

## PROPOSED CHANGE NOTICE

**Affected Document:**

ICD-GPS-870 Rev D

**IRN/SCN Number**

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**Date:**

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**Authority:**

RFC-00395

**Proposed Change Notice**

ICD870D-RFC395

**Date:**

31-MAY-2019

**CLASSIFIED BY: N/A****DECLASSIFY ON: N/A****Document Title: Navstar GPS Control Segment to User Support Community Interfaces****RFC Title: 2019 Public Document Proposed Changes****Reason For Change (Driver):**

1. IS-GPS-705 identifies dual frequency users as "L1/L2" and "L1/L5 (recommended)". Users may interpret frequency pair (L2/L5) as a viable dual frequency; that is not recommended.
2. The user implementation community has identified equations in the Elements of Coordinates Systems tables in documents IS-GPS-200, IS-GPS-705, and IS-GPS-800 that can benefit from an improvement.
3. Documents IS-GPS-200, IS-GPS-705, and IS-GPS 800 are not consistent in their definition of when to broadcast CNAV UTC data. These documents need to be made consistent.
4. ICD-GPS-870 Appendices 1-6, public release GPS products, were derived and developed from ICD-GPS-240 (AEP) to account for OCX transition. Currently OCX uses a translator tool to convert modernized into legacy format to maintain backwards compatibility that AEP produces. Appendices 1-6 must reflect the backwards compatibility format until the public users are well-informed of availability of the modernized format (GPS community).
5. OCX provides a utility to convert modernized GPS products to the legacy, AEP-formatted GPS products. The legacy formats are characterized with default filenames, which are important for the public user community to interpret and process the GPS products. However, these default filenames are not described in ICD-GPS-870.
6. Public documents need clarification and clean-up, as identified in past Public ICWGs and as newly-identified changes of administrative nature.
7. Currently the Operational Advisories (OAs) that are published and archived contain plane/slot descriptions that are not in the constellation definition provided to the public in the SPS Performance Standard as well as the data provided by the National Geospatial-Intelligence Agency (NGA) (refer to <http://earth-info.nga.mil/GandG/sathtml/satinfo.html>). The OA does not have the capability to correctly publish information regarding fore/aft position since moving to the 24+3 constellation with three expanded slots. (Moved from RFC-374)

**Description of Change:**

1. In IS-GPS-705, state operational use of the group of signals (L2/L5) is at the users own risk.
2. Recommend a different, less complicated kinematic formulation that improves the equations in the Elements of Coordinate Systems tables in the Signal in Space (SiS) documents.
3. Ensure consistency across documentation of when to broadcast CNAV UTC data in documents IS-GPS-200, IS-GPS-705, and IS-GPS 800.
4. Clarify ICD-GPS-870 Appendix 1-6 are legacy and update definitions in Appendices 1-6 read as built (eg. Appendix 1 describes the legacy NANU types and NANU message format. The sample file in this section is consistent with the legacy format. Sample file for the modernized format will be provided by the GPS community).
5. Add in ICD-GPS-870 a description of default filenames for all legacy GPS products.
6. Provide clarity and clean up identified administrative changes in all public documents.
7. This topic was originally addressed in RFC-374 but needs to be re-addressed in order to update ICD-GPS-870 such that OCX produces an OA with section one set to the original data or set to "RESERVED."

**Authored By: RE: Albert Sicam****Checked By: RE: Anthony Flores****AUTHORIZED SIGNATURES****REPRESENTING****DATE**

	GPS Directorate Space & Missile Systems Center (SMC) – LAAFB	
	HQ Air Force Space Command (AFSPC/50OG)	
	Department of Homeland Security (DHS), United States Coast Guard (USCG) Navigation Center (NAVCEN)	
	Department of Transportation (DOT), Federation Aviation Administration (FAA)	

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**ICD870-23 :**

**Section Number :**

2.1.0-6

**WAS :**

IS-GPS-200 Current Version	Navstar GPS Space Segment / Navigation User Interface
IS-GPS-705 Current Version	Navstar GPS Space Segment / User Segment L5 Interfaces
IS-GPS-800 Current Version	Navstar GPS Space Segment / User Segment L1C Interfaces
GP-03-001 Current Version	GPS Interface Control Working Group (ICWG) Charter
MOA Current Version	Interagency Memorandum of Agreement with Respect to Support of Users of the Navstar Global Positioning System (GPS)
2017	Federal Radionavigation Plan  (Signatories: Department of Homeland Security, Department of Transportation, Department of Defense)
MFR 30 June 2011	Department of the Air Force, 50th Space Wing (AFSPC) Memorandum for Record - 2 SOPS GPS Public Release Policy
6 February 2003	DODI 8500.2, Information Assurance (IA) Implementation
4 May 2011	United States Department of Defense X.509 Certificate Policy

