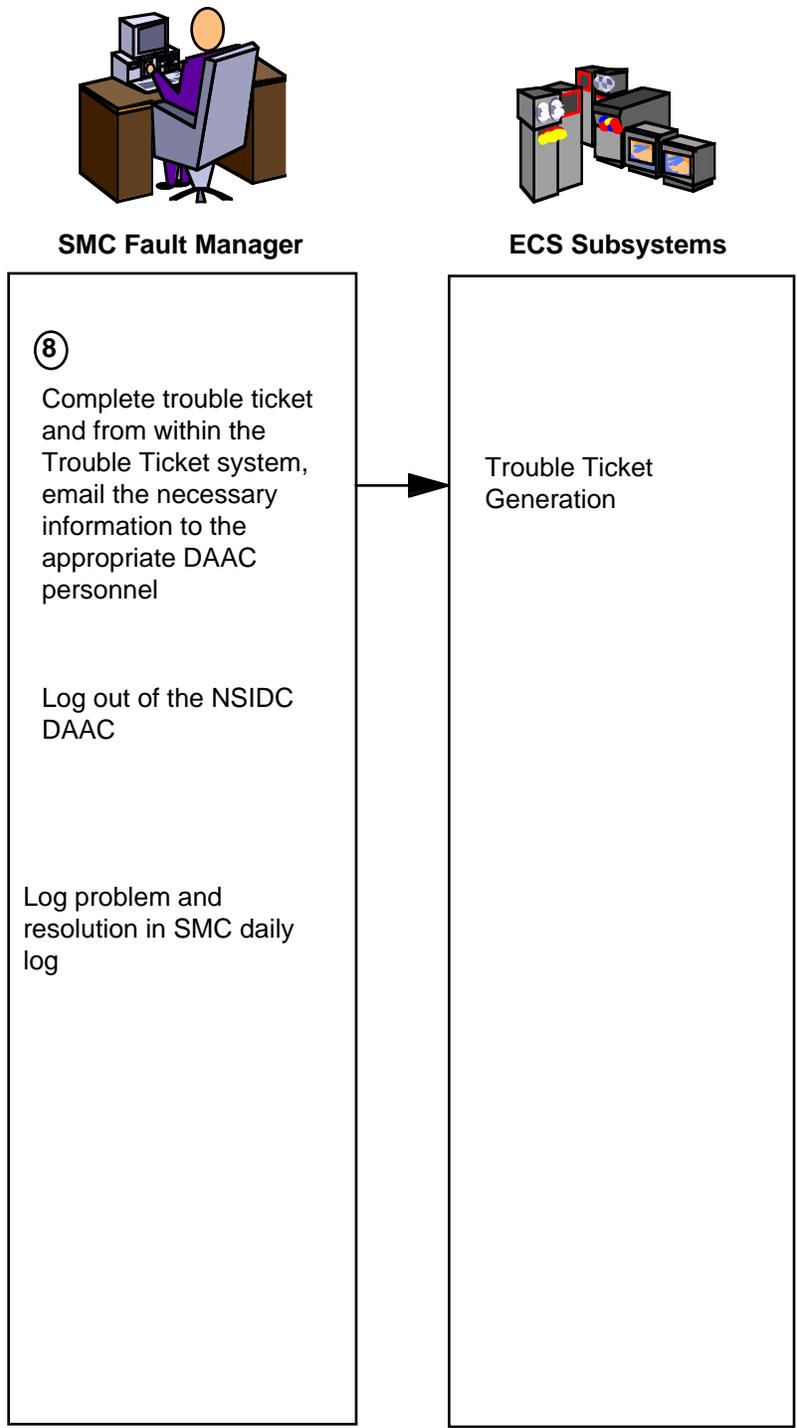
**ECS Subsystems**



**Figure 3.3.3-1. Data Management Server Saturation Points of View (2 of 4)**

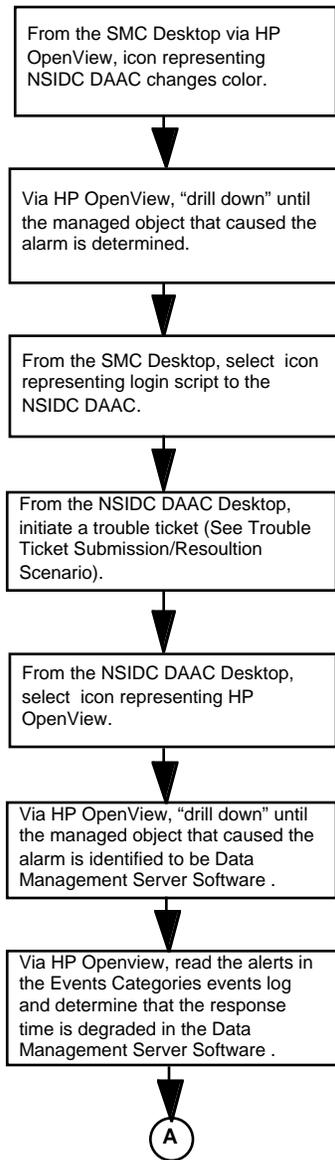


**Figure 3.3.3-1. Data Management Server Saturation Points of View (3 of 4)**

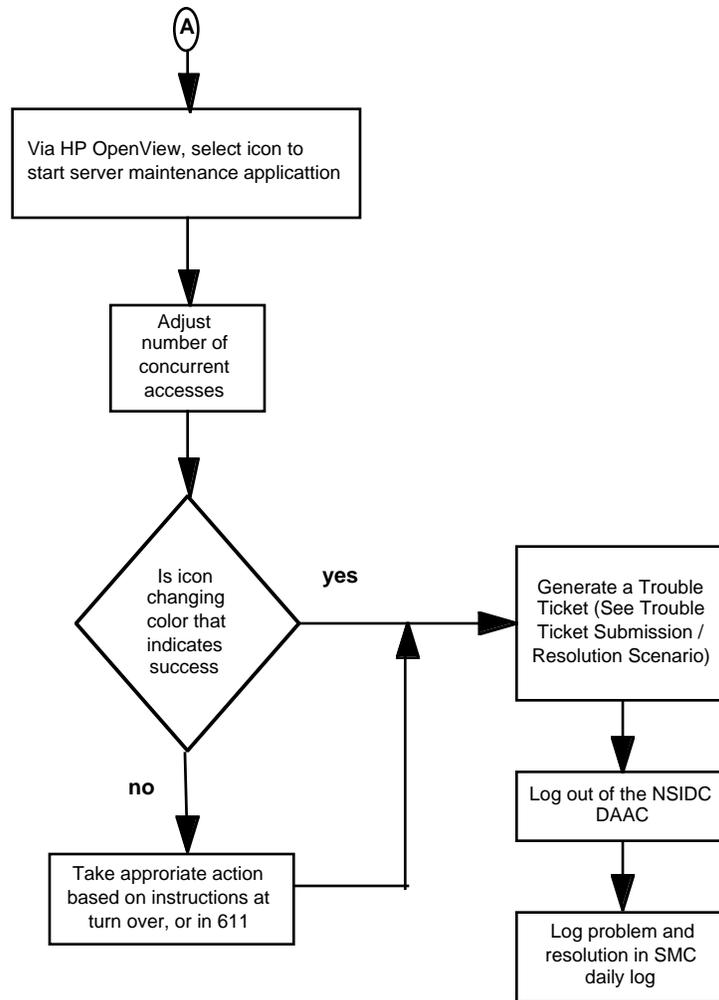


**Figure 3.3.3-1. Data Management Server Saturation Points of View (4 of 4)**

### 3.3.4 Data Management Server Saturation Work Flow



**Figure 3.3.4-1. Data Management Server Saturation Workflow (1 of 2)**



**Figure 3.3.4-1. Data Management Server Saturation Workflow (2 of 2)**

## 3.4 Runaway PGE

### 3.4.1 Runaway PGE Description

During the course of operations, the NSIDC DAAC may choose to perform reprocessing of PGEs during periods of unattended operations. The NSIDC DAAC will prepare and implement a production schedule of the PGEs, and the SMC can monitor the execution of the PGEs. This scenario describes one of those PGEs executing well outside its profile (e.g., excessive CPU). Production delay notices are being generated and the job needs to be identified and terminated. It demonstrates how HPOV is used to assist in identifying the managed object that caused the alarm; how Autosys and the MSS Log Browser assist in determining the cause, and how SMC can resolve the problem.

