

CHANGE NOTICE

Affected Document: IS-GPS-705H Rev M	IRN/SCN Number XXX-XXX-XXXX-XXX	Date: XX-XXX-XXXX
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Authority: RFC-00467	Proposed Change Notice PCN-IS-705H_RFC467	Date: 29-SEP-2021
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CLASSIFIED BY: N/A
DECLASSIFY ON: N/A

Document Title: NAVSTAR GPS Space Segment / Navigation User Interfaces

RFC Title: 2021 Proposed Changes to the Public Documents

Reason For Change (Driver):

1. Reserved/spare bits in the CNAV/CNAV-2 in IS-GPS-200 are assumed to be a static bit pattern. With the current proposed implementation to fill those bits with a pseudorandom bit pattern, users are at risk of incorrectly using those bits for integrity checks.
2. The GPS III SV Configuration Code '101' confirms that the "alert" in HOW is still applicable. As such, one of the public stakeholder was requesting clarification to confirm if the "alert" in the HOW will also be applicable in the future undefined configuration codes. This is not sufficient for safety-of-life equipment that would need to have the confirmation because the alert is part of the "marginal" conditions leading to the selection/deselection of a satellite in a RAIM or ARAIM integrity context.
3. Current Issue of Data and Clock (IODC) requirement in IS-GPS-200 states that the IODC will be different from any value transmitted by the SV during the preceding 7-days. In certain occasions, current operations have shown not to follow that requirement.
4. The descriptions of how the navigation message changes with time (for example, transitions between data sets, or behavior under extended navigation) do not capture all the implementation differences between earlier SVs and GPS III/IIIF.
5. Documents need clarification and clean-up, as identified in past Public ICWGs and as newly-identified changes of administrative nature.

Description of Change:

1. Clarify language in IS-GPS-200, IS-GPS-705 and IS-GPS-800 to tell users to not utilize the spare/reserved bits.
2. Add clarification to the SV Configuration Code section for the undefined SV codes.
3. Modify or delete the IODC requirement.
4. Update the timing-related information to reflect the current implementation, including aspects specific to GPS III/IIIF.
5. Provide clarity and clean up identified administrative changes in all affected documents.

Authored By: RE: Tony Anthony **Checked By: RE:**

AUTHORIZED SIGNATURES	REPRESENTING	DATE
	PNT Capability Area Integration, Portfolio Architect, Space Systems Command - LAAFB	

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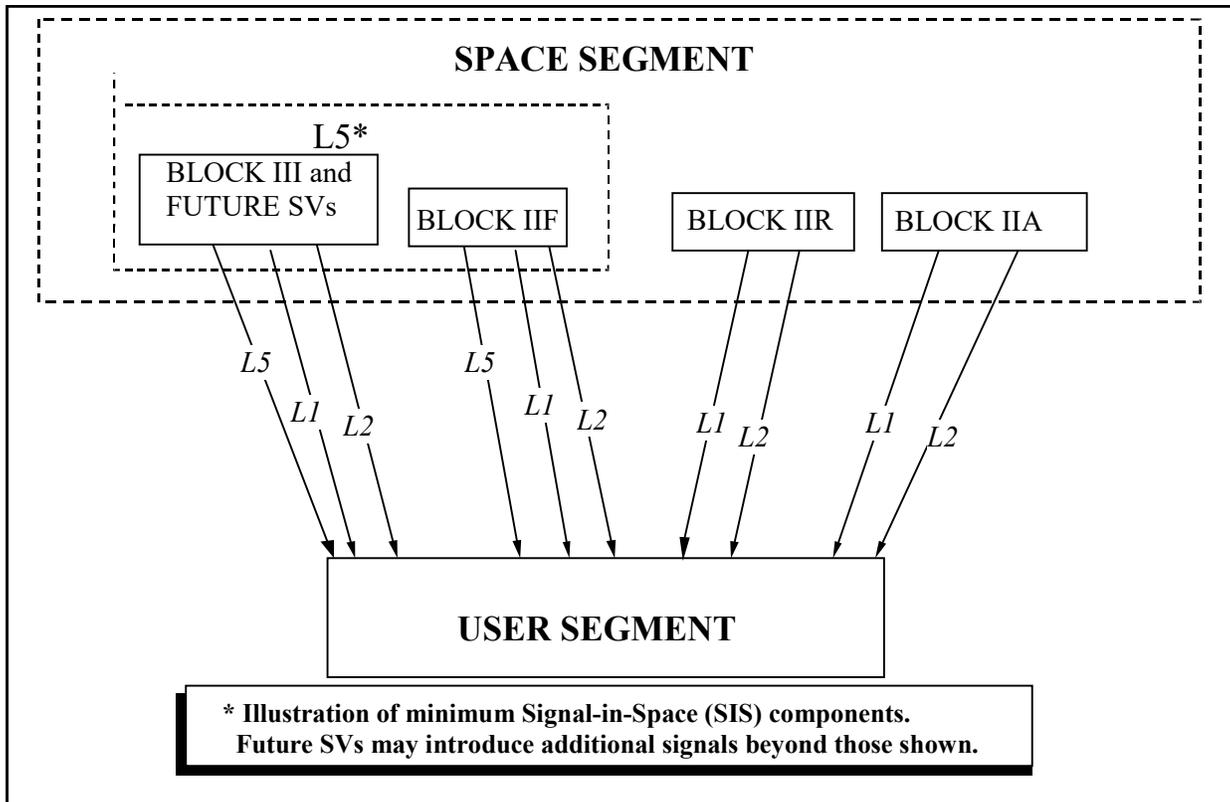
THIS DOCUMENT SPECIFIES TECHNICAL REQUIREMENTS AND NOTHING HEREIN CONTAINED SHALL BE DEEMED TO ALTER THE TERMS OF ANY CONTRACT OR PURCHASE ORDER BETWEEN ALL PARTIES AFFECTED.	Interface Control Contractor: SAIC (GPS SE&I) 200 N. Pacific Coast Highway, Suite 1800 El Segundo, CA 90245 CODE IDENT 66RP1
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IS705-1534:

Section Number:

3.1.0-3

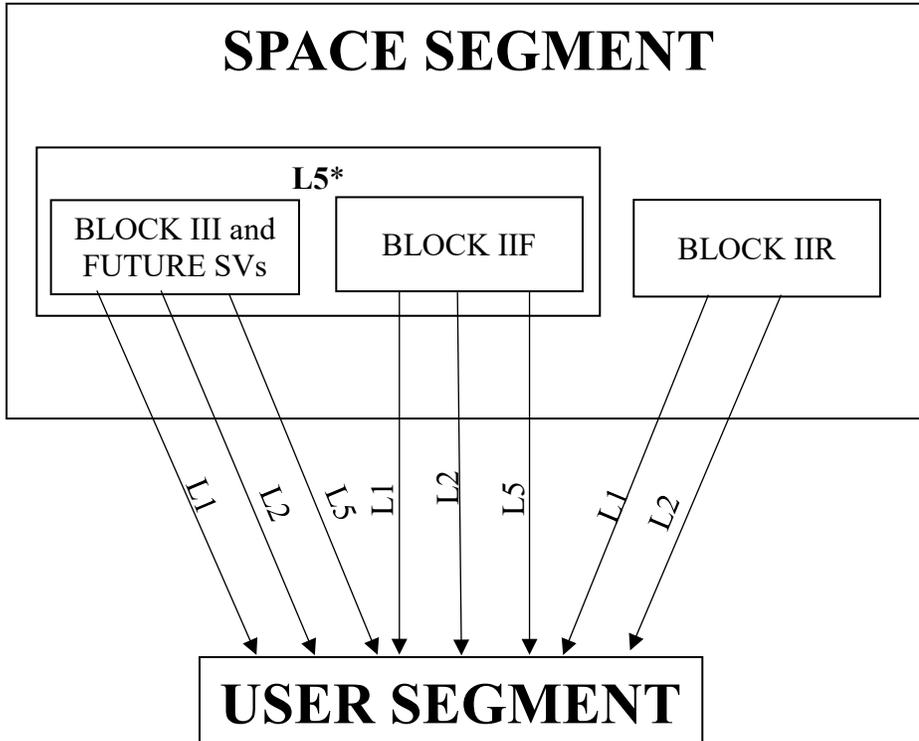
WAS:



Redlines:

Graphics are not available. The **BLOCK IIA** block in the **SPACE SEGMENT** and associated communications lines have been removed.

IS:



* Illustration of minimum Signal-in-Space (SIS) components. Future SVs may introduce additional signals beyond those shown.

Rationale:

All Block II and IIA SVs have been decommissioned, so graphical references to Block IIA have been removed from this figure in this document. (T. Anthony)

IS705-119:

Section Number:

6.2.2.2.0-1

WAS:

The operational satellites are designated Block IIA, Block IIR, Block IIRM, Block IIF, GPS III, and GPS IIIF SVs. Characteristics of these SVs are provided below. These SVs transmit configuration codes as specified in paragraph 20.3.3.5.1.4 of IS-GPS-200. The navigation signal provides no direct indication of the type of the transmitting SV.

Redlines:

The operational satellites are designated Block ~~IIA~~, ~~Block~~-IIR, Block ~~IIRM~~IIR-M, Block IIF, GPS III, and GPS IIIF SVs. Characteristics of these SVs are provided below. These SVs transmit configuration codes as specified in paragraph 20.3.3.5.1.4 of IS-GPS-200. The navigation signal provides no direct indication of the type of the transmitting SV.

IS:

The operational satellites are designated Block IIR, Block IIR-M, Block IIF, GPS III, and GPS IIIF SVs. Characteristics of these SVs are provided below. These SVs transmit configuration codes as specified in paragraph 20.3.3.5.1.4 of IS-GPS-200. The navigation signal provides no direct indication of the type of the transmitting SV.