**Redlines :**

IS-GPS-200 Current Version	Navstar GPS Space Segment / Navigation User Interface
IS-GPS-705 Current Version	Navstar GPS Space Segment / User Segment L5 Interfaces
IS-GPS-800 Current Version	Navstar GPS Space Segment / User Segment L1C Interfaces
GP-03-001 Current Version	<del>GPS Interface Control Working Group (ICWG) Charter</del> <a href="#">GPS Adjudication Working Group (AWG) and Rough Order of Magnitude (ROM)/ Impact Assessment (IA) Charter</a>
MOA Current Version	Interagency Memorandum of Agreement with Respect to Support of Users of the Navstar Global Positioning System (GPS)
2017	Federal Radionavigation Plan  (Signatories: Department of Homeland Security, Department of Transportation, Department of Defense)
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6 February 2003	DODI 8500.2, Information Assurance (IA) Implementation
4 May 2011	United States Department of Defense X.509 Certificate Policy

**IS :**

IS-GPS-200 Current Version	Navstar GPS Space Segment / Navigation User Interface
IS-GPS-705 Current Version	Navstar GPS Space Segment / User Segment L5 Interfaces
IS-GPS-800 Current Version	Navstar GPS Space Segment / User Segment L1C Interfaces
GP-03-001 Current Version	GPS Adjudication Working Group (AWG) and Rough Order of Magnitude (ROM)/ Impact Assessment (IA) Charter
MOA Current Version	Interagency Memorandum of Agreement with Respect to Support of Users of the Navstar Global Positioning System (GPS)
2017	Federal Radionavigation Plan  (Signatories: Department of Homeland Security, Department of Transportation, Department of Defense)
MFR 30 June 2011	Department of the Air Force, 50th Space Wing (AFSPC) Memorandum for Record - 2 SOPS GPS Public Release Policy
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**Rationale :**

Update the ICWG Charter to the new AWG Charter

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**ICD870-738 :**

Insertion after object ICD870-674

Given validated inputs, the Validate and Transform Utility will use XSLT stylesheets to produce the desired output format as listed in Table 3-III.

**Section Number :**

3.1.0-26

**WAS :**

N/A

**Redlines :**

<INSERTED OBJECT>

**IS :**

The Validate and Transform Utility will output default filenames IAW Table 3-II.

**Rationale :**

Add new statement to refer to the table of legacy product filenames output by the Validate and Transform Utility for user awareness/understanding of how OCX outputs legacy products.

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**ICD870-722 :****Section Number :**

3.1.0-30.0-1

**WAS :**

Table 3-II not used

**Redlines :**

Table 3-II ~~notDefault~~ ~~used~~ [Filenames for Transformed Products](#)

**IS :**

Table 3-II Default Filenames for Transformed Products

**Rationale :**

Use the unused Table 3-II table caption for new transformed products table for user awareness.

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**ICD870-739 :**

Insertion after object ICD870-722 (See Previous)

**Section Number :**

3.1.0-30.0-2

**WAS :**

N/A

**Redlines :**

&lt;INSERTED OBJECT&gt;

**IS :**

<b>Legacy File Type (see Appendix ICD-GPS-870 Appendix 1-5)</b>	<b>Default Filename</b>
<b>NANU File (NANU)</b>	yyyyNNN.nnu (see note 1 and 2 and 3)
<b>Operational Advisory (OA)</b>	yyyy_ddd.oa1 (see note 1 and 3)
<b>SEM Almanac (PRN 1-32)</b>	yyyy_ddd.al3 (see note 1 and 3)
<b>SEM Almanac (PRN 1-63)</b>	yyyy_ddd.bl3 (see note 1 and 3)
<b>YUMA Almanac (PRN 1-32)</b>	yyyy_ddd.alm (see note 1 and 3)
<b>YUMA Almanac (PRN 1-63)</b>	yyyy_ddd.blm (see note 1 and 3)
<b>Anti-Spoof Status (AS) (PRN 1-32)</b>	AS_yyyy_ddd.txt (see note 1 and 3)
<b>Anti-Spoof Status AS2 (PRN 1-63)</b>	AS2_yyyy_ddd.txt (see note 1 and 3)
<b>Extended Signal Health Status</b>	yyyy_ddd.ale (see note 1 and 3)
<b>Satellite Outage File (SOF)</b>	YYYY_DDD_HHMMSS_vnn.sof
<p><b>Note 1:</b></p> <ul style="list-style-type: none"> <li>- yyyy is the year</li> <li>- ddd is the 3 digit Julian day of year, zero-filled with a range from 001 to 366 beginning January 1</li> <li>- hhmss is the hour/minute/second UTC with hh range from 00 to 24 and with mm and ss range from 00 to 59</li> </ul> <p><b>Note 2:</b></p> <ul style="list-style-type: none"> <li>- NNN – sequentially assigned three-digit NANU ID number which begins at 001 for the first NANU of a new year. The ID number is incremented for each new NANU up to a maximum of 999 in any given calendar year, after which the ID number rolls over and begins numbering subsequent NANUs beginning with 001.</li> </ul> <p><b>Note 3:</b></p> <ul style="list-style-type: none"> <li>- The file is named with the reference date/time that the original GPS product was created by the CS.</li> </ul> <p><b>Note 4:</b></p> <ul style="list-style-type: none"> <li>- The nn is the file format version number and ranges from 01-09.</li> </ul>	