**Assumptions:**

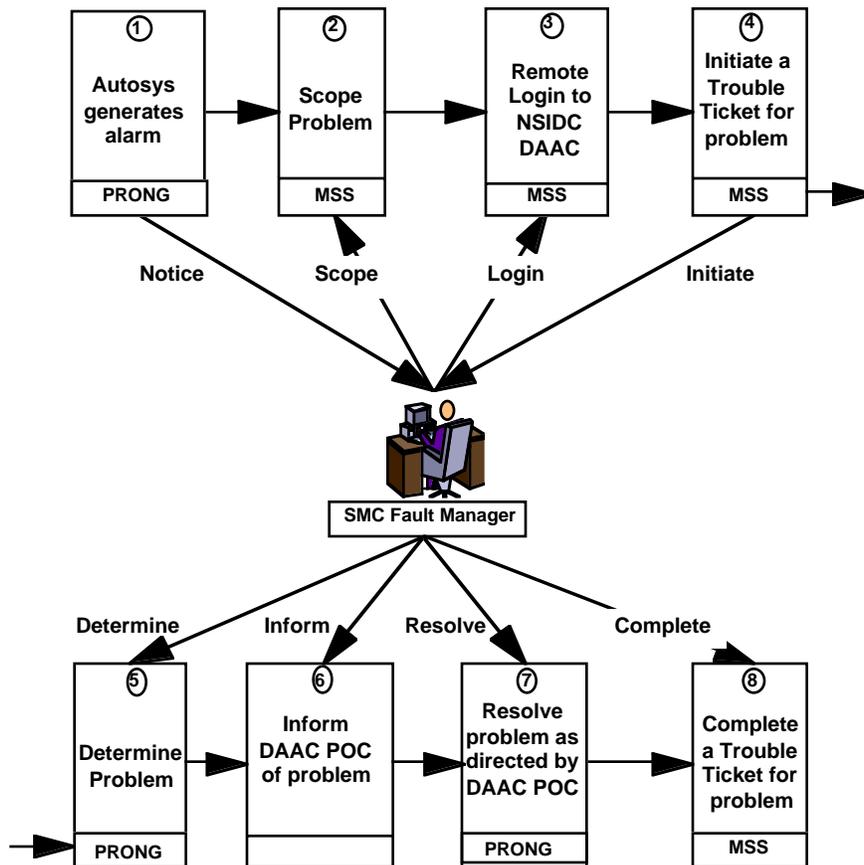
NSIDC operations is staffed Monday through Sunday, 10:00 a.m. to 7:00 p.m. ET.

HPOV is running on a SMC workstation simultaneously displaying statuses of all the DAACs.

SMC personnel are logged into the SMC system at a different workstation and have a Desktop running. There is an icon for each DAAC that will bring up the Desktop that the SMC personnel can use to perform unattended operations. The Desktops will display only those icons SMC personnel may use.

SMC limits of authorities are defined in agreements with the DAACs, and the procedures are defined in the Mission Operation Procedures for the ECS Project, 611-CD-002-001.

SMC personnel do not possess expertise in DAAC production control, and are restricted to notifying the DAAC point of contact (POC) of a problem and responding to their direction.



**Figure 3.4.1-1. Runaway PGE Functional Flow**

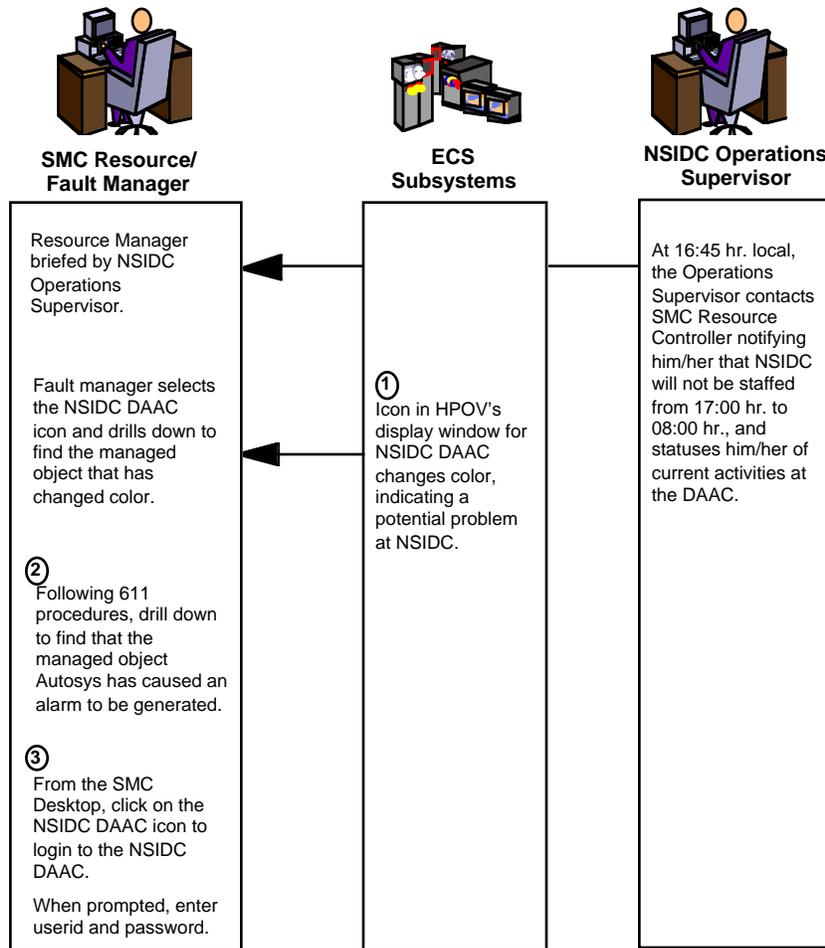
### **3.4.2 Runaway PGE Operator Roles**

