Procedures and Guidelines

DIRECTIVE NO.	400-PG-8621.1.1E	**APPROVED BY Signature:**	***Original signed by:***
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EXPIRATION DATE:	02/13/2011	**TITLE:**	Associate Director, FPPD

COMPLIANCE IS MANDATORY

Responsible Office: Code 400/Flight Programs and Projects Directorate

Title: Anomaly Notification System for Code 400 Programs and Projects

PREFACE

P.1 PURPOSE

The objective of the Code 400 Anomaly Notification System is to provide timely notification to Center and Headquarters management regarding anomalies that affect or involve Code 400 programs and projects. This document provides requirements and guidelines for generating and distributing Anomaly Reports.

P.2 APPLICABILITY

This document applies to all Code 400 programs and projects

P.3 AUTHORITY

NPR 8621.1 NASA Procedural Requirements for Mishap Reporting, Investigating, and Recordkeeping

P.4 REFERENCES

a. NPR 8621.1, NASA Procedural Requirements for Mishap Reporting, Investigating, and Recordkeeping
b. GPR 5340.2, Control of Nonconformances
c. GPR 8621.1, Reporting of Mishaps and Close Calls
d. NASA Form 1627, NASA Mishap Report

P.5 CANCELLATION

400-PG-8621.1.1D, Anomaly Notification System for Flight Programs and Projects

P.6 SAFETY

None

P.7 TRAINING

The following course of instruction is available on the NASA SOLAR website: Mishap Reporting Familiarization. The URL is https://solar.msfc.nasa.gov/ .

P.8 RECORDS

Record Title	Record Custodian	Retention
Anomaly Report	Reporting Organization	One year after occurrence of anomaly

P.9 METRICS

None

P.10 DEFINITIONS

a. Flight System Development Phase (prior to launch) anomaly - Any isolated accident, failure, or event involving flight hardware that is likely to cause a slip in the launch readiness date or significant cost growth.

b. Flight System Operations Phase (post-launch) anomaly - Any isolated accident, failure, or event that is likely to compromise the ability of an instrument or spacecraft to successfully complete its mission.

c. Ground System Anomaly – Any isolated accident, failure, or event not involving the mission's flight segment that results in the inability of spacecraft or sensor data to be successfully transmitted between the spacecraft or sensor and the mission operations center or ground data processing system.

d. Mishap – For the purposes of this document, any unplanned occurrence or event that may be classified as a Type A, B, or C Mishap, Incident, or Mission Failure. A mishap may involve NASA personnel, equipment or facilities or NASA contract personnel and/or equipment in support of operations at NASA. See NPR 8621.1, NASA Procedural Requirements for Mishap Reporting, Investigating, and Recordkeeping.

e. Nonconformance – Non-fulfillment of a specified requirement.

PROCEDURES

In this document, a requirement is identified by "shall," a good practice by "should," permission by "may" or "can," expectation by "will," and descriptive material by "is."

With regard to flight hardware, the individual responsible for the issuance of Anomaly Reports during the Development Phase and during on-orbit checkout is the Project Manager. The individual responsible for the issuance of Anomaly Reports during routine operations (after on-orbit checkout) is the Mission Director.

With regard to ground system anomalies, the individual(s) responsible for the issuance of Anomaly Reports depends upon the "owner" of the ground station. It may be the Ground or Space Network Project Manager, or the controller of a project-unique facility .

It is recognized that at the time an anomaly occurs it is often difficult to predict the severity of the resultant impact. The primary purpose of the initial issuance of an Anomaly Report is to give management early notification that a potentially serious event has occurred. A balance has to be sought between timely notification of management of such events and issuing "false alarms." In the end, the issuance of an Anomaly Report is often a judgment call on the part of the project manager or mission director.

Specific examples of reportable flight hardware anomalies during the pre-launch Development Phase include:

- The roof leaks and flight hardware is damaged
- Significant structural damage to an instrument or spacecraft occurs during vibration testing
- The instrument or spacecraft is dropped in processing or shipment
- Test equipment is incorrectly configured (i.e. wiring mis-mates, incorrect polarity, etc.) and significant damage to hardware occurs.

The following would not be considered reportable anomalies during the pre-launch Development Phase:

- Testing reveals that certain detectors are not meeting specifications
- It is discovered that the flight hardware includes suspect components
- An accumulation of technical problems results in the cost cap being exceeded.

During on-orbit checkout, but before routine operations begin, it is quite likely that numerous anomalies will occur. The issuance of Anomaly Reports during on-orbit checkout should be limited to mission-threatening events.

