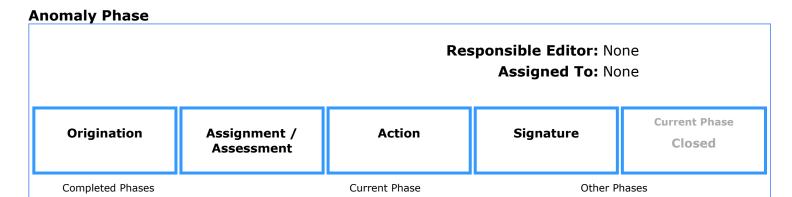
Close Window Print



#### Disclaimer

DISCREET: The information in this document may be limited to US persons who are JPL/Caltech employees and who require knowledge of its contents to aid them in evaluating effects on JPL projects and equipment under their purview. If it is unclear that distribution is limited, please contact the project manager. U.S. recipient is responsible for ensuring that no unauthorized export of controlled information takes place.

Paper copies of this document may not be current and should not be relied on for official purposes. The current version is in the Problem Reporting System: https://prs.jpl.nasa.gov/login.asp

### **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

**Other Projects** Affected:

#### **Description**

Incident:

Description of 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 ( $\sim$ 258/0843 to  $\sim$ 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: <u>Jeremy B Jones</u> 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.

	plume occultation was achie	eved.			
Cause Codes:					
Corrective Action					
Actual Hours:					
Section Last Modified	January D. January 0/16/2006	12.00.00 AM			
Ву:	Jeremy B Jones 9/16/2006	12:00:00 AM			
est/Verification					
Test Verification:					
Test & Verification					
Actual Hours:					
Test Results					
Verification:					
Section Last Modified By:					
-,-					
<b>.</b>					
est Environment	;				
Workstation Name:					
Operating System:					
Operating System					
Version:					
Flight SW Version:					
Ground SW Version:					
Subsystem Name:					
Program Name:					
Reproducible:					
Related Documen	its				
tolatea Decamen					
			_		
Related Documents:	<b>Document ID</b>	Туре			
	Z89253	Legacy ISA			
	203233	Legacy 13A	1		
Command File Mo	dule To be filled	d out by the MOAM			
Command File Error	:				
Additional Codes	and Ratings				
	1 Known cause/certainty in corrective action. No known residual risk				
Command Process Related:	No				
Lessons Learned					
Candidate:	No				

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

Flight Project No Concurrence: Personnel Safety: Hardware Safety:

# Signatures

For converted anomalies, some legacy signatures may be listed in the change log.								
Signer	Role	Label	Required/Optional	Condition	Sign Date	Agreed	Comments	
Personnel Char	<u>ige</u>		1				,	

## **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**