The SMC Fault Manager (SMF) provides a focal point for inter-ECS site problems and performs fault analysis including isolation, location, identification and characterization. The SMF is responsible for interacting with external systems regarding inter-system problems. Also, the SMF supports fault diagnostic testing for hardware, software, resource-to-resource connectivity, and supports other centers' fault management activities.

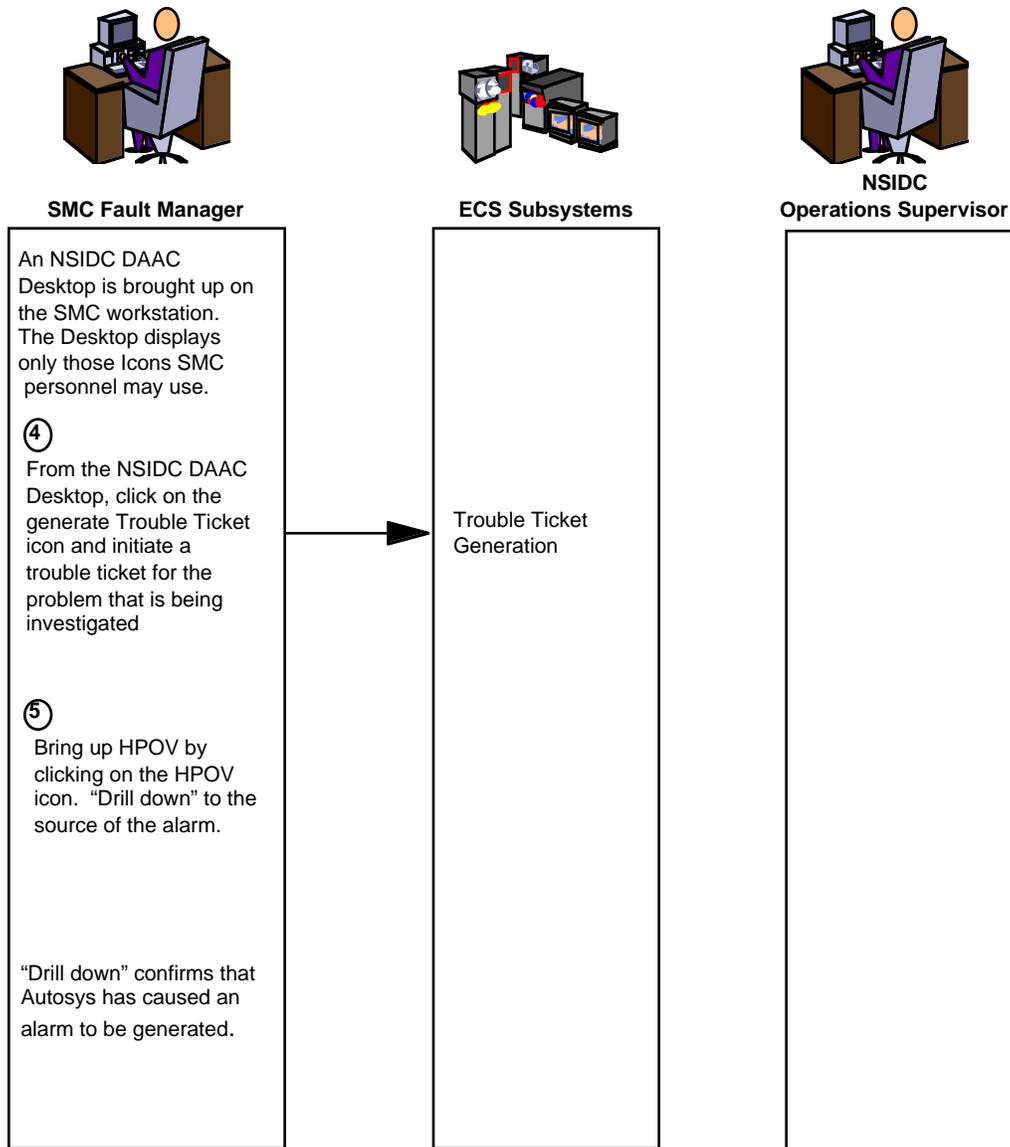
The SMC Resource Controller (SRC) is responsible for all ECS hardware utilization, performance and configuration. The SRC develops plans and coordinates scheduling for system-wide events and activities, and provides impact assessment for SMC and system-wide configuration changes. Also, the SRC provides on-line leadership, direction and coordination to DAAC Resource Managers for ECS system level resource problem resolution, prioritization and configuration, and cross-DAAC production planning adjudication.