**Rationale :**

Add table of default filenames for OCX transformed products for user understanding.

Note 2 incorrectly states that the NANU is published on the first day of the new year. Instead it should say that ti is published when required

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**ICD870-741 :**

Insertion after object ICD870-199

1. SATELLITES, PLANES, AND CLOCKS (CS=CESIUM RB=RUBIDIUM):
A. BLOCK I : NONE
B. BLOCK II : PRNS 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14
PLANE : SLOT B2, D1, C2, D4, B6, C5, A6, A3, A1, E3, D2, B4, F3, F1
CLOCK : RB, RB, CS, RB, RB, RB, RB, CS, CS, CS, RB, RB, RB
BLOCK II : PRNS 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28
PLANE : SLOT F2, B1, C4, E4, C3, E1, D3, E2, F4, D5, A5, F5, A4, B3
CLOCK : RB, RB, RB, RB, RB, RB, RB, RB, CS, RB, RB, CS, RB
BLOCK II : PRNS 29, 30, 31, 32
PLANE : SLOT C1, B5, A2, E5
CLOCK : RB, CS, RB, RB
C. BLOCK III: PRNS 33, 34, 35
PLANE : SLOT A2, C3, F4
CLOCK : RB, RB, RB

Figure 20-3 OA Section 1

**Section Number :**

20.3.0-4

**WAS :**

N/A

**Redlines :**

<INSERTED OBJECT>

**IS :**

If no data are available, section one is denoted with "RESERVED." An example is illustrated in Figure 20-3a.

**Rationale :**

The original proposal in RFC-374 to remove the data from section one of the Operational Advisory was removed and is re-addressed in this RFC. Provide flexibility for OCX to provide either the original OA section one data or a "RESERVED" field.



**ICD870-742 :**

Insertion after object ICD870-741 (See Previous)

**Section Number :**

20.3.0-5

**WAS :**

N/A

**Redlines :**

<INSERTED OBJECT>

**IS :**

1. RESERVED

**Rationale :**

The original proposal in RFC-374 to remove the data from section one of the Operational Advisory was removed and is re-addressed in this RFC. Provide flexibility for OCX to provide either the original OA section one data or a "RESERVED" field.

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**ICD870-743 :**

Insertion after object ICD870-742 (See Previous)

**Section Number :**

20.3.0-6

**WAS :**

N/A

**Redlines :**

<INSERTED OBJECT>

**IS :**

Figure 20-3a OA Section One (No Data)

**Rationale :**

The original proposal in RFC-374 to remove the data from section one of the Operational Advisory was removed and is re-addressed in this RFC. Provide flexibility for OCX to provide either the original OA section one data or a "RESERVED" field.

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**ICD870-740 :**

Insertion below object ICD870-726

### **30 APPENDIX 3: SATELLITE OUTAGE FILE (SOF) FORMAT**

**Section Number :**

30.1

**WAS :**

N/A

**Redlines :**

<INSERTED OBJECT>

**IS :**

Appendix 3 describes the SOF format.

**Rationale :**

As discussed in TIMs; this statement added helps clarify legacy format

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**ICD870-259 :**

**Section Number :**

50.1.0-3

**WAS :**

Table 50-I

Modernized Civil Signal	L1C	L2C	L5
Reference Document	IS-GPS-800	IS-GPS-200	IS-GPS-705
Applicable SV Block/Iteration	III	IIR-M, IIF, III	IIF, III

**Redlines :**

Table 50-I

Modernized Civil Signal	L1C	L2C	L5
Reference Document	IS-GPS-800	IS-GPS-200	IS-GPS-705
Applicable SV Block/Iteration	III, <u>IIIF</u>	IIR-M, IIF, III, <u>IIIF</u>	IIF, III, <u>IIIF</u>

**IS :**

Table 50-I

Modernized Civil Signal	L1C	L2C	L5
Reference Document	IS-GPS-800	IS-GPS-200	IS-GPS-705
Applicable SV Block/Iteration	III, IIIF	IIR-M, IIF, III, IIIF	IIF, III, IIIF

**Rationale :**

Comment made addressing to make distinctions between GPS III and GPS IIIF

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