Rationale:

All Block II and IIA SVs have been decommissioned, so references to them have been removed from this place in this document. (T. Anthony)

CRM #236 8/24/2021 Added dash to "IIR-M" (T. Anthony)

IS705-1494:

Section Number:

6.2.2.2.1

WAS:

Object Heading: Block II SVs

Redlines:

Object Heading: Block II SVs [\(Decommissioned\)](#)

IS:

Object Heading: Block II SVs (Decommissioned)

Rationale:

All Block II and IIA SVs have been decommissioned, so requirements in this section have been modified to describe the decommissioning. (T. Anthony)

IS705-120:

Section Number:

6.2.2.2.2

WAS:

Object Heading: Block IIA SVs

Redlines:

Object Heading: Block IIA SVs [\(Decommissioned\)](#)

IS:

Object Heading: Block IIA SVs (Decommissioned)

Rationale:

CRM #237, #301 9/2/2021 All Block II and IIA SVs have been decommissioned, so requirements in this section have been modified to describe the decommissioning. (T. Anthony)

IS705-129:

Section Number:

6.2.2.2.6.0-1

WAS:

See paragraph 6.2.2.2.6 of IS-GPS-200. The GPS III and GPS IIIF operational SVs do broadcast the L5 signal.

Redlines:

See paragraph 6.2.2.2.6 of IS-GPS-200. The GPS III ~~and GPS IIIF~~ operational SVs do broadcast the L5 signal.

IS:

See paragraph 6.2.2.2.6 of IS-GPS-200. The GPS III operational SVs do broadcast the L5 signal.

Rationale:

CRM #265 11/4/2021 Reworking the 6.2.2.2.6 and 6.2.2.2.7 in IS-GPS-200 demands making IS-GPS-705 match more closely T. Anthony

IS705-1738:

Insertion after object IS705-128

Section Number:

6.2.2.2.7

WAS:

<INSERTED OBJECT>

Redlines:

Object Heading: [GPS IIIIF SVs](#)

Object Type: [Header](#)

IS:

Object Heading: GPS IIIIF SVs

Object Type: Header

Rationale:

CRM #265 11/4/2021 Reworking the 6.2.2.2.6 and 6.2.2.2.7 in IS-GPS-200 demands making IS-GPS-705 match more closely T. Anthony

IS705-1739:

Insertion below object IS705-1738

Section Number:

6.2.2.2.7.0-1

WAS:

<INSERTED OBJECT>

Redlines:

[See paragraph 6.2.2.2.7 of IS-GPS-200. The GPS IIIIF operational SVs do broadcast the L5 signal.](#)

Object Type: [Info-Only](#)

IS:

See paragraph 6.2.2.2.7 of IS-GPS-200. The GPS IIIIF operational SVs do broadcast the L5 signal.

Object Type: Info-Only

Rationale:

CRM #265 11/4/2021 Reworking the 6.2.2.2.6 and 6.2.2.2.7 in IS-GPS-200 demands making IS-GPS-705 match more

IS705-131:

Section Number:

6.2.3.0-1

WAS:

See paragraph 6.2.3 of IS-GPS-200. There is no requirement for extended operations on L5.

Redlines:

See paragraph 6.2.3 of IS-GPS-200. ~~There is no requirement for extended operations on L5.~~

IS:

See paragraph 6.2.3 of IS-GPS-200.

Rationale:

The statement that there is "no requirement for extended operations on L5" is potentially misleading; some SVs (GPS III/IIIIF) have the capability to broadcast L5 for 60 days if contact with the CS is lost. It would be more relevant to state that on L5 only "normal operations" is applicable: this is already addressed by the change to the referenced IS-GPS-200 section 6.2.3, so the information does not need to be repeated here.

IS705-1521:

Section Number:

6.2.8.1-2

WAS:

Symbol	Parameter Name	Message
\dot{A}	Change Rate in Semi-major Axis	10
ΔA	Semi-major Axis Difference at Reference Time	10
Δn_0	Mean Motion Difference from Computed Value at Reference Time	10
$\Delta \dot{n}_0$	Rate of Mean Motion Difference from Computed Value	10
ω	Argument of Perigee	10
e	Eccentricity	10
ISF	Integrity Status Flag ^{NOTE1}	10
(L1/L2/L5)	Signal Health (3 bits)	10
M_0	Mean Anomaly at Reference Time	10
URA _{ED}	Elevation Dependent User Range Accuracy	10
WN	Week Number	10
t_{oe}	Time of Ephemeris	10, 11
t_{op}	CEI Data Sequence Propagation Time of Week	10, 30-37
$\dot{\Omega}$	Rate of Right Ascension	11
Ω_0	Longitude of Ascending Node of Orbit Plane at Weekly Epoch	11
C_{ic}	Amplitude of the Cosine Harmonic Correction Term to the Angle of Inclination	11
C_{is}	Amplitude of the Sine Harmonic Correction Term to the Angle of Inclination	11
C_{rc}	Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius	11
C_{rs}	Amplitude of the Sine Correction Term to the Orbit Radius	11
C_{uc}	Amplitude of Cosine Harmonic Correction Term to the Argument of Latitude	11
C_{us}	Amplitude of Sine Harmonic Correction Term to the Argument of Latitude	11
i_0	Inclination Angle at Reference Time	11
i_{0-n} -DOT	Rate of Inclination Angle	11
ISC _{L1C/A}	Inter-signal Correction	30
ISC _{L2C}	Inter-signal Correction	30
ISC _{L5I5}	Inter-signal Correction	30
ISC _{L5Q5}	Inter-signal Correction	30
T _{GD}	Group Delay Differential	30
a _{f0}	SV Clock Bias Correction Coefficient	30-37