### **3.4.3 Detailed Points of View**

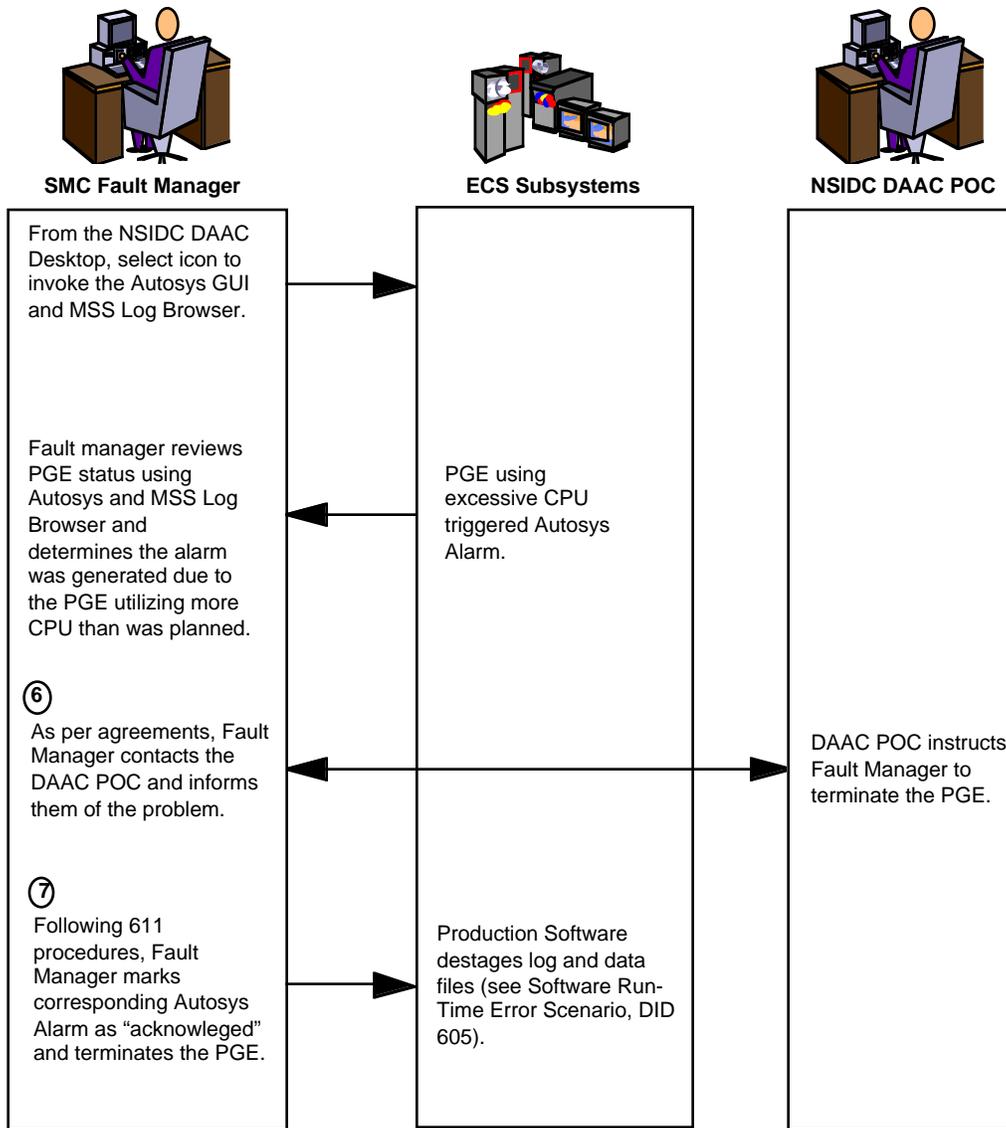
This Points of View provides an overview of the steps involved in responding to an alert that there is a problem with a PGE's performance. It also emphasizes how a COTS product, HPOV, assists in the investigation of the error, and to remotely terminate the PGE using the desktop.



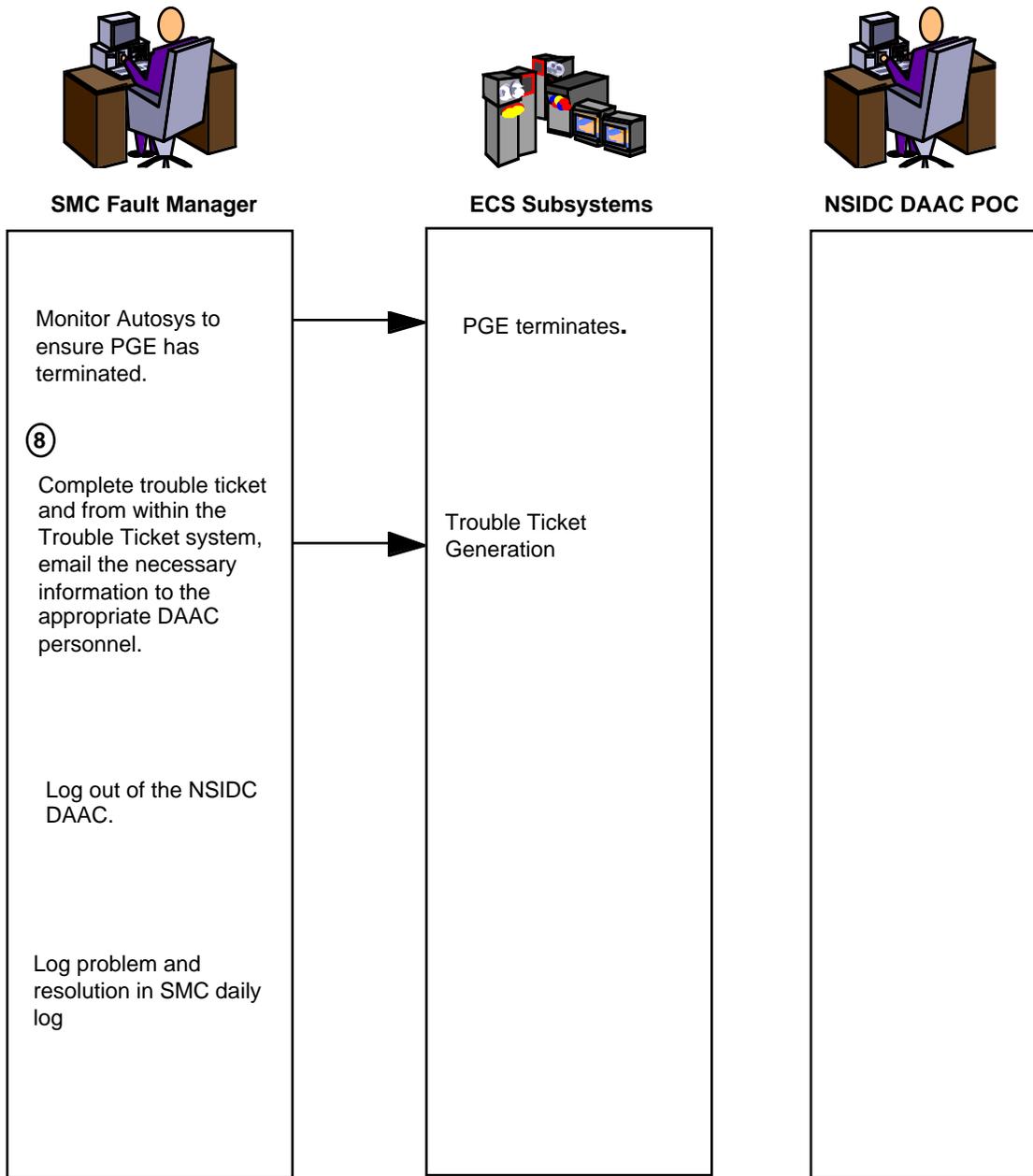
**Figure 3.4.3-1. Runway PGE Points of View (1 of 4)**



