

## PROPOSED INTERFACE REVISION NOTICE (PIRN)

Note: This Cover Page is not intended for signature. It is to be used during the document update (pre-ICWG) process.

**Affected ICD/IS:**  
ICD-GPS-240

**PIRN Number:**  
PIRN-240A-002

**Authority:**  
RFC-00308

**PIRN Date:** 20-JUN-2016

**CLASSIFIED BY:**  
**DECLASSIFY ON:**

**Document Title:**  
Update ICD-GPS-870 and ICD-GPS-240 to align with ICD-GPS-875

**Reason For Change (Driver):**

ICD-GPS-875 has been updated to describe the new OCX-NGA and OCX-USCG interfaces. ICD-GPS-870 now needs to be updated to describe the data format changes for the public users of the USCG data. This will also address numerous formatting errors in the publicly released version of ICD-GPS-870. ICD-GPS-870 and ICD-GPS-240 require updates to clarify NANU outage codes.

**Description of Change:**

Update the descriptions of the data public users can access on the US Coast Guard server in ICD-GPS-870. Add a definition of "outage" for NANU messages to ICD-GPS-240 and to ICD-GPS-870.

**Prepared By:** George Farmer

**Checked By:** Adrienne Harrington

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## ICD240-6 :

### WAS :

The functional data transfer interfaces between the CS and the United States Coast Guard (USCG) Navigation Center (NAVCEN). These interfaces support the Memorandum of Agreement (MOA) between the United States Space Command and the USCG, "Distribution of Navstar Global Positioning System (GPS) Status Information."

### IS :

The functional data transfer interfaces between the CS and the United States Coast Guard (USCG) Navigation Center (NAVCEN). These interfaces support the Memorandum of Agreement (MOA) between the United Department States of Space Defense (DoD) Joint Functional Component Command for Space (JFCC SPACE); the Department of Homeland Security (DHS) U.S. Coast Guard Navigation Center (NAVCEN); and the USCG Department of Transportation (DOT) Federal Aviation Administration (FAA) National Operations Control Center (NOCC), "~~Distribution~~ Interagency Memorandum of Agreement with Respect to Support of Users of the Navstar Global Positioning System (GPS)-~~Status Information.~~"

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## ICD240-38 :

### WAS :

IS-GPS-200 Current Version	Navstar GPS Space Segment/Navigation User Interface
GP-03-001 14 November 2003	GPS Interface Control Working Group (ICWG) Charter
MOA February 1992	Memorandum of Agreement Between the United States Coast Guard and the United States Space Command, "Distribution of Navstar Global Positioning System (GPS) Status Information"  (Signatories: USCG/G-NRN and USSPC/DOO)
MOA February 1996	Support Agreement Between the United States Coast Guard and the United States Air Force Space Command, "Distribution of Navstar Global Positioning System (GPS) Status Information"  (Signatories: Commanding Officer NAVCEN and AFSPC/DOO)

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**IS :**

IS-GPS-200 Current Version	Navstar GPS Space Segment/Navigation User Interface
GP-03-001 14 November 2003	GPS Interface Control Working Group (ICWG) Charter
MOA February 1992	Memorandum of Agreement Between the United States Coast Guard and the United States Space Command, "Distribution of Navstar Global Positioning System (GPS) Status Information"  (Signatories: USCG/G-NRN and USSPC/DOO)
MOA February 1996	Support Agreement Between the United States Coast Guard and the United States Air Force Space Command, "Distribution of Navstar Global Positioning System (GPS) Status Information"  (Signatories: Commanding Officer NAVCEN and AFSPC/DOO)
MOA February 2010	Memorandum of Agreement between the Joint Functional Component Command for Space; the US Coast Guard Navigation Center and the FAA National Operations Control Center with respect to the Support of Users of the Navstar Global Positioning System
MOA June 2014	Interagency Memorandum of Agreement with Respect to Support of Users of the Navstar Global Positioning System (GPS)