Symbol	Parameter Name	Message
a_{f1}	SV Clock Drift Correction Coefficient	30-37
a_{f2}	Drift Rate Correction Coefficient Index	30-37
t_{oc}	Time of Clock	30-37
URA_{NED0}	NED Accuracy Index	30-37
URA_{NED1}	NED Accuracy Change Index	30-37
URA_{NED2}	NED Accuracy Change Rate Index	30-37
Alert	Alert Flag ^{NOTE1}	All
<p>NOTE1: Parameters so indicated are for CEI Refinement – not limited to curve fit. Parameters not indicated are needed for/limited to curve fit. Updates to parameters in table shall prompt changes in t_{oe}/t_{oc}. Any parameter marked with NOTE1 may be changed with or without a change in t_{oe}/t_{oc}.</p>		

Redlines:

Symbol	Parameter Name	Message
\dot{A}	Change Rate in Semi-major Axis	10
ΔA	Semi-major Axis Difference at Reference Time	10
Δn_0	Mean Motion Difference from Computed Value at Reference Time	10
$\Delta \dot{n}_0$	Rate of Mean Motion Difference from Computed Value	10
ω	Argument of Perigee	10
e	Eccentricity	10
ISF	Integrity Status Flag ^{NOTE1}	10
(L1/L2/L5)	Signal Health (3 bits)	10
M_0	Mean Anomaly at Reference Time	10
URA_{ED}	Elevation Dependent User Range Accuracy	10
WN	Week Number	10
t_{oe}	Time of Ephemeris	10, 11
t_{op}	CEI Data Sequence Propagation Time of Week	10, 30-37
$\dot{\Omega}$	Rate of Right Ascension	11
Ω_0	Longitude of Ascending Node of Orbit Plane at Weekly Epoch	11
C_{ic}	Amplitude of the Cosine Harmonic Correction Term to the Angle of Inclination	11
C_{is}	Amplitude of the Sine Harmonic Correction Term to the Angle of Inclination	11
C_{rc}	Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius	11
C_{rs}	Amplitude of the Sine Correction Term to the Orbit Radius	11
C_{uc}	Amplitude of Cosine Harmonic Correction Term to the Argument of Latitude	11
C_{us}	Amplitude of Sine Harmonic Correction Term to the Argument of Latitude	11
i_0	Inclination Angle at Reference Time	11
$i_{0-n-DOT}$	Rate of Inclination Angle	11
$ISC_{L1C/A}$	Inter-signal Correction	30
ISC_{L2C}	Inter-signal Correction	30
ISC_{L5I5}	Inter-signal Correction	30
ISC_{L5Q5}	Inter-signal Correction	30
T_{GD}	Group Delay Differential	30
a_{f0}	SV Clock Bias Correction Coefficient	30-37
a_{f1}	SV Clock Drift Correction Coefficient	30-37
a_{f2}	Drift Rate Correction Coefficient Index	30-37

Symbol	Parameter Name	Message
t_{oc}	Time of Clock	30-37
UR_{NED0}	NED Accuracy Index	30-37
UR_{NED1}	NED Accuracy Change Index	30-37
UR_{NED2}	NED Accuracy Change Rate Index	30-37
Alert	Alert Flag ^{NOTE1}	All
<p>NOTE1: Parameters so indicated are for CEI Refinement – not limited to curve fit. Parameters not indicated are needed for/limited to curve fit. Updates to parameters in table shall prompt changes in t_{oe}/t_{oc}. Any parameter marked with NOTE1 may be changed with or without a change in t_{oe}/t_{oc}.</p>		

IS:

Symbol	Parameter Name	Message
\dot{A}	Change Rate in Semi-major Axis	10
ΔA	Semi-major Axis Difference at Reference Time	10
Δn_0	Mean Motion Difference from Computed Value at Reference Time	10
$\Delta \dot{n}_0$	Rate of Mean Motion Difference from Computed Value	10
ω	Argument of Perigee	10
e	Eccentricity	10
ISF	Integrity Status Flag ^{NOTE1}	10
(L1/L2/L5)	Signal Health (3 bits)	10
M_0	Mean Anomaly at Reference Time	10
URA_{ED}	Elevation Dependent User Range Accuracy	10
WN	Week Number	10
t_{oe}	Time of Ephemeris	10, 11
t_{op}	CEI Data Sequence Propagation Time of Week	10, 30-37
$\dot{\Omega}$	Rate of Right Ascension	11
Ω_0	Longitude of Ascending Node of Orbit Plane at Weekly Epoch	11
C_{ic}	Amplitude of the Cosine Harmonic Correction Term to the Angle of Inclination	11
C_{is}	Amplitude of the Sine Harmonic Correction Term to the Angle of Inclination	11
C_{rc}	Amplitude of the Cosine Harmonic Correction Term to the Orbit Radius	11
C_{rs}	Amplitude of the Sine Correction Term to the Orbit Radius	11
C_{uc}	Amplitude of Cosine Harmonic Correction Term to the Argument of Latitude	11
C_{us}	Amplitude of Sine Harmonic Correction Term to the Argument of Latitude	11
i_0	Inclination Angle at Reference Time	11
$i_{0-n-DOT}$	Rate of Inclination Angle	11
$ISC_{L1C/A}$	Inter-signal Correction	30
ISC_{L2C}	Inter-signal Correction	30
ISC_{L5I5}	Inter-signal Correction	30
ISC_{L5Q5}	Inter-signal Correction	30
T_{GD}	Group Delay Differential	30
a_{f0}	SV Clock Bias Correction Coefficient	30-37
a_{f1}	SV Clock Drift Correction Coefficient	30-37
a_{f2}	Drift Rate Correction Coefficient Index	30-37

