Anomaly Phase

Responsible Editor: None

Assigned To: None

Origination	Assignment / Assessment	Action	Signature	Current Phase Closed

| Completed Phases | | Current Phase | | Other Phases |

Disclaimer

Incident Surprise Anomaly (ISA)

ISA #: **43150**

Title: Z89253 :: Unexpected Loss of Signal During Enceladus Plume Occultation

Originator Name: Aseel Anabtawi

Organization: 332K

Phone: 8183931073

Mail Stop: 230-215

Origination Date: 9/16/2006

Date of Incident: 9/15/2006

Last Processed: 10/31/2007 12:00:00 AM

Status: Closed

Projects Affected

Main Project Affected: CAS - Cassini

Spacecraft/Instrument ID:

Other Projects Affected:

Description

Description of Incident: At about the time the spacecraft was estimated to pass behind the Enceladus plume, all three radio signals abruptly dropped from full strength level to the noise-floor level. This was observed at the two ground antennas supporting the experiment. The signal loss lasted for almost a minute (~258/0843 to ~258/0844). The signals went back to full

strength level after that. Because the plume is tenuous, only small changes to the signal phase were expected, but no significant changes to signal power.

Reported By: Aseel Anabtawi

Date Required By:

Assignment. Note -- * denotes Foreign Person.

Assigned Element: Navigation Team

Is this problem/anomaly on non-JPL provided HW/SW?:

Multiple Teams:

Estimated Hours to Complete:

Codes and Ratings

Location:

Initial Criticality Rating: 1 Major impact or threat to mission success

Priority: Highest

Suspected Cause:

Mission Activity:

Project Phase:

Criticality Rating: 3 Negligible impact or threat to mission success

Mission Phase Affected If Not Corrected:

Software Type:

Analysis/Impacts

Analysis and Impacts: A review of the algorithms used to compute the spacecraft trajectory required to achieve the occultation revealed that the light times from Enceladus to the Earth was not properly computed.

Analysis and Impacts - Actual Hours:

Section Last Modified By: Jeremy B Jones 9/16/2006 12:00:00 AM

Corrective Action Taken

Corrective Action: The algorithm used to design the trajectory required to achieve occultations was rewritten. Three different algorithms were independently developed and the results compared for the Enceladus plume occultation on October 24, 2007.

The comparison indicated that the occultation would be achieved. The science measurements indicated that the plume occultation was achieved.

Cause Codes:	
Corrective Action Actual Hours:	
Section Last Modified By:	Jeremy B Jones 9/16/2006 12:00:00 AM

Test/Verification

Test Verification:	
Test & Verification Actual Hours:	
Test Results Verification:	
Section Last Modified By:	

Test Environment

Workstation Name:	
Operating System:	
Operating System Version:	
Flight SW Version:	
Ground SW Version:	
Subsystem Name:	
Program Name:	
Reproducible:	

Related Documents

Related Documents:

Document ID	Type
Z89253	Legacy ISA

Command File Module -- To be filled out by the MOAM

Command File Error:	

Additional Codes and Ratings

Likelihood of Recurrence:	1 Known cause/certainty in corrective action. No known residual risk
Command Process Related:	No
Lessons Learned Candidate:	No

Flight Project Concurrence:	No
Personnel Safety:	
Hardware Safety:	

Signatures

Signer	Role	Label	Required/Optional	Condition	Sign Date	Agreed	Comments

Personnel Change

Attached Files

File Name	**Upload Date**
Enceladus_Plume_occultation_measurements.JPG	10/30/2010 1:47:05 PM

Issues & Summary

| **Issues:** | |
| **Executive Summary:** | |

Change Log