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**ICD240-50 :**

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**WAS :**

**Table I Information Exchange Matrix**

<b>Producer</b>	<b>Consumer</b>	<b>Data Exchange Identification</b>	<b>Information Description</b>	<b>Nature of Transaction</b>	<b>Security</b>
GPS CS	GUSS Offline Software Tool	GPS Constellation Orbital and Performance Parameters	Almanac	Transfer via diskette	Unclassified
GPS CS	USCG NAVCEN	GPS Status Information	NANU	Transmit via E-Mail	Unclassified
GPS CS	USCG NAVCEN	GPS Constellation Status Summary	OA	Post to Internet Website	Unclassified
GPS CS	USCG NAVCEN	GPS Constellation Orbital and Performance Parameters	Almanac	Post to Internet Website	Unclassified
GPS CS	Military User Community	GPS Status Information	NANU	Post to Internet and SIPRNET Websites	Unclassified
GPS CS	Military User Community	GPS Constellation Status Summary	OA	Post to Internet and SIPRNET Websites	Unclassified
GPS CS	Military User Community	GPS Constellation Orbital and Performance Parameters	Almanac	Post to Internet and SIPRNET Websites	Unclassified

**IS :**

<b>Producer</b>	<b>Consumer</b>	<b>Data Exchange Identification</b>	<b>Information Description</b>	<b>Nature of Transaction</b>	<b>Security</b>
GPS CS	GUSS Offline Software Tool	GPS Constellation Orbital and Performance Parameters	Almanac	Transfer via diskette	Unclassified
GPS CS	USCG NAVCEN	GPS Status Information	NANU	Transmit via E-Mail	Unclassified
GPS CS	USCG NAVCEN	GPS Constellation Status Summary	OA	Post to Internet Website	Unclassified
GPS CS	USCG NAVCEN	GPS Constellation Orbital and Performance Parameters	Almanac	Post to Internet Website	Unclassified

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GPS CS	USCG NAVCEN	GPS Status Information	Satellite Outage File	Post to Internet Website	Unclassified
GPS CS	Military User Community	GPS Status Information	NANU	Post to Internet and SIPRNET Websites	Unclassified
GPS CS	Military User Community	GPS Constellation Status Summary	OA	Post to Internet and SIPRNET Websites	Unclassified
GPS CS	Military User Community	GPS Constellation Orbital and Performance Parameters	Almanac	Post to Internet and SIPRNET Websites	Unclassified

Table I Information Exchange Matrix

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**ICD240-51 :**

**WAS :**

The information distributed by the CS includes Notice Advisory to Navstar Users (NANU), Operational Advisory (OA), and satellite almanac. The NANU is a message that informs users of satellite outages and other GPS issues. The OA is a descriptive summary of GPS constellation status. The satellite almanac contains orbital and performance parameters for operational GPS satellites. The primary means of data distribution include electronic mail (e-mail) and Internet and SIPRNET websites. All data transfer described in this ICD is unclassified.

**IS :**

The information distributed by the CS includes Notice Advisory to Navstar Users (NANU), Operational Advisory (OA), [Satellite Outage File \(SOF\)](#) and satellite almanac. The NANU is a message that informs users of satellite outages and other GPS issues. The OA is a descriptive summary of GPS constellation status. [The SOF is a machine readable format of GPS satellite outage information.](#) The satellite almanac contains orbital and performance parameters for operational GPS satellites. The primary means of data distribution include electronic mail (e-mail) and Internet and SIPRNET websites. All data transfer described in this ICD is unclassified.

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**ICD240-56 :**

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### WAS :

Detailed data formats of the NANU, OA, and almanac data that are referenced in the paragraphs below are described in Appendices 1, 2, and 3 of this ICD, respectively.

### IS :

Detailed data formats of the NANU, OA, [SOF](#) and almanac data that are referenced in the paragraphs below are described in Appendices 1, 2, [3](#) and [34](#) of this ICD, respectively.