Symbol	Parameter Name	Message
t_{oc}	Time of Clock	30-37
UR_{NED0}	NED Accuracy Index	30-37
UR_{NED1}	NED Accuracy Change Index	30-37
UR_{NED2}	NED Accuracy Change Rate Index	30-37
Alert	Alert Flag ^{NOTE1}	All
NOTE1: Parameters so indicated are for CEI Refinement – not limited to curve fit. Parameters not indicated are needed for/limited to curve fit. Updates to parameters in table shall prompt changes in t_{oe}/t_{oc} . Any parameter marked with NOTE1 may be changed with or without a change in t_{oe}/t_{oc} .		

Rationale:

Correct and regularize the terminology for this term to IDOT. Eliminate the misleading term i0-n-DOT. Change elsewhere throughout the document.

Public ICWG: 10/5/2021 Determined to defer CRM #238, #244 and #303, removing the extra NOTE 1 references to ICS values for the moment as "what is core CEI is determined" (T. Anthony)

IS705-1540:

Section Number:

20.3.3.3.1.2.0-2

WAS:

Table 20-IV. Group Delay Differential Parameters ****

Object Type: <blank>

Redlines:

Table 20-IV. Group Delay Differential Parameters ****

Object Type: blank [Table Caption](#)

IS:

Table 20-IV. Group Delay Differential Parameters

Object Type: Table Caption

Rationale:

CRM #253 8/26/2021 Remove 4-asterisk note reference (T. Anthony)

IS705-275:

Section Number:

20.3.3.3.1.2.0-3

WAS:

Parameter	No. of Bits**	Scale Factor (LSB)	Valid Range***	Units
T _{GD}	13*	2 ⁻³⁵		seconds
ISCL1C/A	13*	2 ⁻³⁵		seconds
ISCL2C	13*	2 ⁻³⁵		seconds
ISCL5I5	13*	2 ⁻³⁵		seconds
ISCL5Q5	13*	2 ⁻³⁵		seconds
<p>* Parameters so indicated are two's complement with the sign bit (+ or -) occupying the MSB; ** See Figure 20-3 for complete bit allocation in message type 30; *** Valid range is the maximum range attainable with indicated bit allocation and scale factor; **** The bit string of "100000000000" will indicate that the group delay value is not available.</p>				

Redlines:

Parameter	No. of Bits**	Scale Factor (LSB)	Valid Range***	Units
T _{GD}	13*	2 ⁻³⁵		seconds
ISCL1C/A	13*	2 ⁻³⁵		seconds
ISCL2C	13*	2 ⁻³⁵		seconds
ISCL5I5	13*	2 ⁻³⁵		seconds
ISCL5Q5	13*	2 ⁻³⁵		seconds
<p>* Parameters so indicated are two's complement with the sign bit (+ or -) occupying the MSB; ** See Figure 20-3 for complete bit allocation in message type 30; *** Valid range is the maximum range attainable with indicated bit allocation and scale factor; **** The bit string of "100000000000" will indicate that the group delay value is not available.</p>				

IS:

Parameter	No. of Bits**	Scale Factor (LSB)	Valid Range***	Units
T _{GD}	13*	2 ⁻³⁵		seconds
ISC _{L1C/A}	13*	2 ⁻³⁵		seconds
ISC _{L2C}	13*	2 ⁻³⁵		seconds
ISC _{L5I5}	13*	2 ⁻³⁵		seconds
ISC _{L5Q5}	13*	2 ⁻³⁵		seconds

* Parameters so indicated are two's complement with the sign bit (+ or -) occupying the MSB;
 ** See Figure 20-3 for complete bit allocation in message type 30;
 *** Valid range is the maximum range attainable with indicated bit allocation and scale factor;

Rationale:

CRM #253 8/26/2021 Remove 4-asterisk note (T. Anthony)

IS705-287:

Section Number:

20.3.3.3.1.3.0-2

WAS:

The ionospheric data shall be updated by the CS at least once every six days while the CS is able to upload the SVs. If the CS is unable to upload the SVs, the ionospheric data transmitted by the SVs may not be accurate. During extended operations, if the CS is unable to upload the SVs, the use of this model will yield unpredictable results.