**Figure 3.4.3-1. Runway PGE Points of View (2 of 4)**

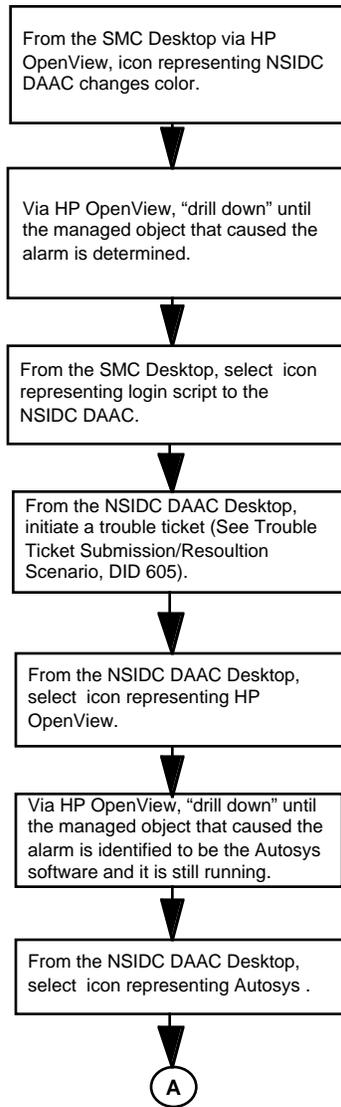


**Figure 3.4.3-1. Runway PGE Points of View (3 of 4)**

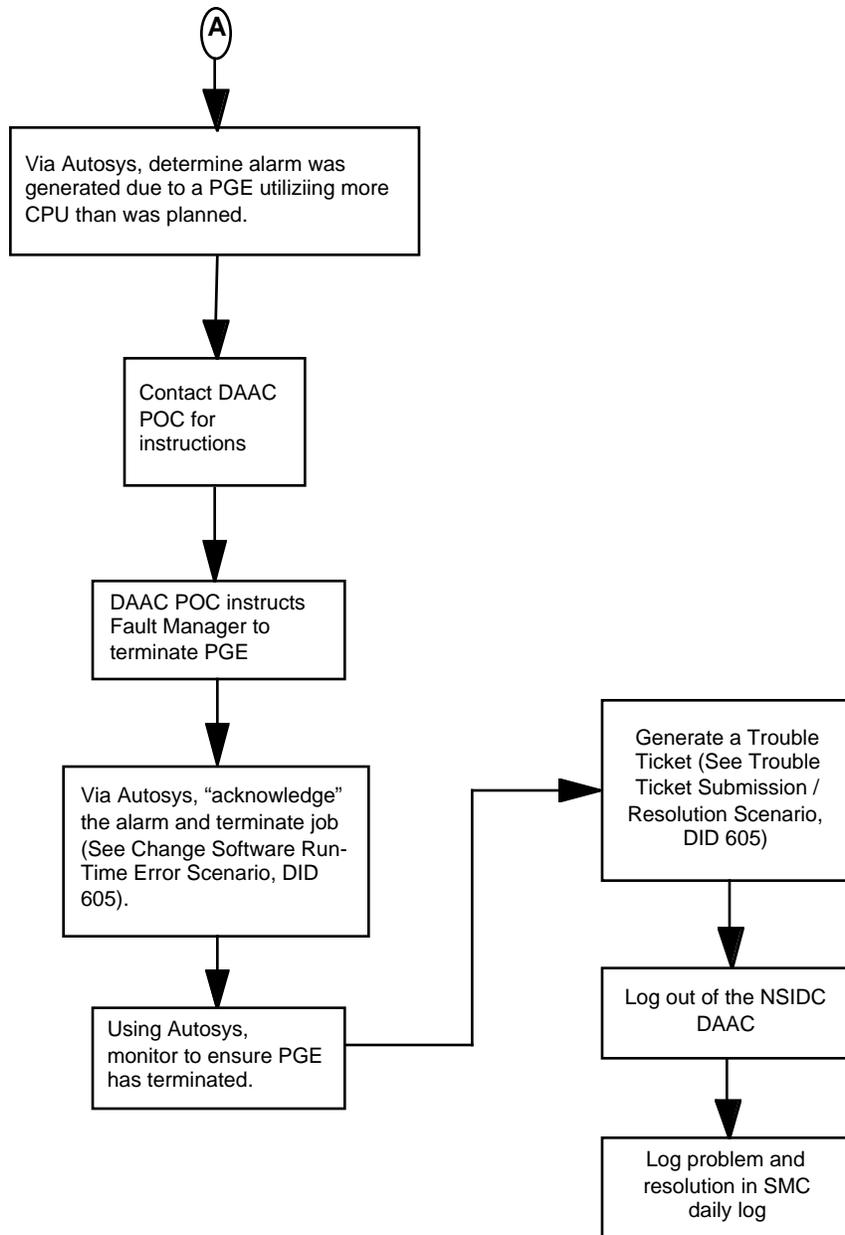


**Figure 3.4.3-1. Runway PGE Points of View (4 of 4)**

### 3.4.4 Runway PGE Work Flow



**Figure 3.4.4-1. Runaway PGE Workflow (1 of 2)**



**Figure 3.4.4-1. Runaway PGE Workflow (2 of 2)**

## **3.5 Science Data Server Abends**

### **3.5.1 Science Data Server Abends Description**

The Science Data Server is responsible for managing collections of earth science and related data, and for servicing requests for the storage, search, retrieval, and manipulation of data within those collections. This scenario describes a failure with the Science Data Server software.