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### ICD240-67 :

#### WAS :

NANU messages are transmitted to the USCG NAVCEN via e-mail from the CS to an e-mail address provided by the NAVCEN. The NANUs are transmitted in a tabular format described in Appendix 1. NANU messages are transmitted whenever they are generated (intermittently) including weekends and holidays. Circumstances that may initiate the generation and transmission of specific NANUs are described in Appendix 1. The NANU file is named current.nnu, which is a running list of NANUs.

#### IS :

NANU messages are transmitted to the USCG NAVCEN via e-mail from the CS to an e-mail address provided by the NAVCEN. [NANU products from 2SOPS are also received via automated processes that link back to the 2SOPS internet website \(\(https://gps.afspc.af.mil/gps/archive/\)\).](https://gps.afspc.af.mil/gps/archive/) The NANUs are transmitted in a tabular format described in Appendix 1. NANU messages are transmitted whenever they are generated (intermittently) including weekends and holidays. Circumstances that may initiate the generation and transmission of specific NANUs are described in Appendix 1. The NANU file is named current.nnu, which is a running list of NANUs.

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### ICD240-290 :

Insertion after object ICD240-68

#### WAS :

N/A

#### IS :

[Satellite Outage File \(SOF\)](#)

**ICD240-292 :**

Insertion below object ICD240-290

**WAS :**

N/A

**IS :**

The Satellite Outage File (SOF) is built by the GPSOC GPSIS to provide a complete and up-to-date statement of past, current, and forecasted satellite outages in the GPS constellation. The information contained in the SOF is based solely on NANUs supplied by the 2 SOPS. It only applies to the GPS satellites managed by the US Air Force, and thus does not reflect status of augmentation satellites, such as those in the WAAS and EGNOS constellations. SOF data is updated and posted to GPSOC GPSIS web sites whenever the GPSOC issues a Notice: Advisory to Navstar Users (NANU).

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**ICD240-76 :**

**WAS :**

**Military User Community Internet NANU, OA, and Almanac Interfaces**

**IS :**

Military User Community Internet NANU, OA, [SOF](#) and Almanac Interfaces

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**ICD240-77 :**

**WAS :**

NANUs, OAs, and almanacs are distributed to the Military user community over the internet by uploading NANU, OA, and almanac files to the 2 SOPS internet website. Military users with internet connectivity can access the 2 SOPS internet website directly or via a direct page-to-page hyperlink from the GPS Operations Center (GPSOC) internet website to the 2 SOPS internet website. Files are downloaded from the 2 SOPS internet website using FTP by selecting a hyperlink to the desired NANU, OA, or almanac file.

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**IS :**

NANUs, OAs, [SOFs](#) and almanacs are distributed to the Military user community over the internet by uploading NANU, OA, [SOF](#) and almanac files to the 2 SOPS internet website. Military users with internet connectivity can access the 2 SOPS internet website directly or via a direct page-to-page hyperlink from the GPS Operations Center (GPSOC) internet website to the 2 SOPS internet website. Files are downloaded from the 2 SOPS internet website using FTP by selecting a hyperlink to the desired NANU, OA, [SOF](#) or almanac file.

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**ICD240-78 :**

**WAS :**

**Military User Community SIPRNET NANU, OA, and Almanac Interfaces**

**IS :**

Military User Community SIPRNET NANU, OA, [SOF](#) and Almanac Interfaces

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**ICD240-79 :**

**WAS :**

NANUs, OAs, and almanacs are distributed to the Military user community over the SIPRNET by uploading NANU, OA, and almanac files to the GPSOC SIPRNET website. Military users with SIPRNET connectivity can download a NANU, OA, or almanac file using FTP by selecting the corresponding hyperlink.

**IS :**

NANUs, OAs, and almanacs are distributed to the Military user community over the SIPRNET by uploading NANU, OA, [SOF](#) and almanac files to the GPSOC SIPRNET website. Military users with SIPRNET connectivity can download a NANU, OA, [SOF](#) or almanac file using FTP by selecting the corresponding hyperlink.