Redlines:

The ionospheric data shall be updated by the CS at least once every six days while the CS is able to upload the SVs. If the CS is unable to upload the SVs, the ionospheric data transmitted by the SVs may not be accurate. ~~During extended operations, if the CS is unable to upload the SVs, and~~ the use of this model will yield unpredictable results.

IS:

The ionospheric data shall be updated by the CS at least once every six days while the CS is able to upload the SVs. If the CS is unable to upload the SVs, the ionospheric data transmitted by the SVs may not be accurate and the use of this model will yield unpredictable results.

Rationale:

CRM #239 8/29/2021 Extended Operations are not applicable to CNAV so the clause about that subject has been removed (T. Anthony)

IS705-299:

Section Number:

20.3.3.4.4.0-1

WAS:

The three, one-bit, health indication in bits 155, 156 and 157 of message type 37 and bits 29, 30 and 31 of each packet of reduced almanac refers to the L1, L2, and L5 carrier of the SV whose PRN number is specified in the message or in the packet. These health indication bits only apply to codes and data as defined in IS-GPS-200, IS-GPS-705, and IS-GPS-800.

The health of each carrier is indicated by:

0 = Some or all codes and data on this carrier are OK,

1 = All codes and data on this carrier are bad or unavailable.

The health bit indication shall be given relative to the capabilities of each SV as designated by the configuration code in the LNAV message (see paragraph 20.3.3.5.1.4 of IS-GPS-200). Accordingly, the health bit for any SV which does not have a certain capability will be indicated as "healthy" if the lack of this capability is inherent in its design or if it has been configured into a mode which is normal from a user standpoint and does not require that capability; however, the Operating Command may choose to set the health bit "unhealthy" for an SV without a certain capability. Single-frequency L5 users or users who have not received or choose not to use configuration code should assume that every signal is available on every SV. The predicted health data will be updated at the time of upload when a new midi almanac or reduced almanac has been built by the CS. Therefore, the transmitted health data may not correspond to the actual health of the transmitting SV. For more information about user protocol for interpreting health indications see paragraph 6.4.5.

Redlines:

The three, one-bit, health indication in bits 155, 156 and 157 of message type 37 and bits 29, 30 and 31 of each packet of reduced almanac refers to the L1, L2, and L5 carrier of the SV whose PRN number is specified in the message or in the packet. These health indication bits only apply to codes and data as defined in IS-GPS-200, IS-GPS-705, and IS-GPS-800.

The health of each carrier is indicated by:

0 = Some or all codes and data on this carrier are OK,

1 = All codes and data on this carrier are bad or unavailable.

The health bit indication shall be given relative to the capabilities of each SV as designated by the configuration code in the LNAV message (see paragraph 20.3.3.5.1.4 of IS-GPS-200). Accordingly, the health bit for any SV which does not have a certain capability will be indicated as "healthy" if the lack of this capability is inherent in its design or if it has been configured into a mode which is normal from a user standpoint and does not require that capability; however, the Operating Command may choose to set the health bit "unhealthy" for an SV without a certain capability. Single-frequency L5 users or users who have not ~~recieved~~[received](#) or choose not to use configuration code should assume that every signal is available on every SV. The predicted health data will be updated at the time of upload when a new midi almanac or reduced almanac has been built by the CS. Therefore, the transmitted health data may not correspond to the actual health of the transmitting SV [or other SVs in the constellation](#). For more information about user protocol for interpreting health indications see paragraph 6.4.5.

IS:

The three, one-bit, health indication in bits 155, 156 and 157 of message type 37 and bits 29, 30 and 31 of each packet of reduced almanac refers to the L1, L2, and L5 carrier of the SV whose PRN number is specified in the message or in the packet. These health indication bits only apply to codes and data as defined in IS-GPS-200, IS-GPS-705, and IS-GPS-800.

The health of each carrier is indicated by:

0 = Some or all codes and data on this carrier are OK,

1 = All codes and data on this carrier are bad or unavailable.

The health bit indication shall be given relative to the capabilities of each SV as designated by the configuration code in the LNAV message (see paragraph 20.3.3.5.1.4 of IS-GPS-200). Accordingly, the health bit for any SV which does not have a certain capability will be indicated as "healthy" if the lack of this capability is inherent in its design or if it has been configured into a mode which is normal from a user standpoint and does not require that capability; however, the Operating Command may choose to set the health bit "unhealthy" for an SV without a certain capability. Single-frequency L5 users or users who have not received or choose not to use configuration code should assume that every

signal is available on every SV. The predicted health data will be updated at the time of upload when a new midi almanac or reduced almanac has been built by the CS. Therefore, the transmitted health data may not correspond to the actual health of the transmitting SV or other SVs in the constellation. For more information about user protocol for interpreting health indications see paragraph 6.4.5.

Rationale:

Latest public Up Rev revision left out text that was not caught in the Revision previous to it.

IS705-1737:

Insertion after object IS705-301

Section Number:

20.3.3.4.5.0-2

WAS:

<INSERTED OBJECT>

Redlines:

The Midi almanac parameters shall be updated by the CS at least once every 3 days while the CS is able to upload the SVs. If the CS is unable to upload the SVs, the accuracy of the Midi almanac parameters transmitted by the SVs will degrade over time.