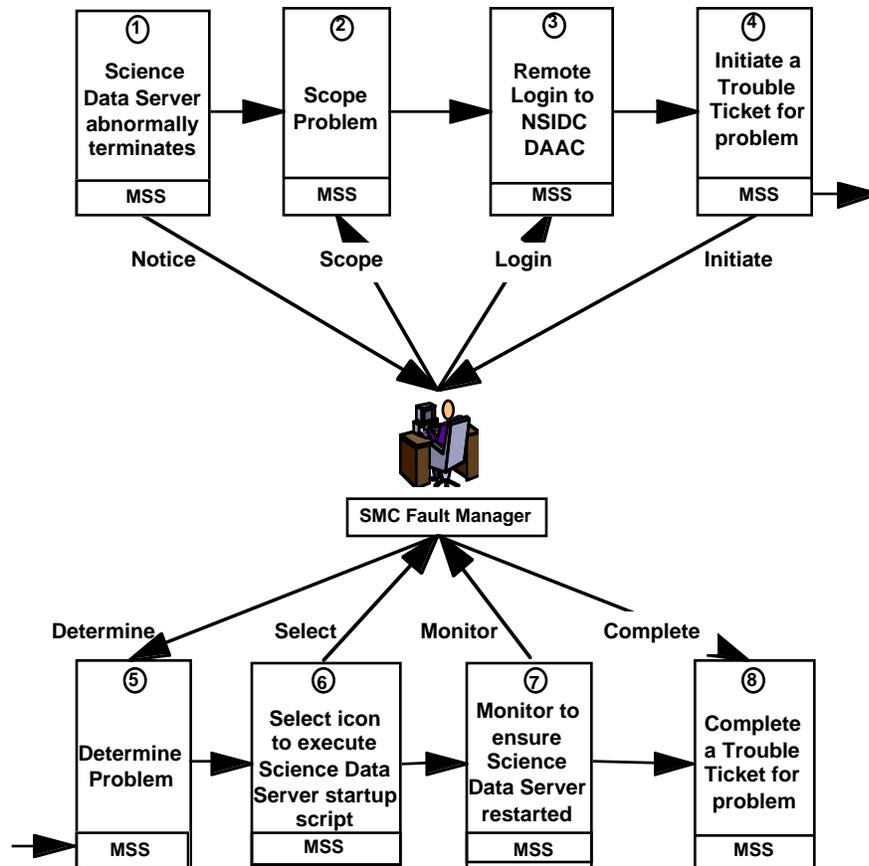
#### **Assumptions:**

NSIDC operations is staffed Monday through Sunday, 10:00 a.m. to 7:00 p.m. ET.

HPOV is running on a SMC workstation simultaneously displaying statuses of all the DAACs.

SMC personnel are logged into the SMC system at a different workstation and have a Desktop running. There is an icon for each DAAC that will bring up the Desktop that the SMC personnel can use to perform unattended operations. The Desktop will display only those icons SMC personnel may use.

SMC limits of authorities are defined in agreements with the DAACs, and the procedures are defined in the Mission Operation Procedures for the ECS Project, 611-CD-002-001.



**Figure 3.5.1-1. Science Data Server Abends Functional Flow**

### 3.5.2 Science Data Server Abends Operator Roles

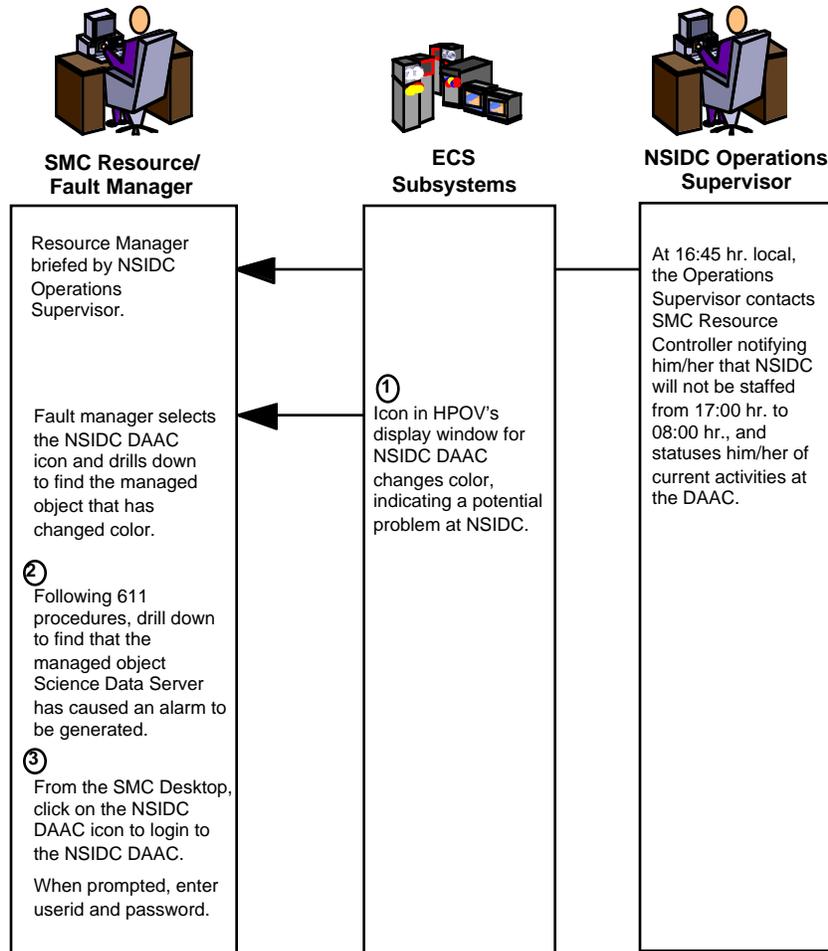
The SMC Fault Manager (SMF) provides a focal point for inter-ECS site problems and performs fault analysis including isolation, location, identification and characterization. The SMF is responsible for interacting with external systems regarding inter-system problems. Also, the SMF supports fault diagnostic testing for hardware, software, resource-to-resource connectivity, and supports other centers' fault management activities.