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### ICD240-293 :

Insertion after object ICD240-157

### WAS :

N/A

### IS :

[APPENDIX 3: SATELLITE OUTAGE FILE \(SOF\)](#)

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### ICD240-294 :

Insertion below object ICD240-293

### WAS :

N/A

### IS :

[Following is a list of the rules or protocols for the SOF data.](#)

#### [Usage Rules](#)

- [1. The SOF always contains fields identifying creation date/time and reference date/time.](#)
- [2. A new SOF is built each time a NANU is issued.](#)
- [3. The latency of the SOF initially may be 15-20 minutes, and is driven by operational procedures and workload.](#)

#### [File Naming Convention](#)

[The most recently built SOF is given a standard name that contains the creation date/time and the file format version number, 'yyyy ddd hhmmss vnn.sof', where yyyy is the year, ddd is the Jday \(day of year starting with 1\), hhmmss is the hour/minute/second UTC, and nn is the file format version number. The file format version number will increment sequentially whenever the file format changes.](#)

#### [Dissemination Methods](#)

[Unclassified Web Site. The GPSOC maintains a Web site accessible to unclassified users worldwide. The current SOF is posted at a conspicuous spot on this Web site for download.](#)

#### [Classification](#)

[The SOF is Unclassified and approved for public release. \[Reference GPS Security Classification Guide, 30 Sep 2008, Topic Number 700.7.10\]](#)

#### [Format](#)

[The SOF is formatted in XML according to the format below. The data type definition \(DTD\), the data format, and the data field definitions are provided.](#)

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A sample SOF with an internal DTD is as follows:

## SOF DTD

<?xml version="1.0"?>

<!DOCTYPE GPSISFILE [

    <!ELEMENT GPSISFILE  
(CREATION,REFERENCE,(PREDICTED|CURRENT|HISTORICAL)+)>

    <!ELEMENT CREATION EMPTY>

    <!ELEMENT REFERENCE EMPTY>

    <!ELEMENT PREDICTED EMPTY>

    <!ELEMENT CURRENT EMPTY>

    <!ELEMENT HISTORICAL EMPTY>

    <!ATTLIST GPSISFILE FILEID CDATA #FIXED "SOF">

    <!ATTLIST GPSISFILE SYSID CDATA #FIXED "GPS">

    <!ATTLIST GPSISFILE VERSION CDATA #REQUIRED>

    <!ATTLIST CREATION YEAR CDATA #REQUIRED>

    <!ATTLIST CREATION DOY CDATA #REQUIRED>

    <!ATTLIST CREATION HR CDATA #REQUIRED>

    <!ATTLIST CREATION MIN CDATA #REQUIRED>

    <!ATTLIST CREATION SEC CDATA #REQUIRED>

    <!ATTLIST REFERENCE YEAR CDATA #REQUIRED>

    <!ATTLIST REFERENCE DOY CDATA #REQUIRED>

    <!ATTLIST REFERENCE HR CDATA #REQUIRED>

    <!ATTLIST REFERENCE MIN CDATA #REQUIRED>

    <!ATTLIST REFERENCE SEC CDATA #REQUIRED>

    <!ATTLIST PREDICTED SVID CDATA #REQUIRED>

    <!ATTLIST PREDICTED SVN CDATA #REQUIRED>

    <!ATTLIST PREDICTED NAME (NANU|GOCGIS|USER\_DEFINED) #REQUIRED>

    <!ATTLIST PREDICTED TYPE (FCSTDV|FCSTMX) #REQUIRED>

    <!ATTLIST PREDICTED REFERENCE CDATA #REQUIRED>

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<!ATTLIST PREDICTED START YEAR CDATA #REQUIRED>  
<!ATTLIST PREDICTED START DOY CDATA #REQUIRED>  
<!ATTLIST PREDICTED START HR CDATA #REQUIRED>  
<!ATTLIST PREDICTED START MIN CDATA #REQUIRED>  
<!ATTLIST PREDICTED START SEC CDATA #REQUIRED>  
<!ATTLIST PREDICTED END YEAR CDATA #REQUIRED>  
<!ATTLIST PREDICTED END DOY CDATA #REQUIRED>  
<!ATTLIST PREDICTED END HR CDATA #REQUIRED>  
<!ATTLIST PREDICTED END MIN CDATA #REQUIRED>  
<!ATTLIST PREDICTED END SEC CDATA #REQUIRED>