Object Type: [Requirement](#)

IS:

The Midi almanac parameters shall be updated by the CS at least once every 3 days while the CS is able to upload the SVs. If the CS is unable to upload the SVs, the accuracy of the Midi almanac parameters transmitted by the SVs will degrade over time.

Object Type: Requirement

Rationale:

The Midi almanac description is missing the CS update requirement, which is 3 days for modernized almanac formats, same as for the Reduced Almanac in IS-GPS-705 20.3.3.4.6.1.

IS705-1643:

Section Number:

20.3.3.10.1.7

WAS:

Object Heading: Satellite Fault Probability

Redlines:

Object Heading: Satellite Fault ~~Probability~~[Rate](#)

IS:

Object Heading: Satellite Fault Rate

Rationale:

CRM #282 11/29/2021 The value described in this paragraph is a Rate and not a Probability (T. Anthony)

IS705-1644:

Section Number:

20.3.3.10.1.7.0-1

WAS:

Bits 74 through 77 of Message Type 40 shall provide the assumed Satellite Fault Probability (R_{sat}) value for ARAIM at the current time for the associated GNSS constellation.

Redlines:

Bits 74 through 77 of Message Type 40 shall provide the assumed Satellite Fault ~~Probability~~ Rate (R_{sat}) value for ARAIM at the current time for the associated GNSS constellation.

IS:

Bits 74 through 77 of Message Type 40 shall provide the assumed Satellite Fault Rate (R_{sat}) value for ARAIM at the current time for the associated GNSS constellation.

Rationale:

CRM #282 11/29/2021 The value described in this paragraph is a Rate and not a Probability. This change is being made uniformly across IS-GPS-200, IS-GPS-705 and IS-GPS-800 (T. Anthony)

IS705-1476:

Section Number:

20.3.4.4

WAS:

Object Heading: CEI Data Sets

Redlines:

Object Heading: ~~CEI~~ Data Sets

IS:

Object Heading: Data Sets

Rationale:

Change the section title to "Data Sets" for consistency with IS-GPS-200 section 30.3.4.4.
CRM 305 11/27/2021 Corrected reference in Rationale (T. Anthony)

IS705-1672:

Section Number:

20.3.4.4.0-2

WAS:

t_{op} does not have to match t_{oe}/t_{oc} . As a redundant check, t_{op} in message type 10 will match with the t_{op} term in message type 30-37 for a valid CEI data set.

Redlines:

t_{op} does not have to match t_{oe}/t_{oc} . ~~As a, redundant~~ but check, the t_{op} in message ~~Message type~~ Type 10 will match ~~with~~ the ~~top~~ ~~term~~ in message ~~Message type~~ Type 30-37 ~~for from~~ at the valid same CEI data set.

IS:

t_{op} does not have to match t_{oe}/t_{oc} , but the t_{op} in Message Type 10 will match the t_{op} in Message Type 30-37 from the same CEI data set.

Rationale:

This section of the IS should be describing the behavior of the navigation data rather than implying specific checks to be performed by the UE.

IS705-1674:

Section Number:

20.3.4.4.0-4

WAS:

Cutovers to new CEI data sets will occur only on hour boundaries except for the first CEI data set of a new CEI data sequence propagation. The first CEI data set may be cut-in (reference paragraph 20.3.4.1) at any time during the hour and therefore may be transmitted by the SV for less than one hour.

Redlines:

Cutovers to new CEI data sets will occur only on two-hour boundaries except for the first CEI data set of a new CEI data sequence propagation. The first CEI data set may be cut-in (reference paragraph 20.3.4.1) at any time during the ~~hour~~two hours and therefore may be transmitted by the SV for less than ~~one~~two hourhours.

IS:

Cutovers to new CEI data sets will occur only on two-hour boundaries except for the first CEI data set of a new CEI data sequence propagation. The first CEI data set may be cut-in (reference paragraph 20.3.4.1) at any time during the two hours and therefore may be transmitted by the SV for less than two hours.

Rationale:

All modernized CEI data set cutovers nominally occur on “even” hour boundaries.

IS705-1675:

Section Number:

20.3.4.4.0-5

WAS:

The start of the transmission interval for each CEI data set corresponds to the beginning of the curve fit interval for the CEI data set. Each CEI data set remains valid for the duration of its transmission interval, and nominally also remains valid for the duration of its curve fit interval. A CEI data set is rendered obsolete before the end of its curve fit interval when it is superseded by the SV cutting over to the first CEI data set of a new CEI data sequence propagation.

Redlines:

~~The~~Except for the first CEI data set of a new CEI data sequence propagation, the start of the transmission interval for each CEI data set corresponds to the beginning of the curve fit interval for the CEI data set. Each CEI data set remains valid for the duration of its transmission interval, and nominally also remains valid for the duration of its curve fit interval. A CEI data set is rendered obsolete before the end of its curve fit interval when it is superseded by the SV cutting over to the first CEI data set of a new CEI data sequence propagation.