The SMC Resource Controller (SRC) is responsible for all ECS hardware utilization, performance and configuration. The SRC develops plans and coordinates scheduling for system-wide events and activities, and provides impact assessment for SMC and system-wide configuration changes. Also, the SRC provides on-line leadership, direction and coordination to

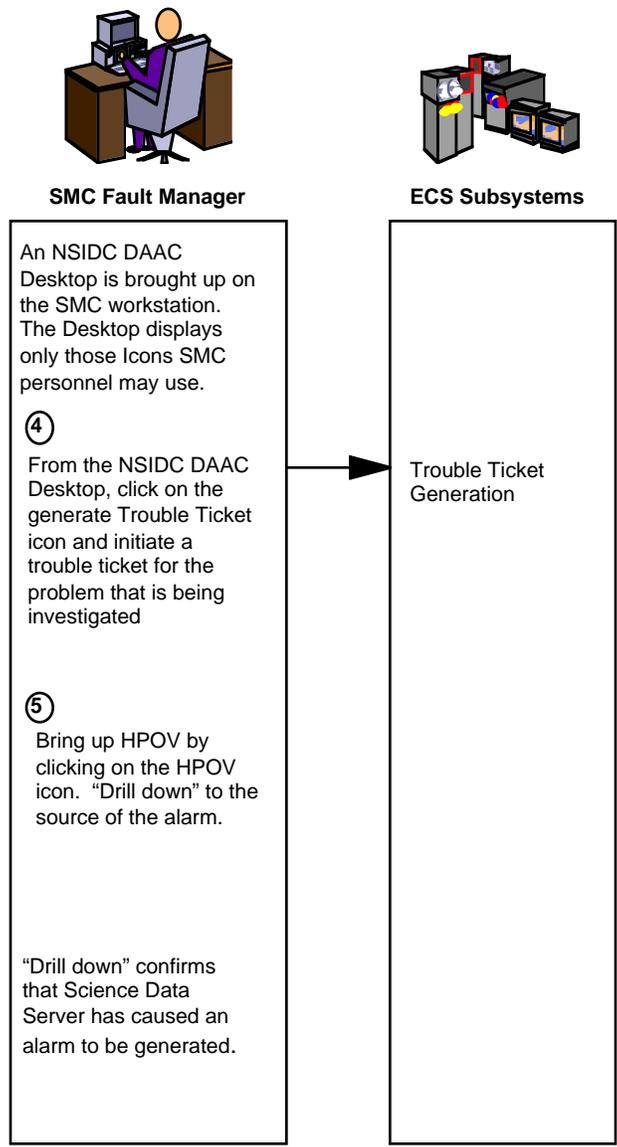
DAAC Resource Managers for ECS system level resource problem resolution, prioritization and configuration, and cross-DAAC production planning adjudication.

### 3.5.3 Science Data Server Abends Detailed Points of View

This Points of View provides an overview of the steps involved in responding to an alert that an application has abended. It also emphasizes how a COTS product, HPOV, assists in the investigation of the error and, from a desktop, remotely restarts the application.



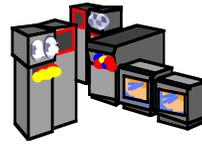
**Figure 3.5.3-1. Science Data Server Abends Points of View (1 of 3)**



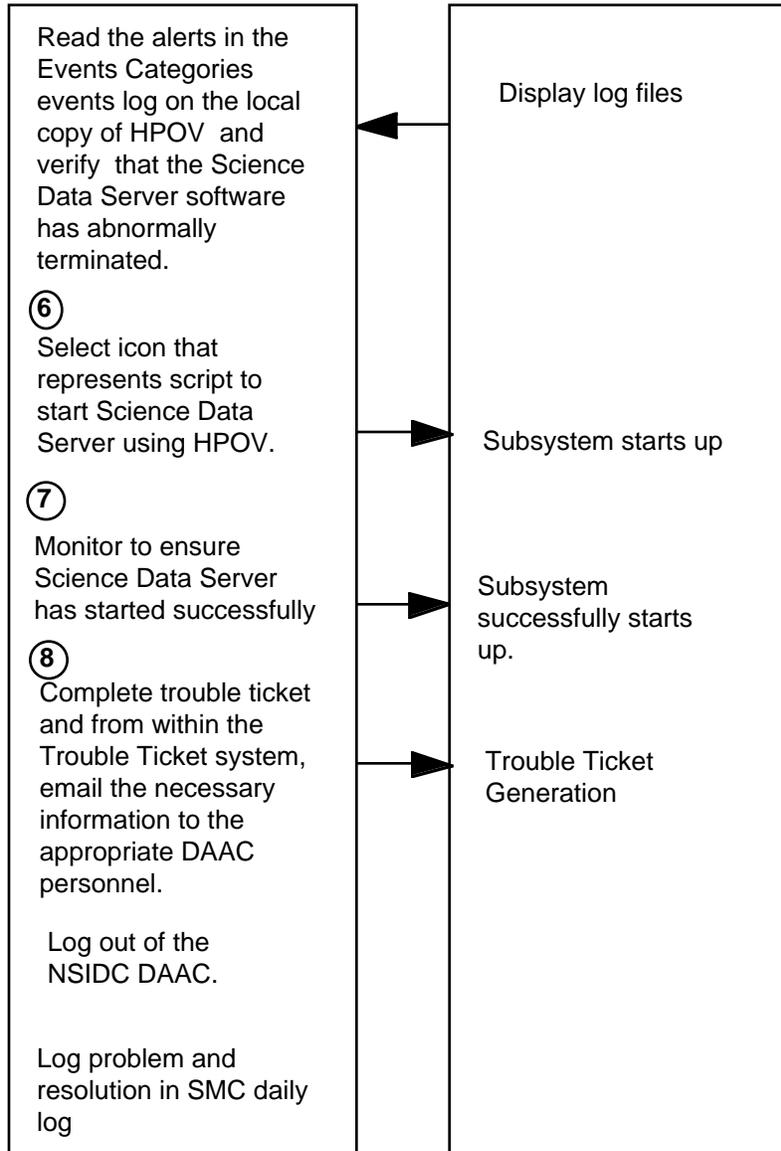
**Figure 3.5.3-1. Science Data Server Abends Points of View (2 of 3)**