<!ATTLIST CURRENT SVID CDATA #REQUIRED>  
<!ATTLIST CURRENT SVN CDATA #REQUIRED>  
<!ATTLIST CURRENT NAME (NANU|GOCGIS|USER\_DEFINED) #REQUIRED>  
<!ATTLIST CURRENT TYPE CDATA #FIXED "UNUSUFN">  
<!ATTLIST CURRENT REFERENCE CDATA #REQUIRED>  
<!ATTLIST CURRENT START YEAR CDATA #REQUIRED>  
<!ATTLIST CURRENT START DOY CDATA #REQUIRED>  
<!ATTLIST CURRENT START HR CDATA #REQUIRED>  
<!ATTLIST CURRENT START MIN CDATA #REQUIRED>  
<!ATTLIST CURRENT START SEC CDATA #REQUIRED>

<!ATTLIST HISTORICAL SVID CDATA #REQUIRED>  
<!ATTLIST HISTORICAL SVN CDATA #REQUIRED>  
<!ATTLIST HISTORICAL NAME (NANU|GOCGIS|USER\_DEFINED) #REQUIRED>  
<!ATTLIST HISTORICAL TYPE (FCSTSUMM|UNUSABLE|UNUNOREF) #REQUIRED>  
<!ATTLIST HISTORICAL REFERENCE CDATA #REQUIRED>  
<!ATTLIST HISTORICAL START YEAR CDATA #REQUIRED>  
<!ATTLIST HISTORICAL START DOY CDATA #REQUIRED>  
<!ATTLIST HISTORICAL START HR CDATA #REQUIRED>  
<!ATTLIST HISTORICAL START MIN CDATA #REQUIRED>  
<!ATTLIST HISTORICAL START SEC CDATA #REQUIRED>  
<!ATTLIST HISTORICAL END YEAR CDATA #REQUIRED>

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<!ATTLIST HISTORICAL END DOY CDATA #REQUIRED>

<!ATTLIST HISTORICAL END HR CDATA #REQUIRED>

<!ATTLIST HISTORICAL END MIN CDATA #REQUIRED>

<!ATTLIST HISTORICAL END SEC CDATA #REQUIRED>

└>

SOF Structure

<?xml version="1.0"?>

<GPSISFILE FILEID="SOF" SYSID="GPS" VERSION="2">

<CREATION YEAR="2004" DOY="257" HR="11" MIN="2" SEC="11" />

<REFERENCE YEAR="2004" DOY="257" HR="11" MIN="2" SEC="11" />

<PREDICTED

SVID="9" SVN="39"

NAME="NANU" TYPE="FCSTMX" REFERENCE="2004094"

START YEAR="2004" START DOY="229" START HR="12" START MIN="0"  
START SEC="0"

END YEAR="2004" END DOY="230" END HR="0" END MIN="0" END SEC="0"

\_\_\_\_\_/>

<CURRENT

SVID="31" SVN="31"

NAME="NANU" TYPE="UNUSUFN" REFERENCE="2004101"

START YEAR="2004" START DOY="257" START HR="5" START MIN="50"  
START SEC="0"

\_\_\_\_\_/>

<HISTORICAL

SVID="27" SVN="27"

NAME="NANU" TYPE="UNUSABLE" REFERENCE="2004100"

START YEAR="2004" START DOY="242" START HR="1" START MIN="32"  
START SEC="0"

END YEAR="2004" END DOY="243" END HR="19" END MIN="12" END SEC="0"

\_\_\_\_\_/>

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</GPSISFILE>

All times are GPS TIME unless otherwise specified. DOY is day of year (same as JDAY); 1=1 January, 366 is valid for leap year

## 'GPSISFILE' FILE INFORMATION

Occurs once per file

FILEID is always 'SOF'

SYSID is always 'GPS'

VERSION is the version number of the file. The version text should be an integer version number. Example: 2

CREATION indicates date/time of file creation. Time is computer time (UTC time zone).