IS:

Except for the first CEI data set of a new CEI data sequence propagation, the start of the transmission interval for each CEI data set corresponds to the beginning of the curve fit interval for the CEI data set. Each CEI data set remains valid for the duration of its transmission interval, and nominally also remains valid for the duration of its curve fit interval. A CEI data set is rendered obsolete before the end of its curve fit interval when it is superseded by the SV cutting over to the first CEI data set of a new CEI data sequence propagation.

Rationale:

Clarification of curve fit interval start time

CRM #240 8/24/2021 Pointed out that this change goes in the next paragraph and not here. (T. Anthony)

CRM #280 9/3/2021 Normalized the wording for when the transmission interval matches the beginning of the curve fit interval across all signals (T. Anthony)

IS705-1736:

Insertion after object IS705-1675

Section Number:

20.3.4.4.0-6

WAS:

<INSERTED OBJECT>

Redlines:

The start time of the curve fit interval of the first CEI data set of a new CEI data sequence propagation may be later than the start time of the curve fit interval of the preceding CEI data set that was transmitted prior to the cutover. The beginning of the curve fit interval of the first CEI data set of a new CEI data sequence propagation will be a multiple of 300 seconds (5 minutes) relative to the start of week.

Object Type: [Info-Only](#)

IS:

The start time of the curve fit interval of the first CEI data set of a new CEI data sequence propagation may be later than the start time of the curve fit interval of the preceding CEI data set that was transmitted prior to the cutover. The beginning of the curve fit interval of the first CEI data set of a new CEI data sequence propagation will be a multiple of 300 seconds (5 minutes) relative to the start of week.

Object Type: Info-Only

Rationale:

New information (using wording that accommodates the differences in CEI data set implementation for IIR/IIR-M/IIF and GPS III/IIF) to explain the constraints on selection of the new curve fit interval, for the first CEI data set of a new CEI data sequence propagation.

CRM #241 8/24/2021 Updated Curve Fit interval description for consistency across all documents (T. Anthony)

Public ICWG: 10/6/2021 Decided in the meeting to keep data sequence propagation granularity at 300 seconds across the entire set of public documents (T. Anthony)

IS705-2, IS705-4, IS705-9, IS705-14, IS705-19, IS705-22, IS705-24, IS705-26, IS705-29, IS705-31, IS705-36, IS705-38, IS705-40, IS705-42, IS705-44, IS705-46, IS705-48, IS705-50, IS705-52, IS705-57, IS705-60, IS705-62, IS705-64, IS705-66, IS705-68, IS705-70, IS705-72, IS705-74, IS705-78, IS705-87, IS705-89, IS705-91, IS705-93, IS705-99, IS705-101, IS705-111, IS705-112, IS705-114, IS705-116, IS705-118, IS705-120, IS705-122, IS705-124, IS705-126, IS705-130, IS705-132, IS705-1514, IS705-1523, IS705-1516, IS705-134, IS705-135, IS705-137, IS705-140, IS705-143, IS705-155, IS705-157, IS705-159, IS705-177, IS705-179, IS705-180, IS705-185, IS705-189, IS705-190, IS705-192, IS705-196, IS705-212, IS705-213, IS705-221, IS705-223, IS705-227, IS705-236, IS705-238, IS705-245, IS705-246, IS705-249, IS705-251, IS705-253, IS705-255, IS705-266, IS705-267, IS705-269, IS705-276, IS705-279, IS705-285, IS705-288, IS705-1500, IS705-291, IS705-293, IS705-295, IS705-296, IS705-298, IS705-300, IS705-303, IS705-305, IS705-308, IS705-310, IS705-314, IS705-316, IS705-325, IS705-327, IS705-330, IS705-333, IS705-335, IS705-338, IS705-340, IS705-342, IS705-344, IS705-348, IS705-350, IS705-353, IS705-358, IS705-360, IS705-362, IS705-365, IS705-367, IS705-369, IS705-372, IS705-374, IS705-376, IS705-378:

Section Number:

<many>

WAS:

<many>

Redlines:

<many>

IS:

<many>

Rationale:

Remove trailing '.' character from all Headers, as they are not sentences.

Change Summary

of inserted requirements: 1
 # of modified requirements: 4
 # of deleted requirements: 0
 # of TBDs: 0
 # of TBRs: 0
 # of (added/modified) effectivities: 0
 # of VCRM additions: 0
 # of VCRM modifications: 0
 # of VCRM deletions: 0
 # of descriptive texts: 6
 # of (added/modified) tables: 2
 # of (added/modified) figures: 0

Verification Cross Reference Matrix:

Only new requirement objects and objects containing VCRM attributes that are being added, modified or deleted in this IRN/SCN will be shown in the "Was" and "Is" fields in the VCRM.

WAS:

DOORS ID	Object Number	Effectivity	AEP Effectivity	CS Effectivity	SS Effectivity	Highest Verification Level	Segment	System Verification Method
IS705-1737	<INSERTED>	<INSERTED>	<INSERTED>	<INSERTED>	<INSERTED>	<INSERTED>	<INSERTED>	<INSERTED>

IS:

DOORS ID	Object Number	Effectivity	AEP Effectivity	CS Effectivity	SS Effectivity	Highest Verification Level	Segment	System Verification Method
IS705-1737	20.3.3.4.5.0-2			N/A	N/A	N/A		N/A