Specific examples of reportable flight hardware anomalies during routine operations (after on-orbit checkout) include:

- Significant loss of science or data flow (i.e., communications system failure, instrument failure, ground systems failure, entry into safe hold, etc)
- Loss of redundancy aboard the spacecraft where an additional failure will result in the loss of the mission
- Any event that jeopardizes the ability to complete the target mission life (i.e., unexpected loss of expendables such as cryogens, degraded solar array performance, etc).

Specific examples of reportable ground systems anomalies include:

- Significant loss of service, such as ground antenna failure or Tracking and Data Relay Satellite (TDRS) service failure
- Any event that jeopardizes the ability to provide mission data to a project on a continuing basis.

If an event occurs which will require the generation of an Anomaly Report, an Instant Alert phone call shall be made by the Project or Mission Manager informing Code 400 management of the anomaly. The call shall be made as soon as possible after discovery of the anomaly (day or night, including

weekends). The call shall first be made to the Code 400 Director of. If he/she is not available, the call shall be made next to the Deputy Director of, and then to the Associate Director.

Anomaly Reports shall be distributed by e-mail as soon as practical, but not later than 24 hours after the event occurs. Anomaly Reports shall be in the form of an MS Word e-mail attachment using the standard Anomaly Report format shown in Attachment 1.

As a minimum, the e-mail distribution list shall include the following GSFC and HQ individuals:

- Center Director
- Deputy Center Director
- Deputy Center Director/Technical
- Associate Director/Communications
- Head, Office of Public Affairs
- Code 400 Director of
- Code 400 Deputy Director of`
- Code 400 Associate Director of
- Code 400 Assistant Director of
- Code 400 Librarian
- Code 300 Director of
- Code 300 Deputy Director of
- Code 500 Director of
- Code 500 Deputy Director of
- Code 600 Director of
- Code 450 Director of
- Code 400 Program Manager
- HQ Program Executive
- HQ Program Scientist
- The appropriate HQ Associate Administrator
- The appropriate HQ Deputy Associate Administrator

Individual projects may supplement these listings with additional names unique to their own project.

For anomalies which occur during routine operations (after on-orbit checkout), follow-up e-mail status messages shall be sent whenever status changes significantly and continue until the event has been resolved (to the extent possible).

Note: The primary intent of this directive is to provide timely notification to Center and Headquarters management of anomalies that affect or involve GSFC Code 400 missions. This initial notification does not eliminate or replace the requirement to document anomalous events in accordance with GPR 8621.1 and GPR 5340.2.

For events that are considered mishaps, project managers and mission directors shall follow the mishap reporting process defined in GPR 8621.1. This includes initiating a NASA Form 1627 (first 14 blocks only) and submitting it to Code 250 or 302.

Anomalies that are considered nonconformances are reported via the GSFC Problem Reporting System at https://gprs.gsfc.nasa.gov/ . In the Development Phase and on-orbit checkout, these anomalies shall be documented in the Problem Reporting/Problem Failure Reporting (PR/PFR) system. During the Operations Phase, these anomalies shall be documented in the Spacecraft Orbital Anomaly Reporting (SOAR) system.

Attachment 1 Anomaly Report

TO:

FROM:

DATE:

PROGRAM/PROJECT:

DATE OF ANOMALY:

LOCATION OF ANOMALY:

DESCRIPTION OF EVENT:

IMPACT ON PROGRAM/PROJECT AND SCHEDULE:

CORRECTIVE ACTION:

Sample

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	03/06/03	Initial Release
A	10/22/03	Clarified anomaly reporting during on-orbit checkout and updated contact tables. Added documentation requirements for mishaps, SOAR, and PR/PFR systems.
B	06/18/04	Changed directive number from 400-PG-8621.0.1A to 400-PG-8621.1.1B because GPG 8621.1 has been released. Modified title and updated contact tables.
C	01/25/2005	Clarified all requirements to clearly distinguish them from supporting text in accordance with the NASA rules review. Added specific references to ground system anomalies (Item "c", Section P10; third and ninth paragraph in Procedures section). Deleted email lists and phone trees.
D	06/23/2005	Added Anomaly Report as a record. Added requirement for "Instant Alert" notification of Code 400 management. Deleted "Space Science" restriction for notification of Code 600. Deleted phone tree notification for catastrophic anomalies.
E	02/13/2006	Updated the e-mail distribution list for Anomaly Reports