REFERENCE indicates date/time to which SOF data applies. For example, if January 10, 2003 1550Z is the REFERENCE time then Satellite Outage information will be collected up to and including that time, including past, current, and predicted information. The REFERENCE time is set to be the date/time of the most recent NANU incorporated into the SOF.

## 'SOF RECORD' INFORMATION

Occurs multiple times per file, once for each predicted, current or historical satellite outage issued by the REFERENCE data/time.

There are three types of SOF records.

PREDICTED identifies predicted outages as of the REFERENCE time.

CURRENT identifies any active outages as of the REFERENCE time, along with the time the outage began.

HISTORICAL identifies actual outages that have taken place prior to the REFERENCE time.

SVID - reusable identifier for each satellite in identified system. For GPS the SVID shall be the PRN.

SVN (Satellite Vehicle Number) – unique sequential number associated with satellite-specific program is an integer. For GPS this is assigned by the US Air Force.

## PREDICTED record fields

NAME – Alphanumeric indicator of outage source (currently 'NANU'). GOCGIS used when no NANU has been issued, yet outage is predicted or a GENERAL NANU has been issued that affects this outage.

TYPE – If NAME=NANU, then the choices are FCSTDV, FCSTMX. If a FCSTEXTD, then implemented as original type (FCSTDV or FCSTMX) with start date/time the same as in the

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FCSTEXTD and end date/time fixed twenty years out. If FCSTRESCD, then implemented as original type with dates/times as in the FCSTRESCD NANU. If a FCSTCANC type NANU is issued, the original type will be deleted from the SOF.

REFERENCE – reference info. If NAME=NANU this will be the NANU number of the last valid NANU associated with this outage. For example, if there is a FCSTDV issued with number 2003010, then REFERENCE=2003010. As another example, if there is a FCSTMX issued with number 2003047, followed by a FCSTEXTD with number 2003050, then REFERENCE=2003050.

### CURRENT record fields

NAME – Alphanumeric indicator of outage source (currently ‘NANU’).

TYPE – If NAME=NANU, then the choices are UNUSUFN and GENERAL. If NANU is initially issued as a GENERAL launch message, then it will be implemented in the SOF as a UNUSUFN with the start date/time as 0000Z on the first day the satellite appears in the almanac.

REFERENCE – reference info. If NAME=NANU this will be the NANU number of the last valid NANU associated with this outage. For example, if there is a UNUSUFN issued with number 2003049, then REFERENCE=2003049.

### HISTORICAL record fields

NAME –Alphanumeric indicator of outage source (currently NANU).

TYPE – If NAME=NANU, then the choices are FCSTSUMM, UNUSABLE, UNUNOREF, USABINIT, and GENERAL. If NANU is initially issued as a GENERAL launch message, then it will be implemented in the SOF as an UNUSABLE with stop dates/times as in the USABINIT and the start date/time as 0000Z on the first day the satellite appears in the almanac. This closes out the UNUSUFN that was implemented earlier for the GENERAL launch message. If the NANU is initially issued as a GENERAL decommission it will be implemented in the SOF as an UNUSABLE with the decommission date/time as the end date/time. If a GENERAL NANU is issued which cancels a previous NANU, the previous NANU will not appear in the SOF.

REFERENCE – reference info. If NAME=NANU this will be the NANU number of the last valid NANU associated with this outage. For example, if there is a FCSTSUMM issued with number 2003051, then REFERENCE=2003051.

### Format Changes

Changes to file formats are implemented as follows:

1. Files implementing a new format have the VERSION attribute of the GPSISFILE element incremented. Version 1 files encoded the file version in the filename. For example, a file with a previous format may have a name like 2004 202 145503 v01.sof. Later file versions encode the version both in the filename, and the XML VERSION attribute. The filenames of the new file versions look like 2004 202 145503 v02.sof.
2. If a new file format is implemented, both the old and the new file formats will be posted to the web site location for a transition period.
3. The old file format will be posted for four months, and then be removed. This provides time for users to adapt to the new file format.

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