**SMC Fault Manager**

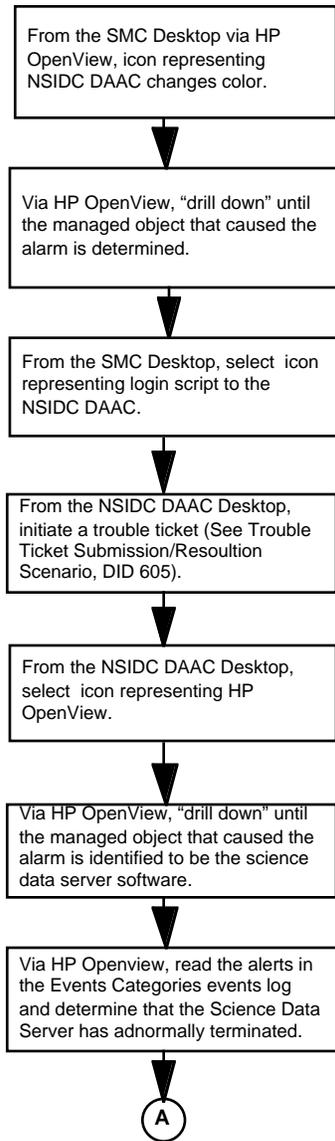


**ECS Subsystems**

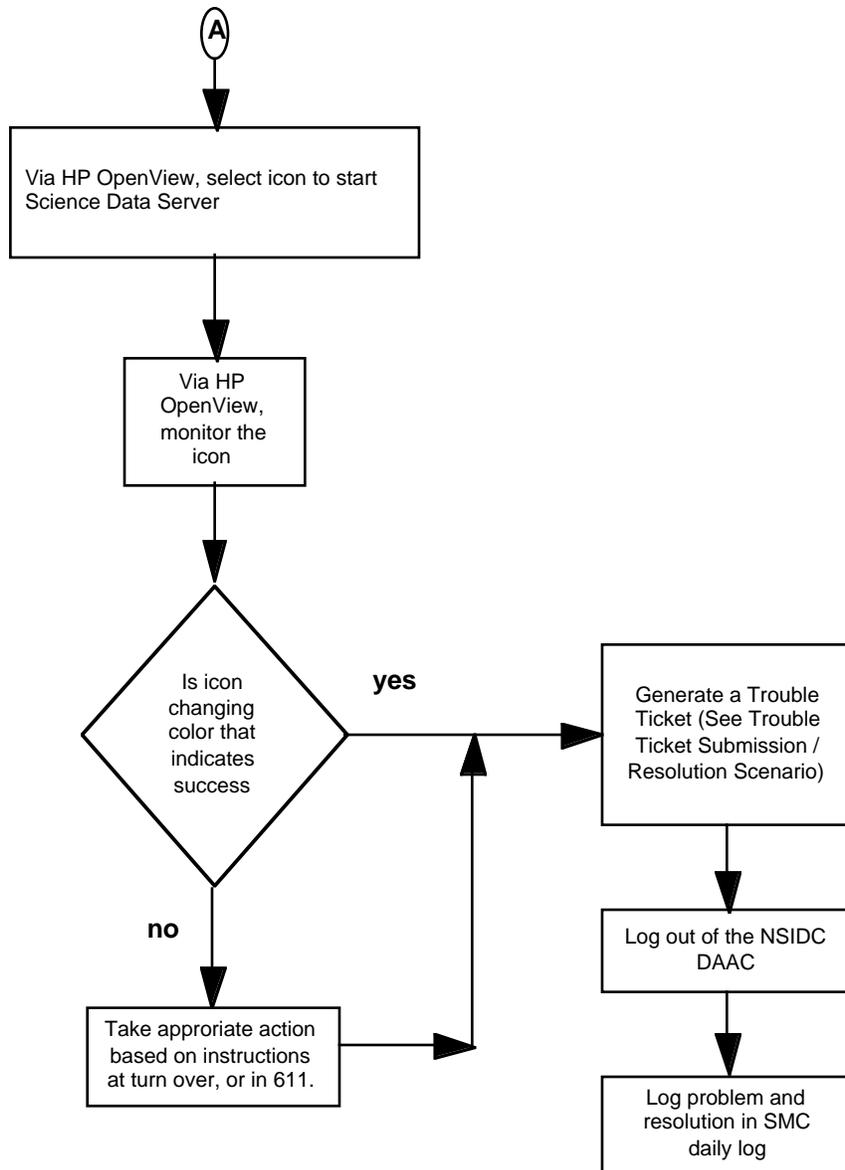


**Figure 3.5.3-1. Science Data Server Abends Points of View (3 of 3)**

### 3.5.4 Science Data Server Abends Work Flow



**Figure 3.5.4-1. Science Data Server Abends Workflow (1 of 2)**



**Figure 3.5.4-1. Science Data Server Abends Workflow (2 of 2)**

# Abbreviations and Acronyms

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BAAS	Billing and Accounting Application Service
CCB	Configuration Change Board
CCR	configuration change request
CDRL	Contract Data Requirement List
CLS	contact log service client subsystem
COTS	commercial off-the-shelf
CSDT	Computer Science Data Types
CSMS	Communications and Systems Management Segment
DAAC	Distributed Active Archive Center
DAM	DAAC archive manager
DBA	database administrator
DCE	distributed computing environment
DCN	document change notice
DIM	distributed information manager
DIT/DDT	DAAC Ingest / Distribution Technician
DLL	dynamic linked library
DPR	data processing requests
DPS	data processing subsystem
DS	data specialist
DSS	data server subsystem
ECS	Earth Observing System Data and Information System Core System
EDC	EROS Data Center
EDOS	Earth Observing System (EOS) Data and Operations System
EDS	Electronic Data Systems Corporation
EMC BAAS	Enterprise Monitoring and Coordination Billing and Accounting Application Service

EOS	Earth Observing System
EOSDIS	Earth Observing System Data and Information System
EROS	Earth Resources Observations System
ESDIS	Earth Science Data and Information System
ESDT	Earth Science Data Types
ESST	Earth science search tool
FOS	Flight Operations Segment
GFE	government furnished equipment
GUI	graphical user interface
HPOV	Hewlett Packard OpenView
HTML	hypertext markup language
ICDs	interface control document
IDR	Incremental Design Review
ILM	inventory/logistics/maintenance
IWG	investigator working group
LIM	local information manager
LPS	Landsat Processing System
LSM	local system management
LaRC	Langley Research Center
M&O	Maintenance and Operations
MSS	Management Subsystem
MTPE	Mission to Planet Earth
NOAA	National Oceanic and Atmospheric Administration
NSIDC	National Snow and Ice Data Center
OPR	on-demand product requests
PDPS	planning and data processing
PGE	product generation executive
PGS	product generation system
PRT	product request tool

QA	quality assurance
QAE	quality assurance executive
RDBMS	relational database management system
SCF	Science Computing Facility
SDPF	Sensor Data Processing Facility
SDPS	Science Data Processing Segment
SEO	Sustaining Engineer Organization
SMC	system monitoring center
SSAP	science software archive package
SSI&T	science software integration & test
TSDIS	TRMM Science and Data Information System
TT	trouble ticket
TTS	trouble ticketing service
UI	user interface
UR	universal reference
US Rep	User Services Representative