CHANGE NOTICE

Affected Document:	**IRN/SCN Number**	**Date:**
IS-GPS-705 Rev J	XXX-XXXX-XXX	DD-MMM-YYYY
Authority:	**Proposed Change Notice**	**Date:**
RFC-000519	PCN-IS-705J_RFC519	22-OCT-2024

Document Title: NAVSTAR GPS Space Segment/Navigation User Segment L5 Interfaces

RFC Title: Civil Integrity Support Message (ISM) Formats

Reason For Change (Driver):
Complete the Civil Integrity Support Message format portion to enable the ARAIM capability in time to meet FAA's needs in support of RTCA/DO-401A and EUROCAE/ED-259B.
(Pre-RFC-1200, Pre-RFC 1269, partial Pre-RFC-1326)

Description of Change:
Expand and update current related requirements to build solid definitions for the civil ISM messages:

1. L2C and L5 CNAV MT-40 (IS-GPS-200, IS-GPS-705)
2. L1C Subframe 3 Page 8 (IS-GPS-800)

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

AUTHORIZED SIGNATURES	**REPRESENTING**	**DATE**
N/A	PNT Technical Director, MilComm & PNT Program Executive Office, Space Systems Command (SSC)	

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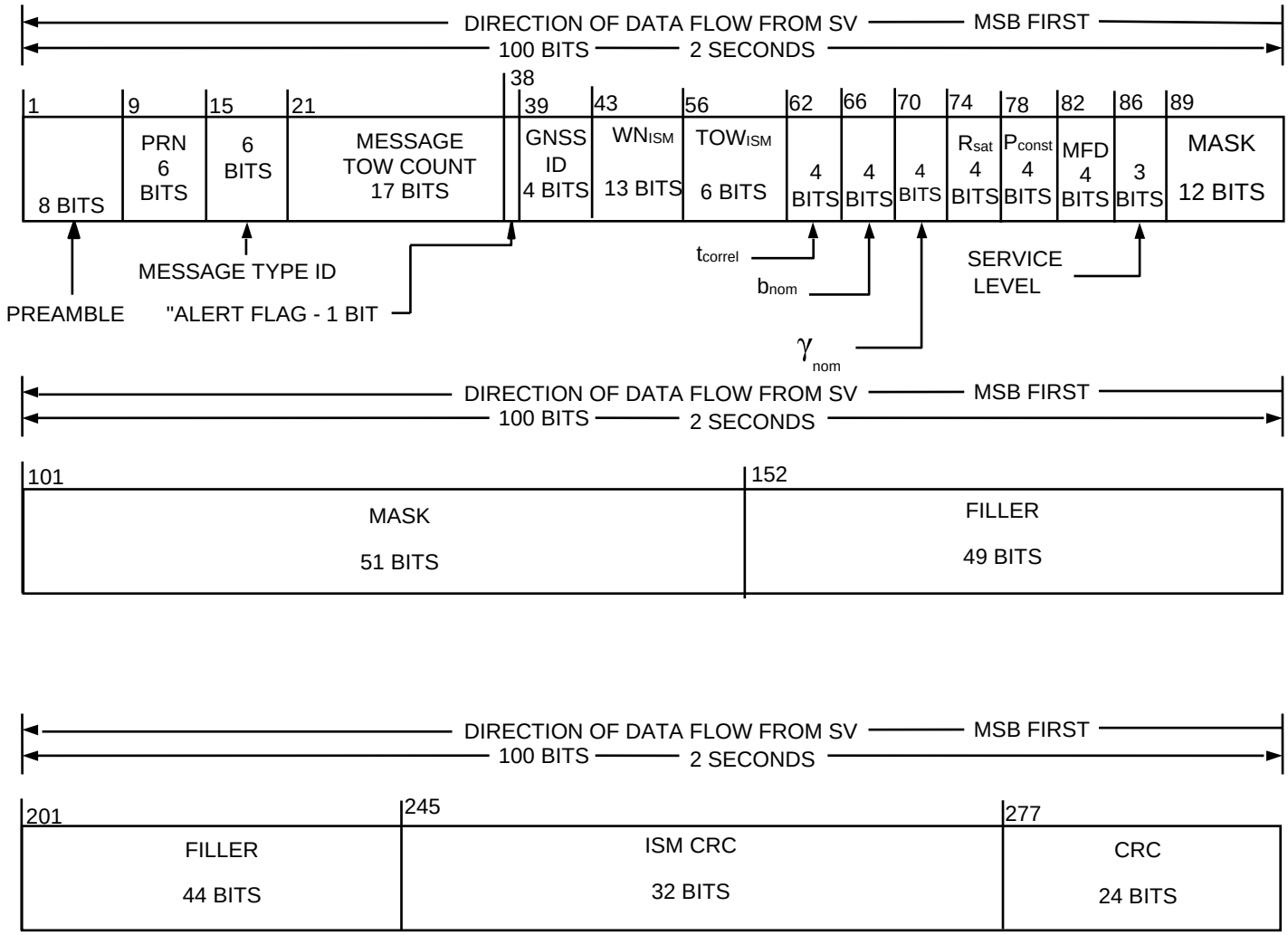
THIS DOCUMENT SPECIFIES TECHNICAL REQUIREMENTS AND NOTHING HEREIN CONTAINED SHALL BE DEEMED TO ALTER THE TERMS OF ANY CONTRACT OR PURCHASE ORDER BETWEEN ALL PARTIES AFFECTED.	Interface Control Contractor: SAIC (GPS SE&I) 200 N. Pacific Coast Highway, Suite 1800 El Segundo, CA 90245 CODE IDENT 66RP1

IS705-1606:

Section Number:
20.3.3.0-30

WAS:



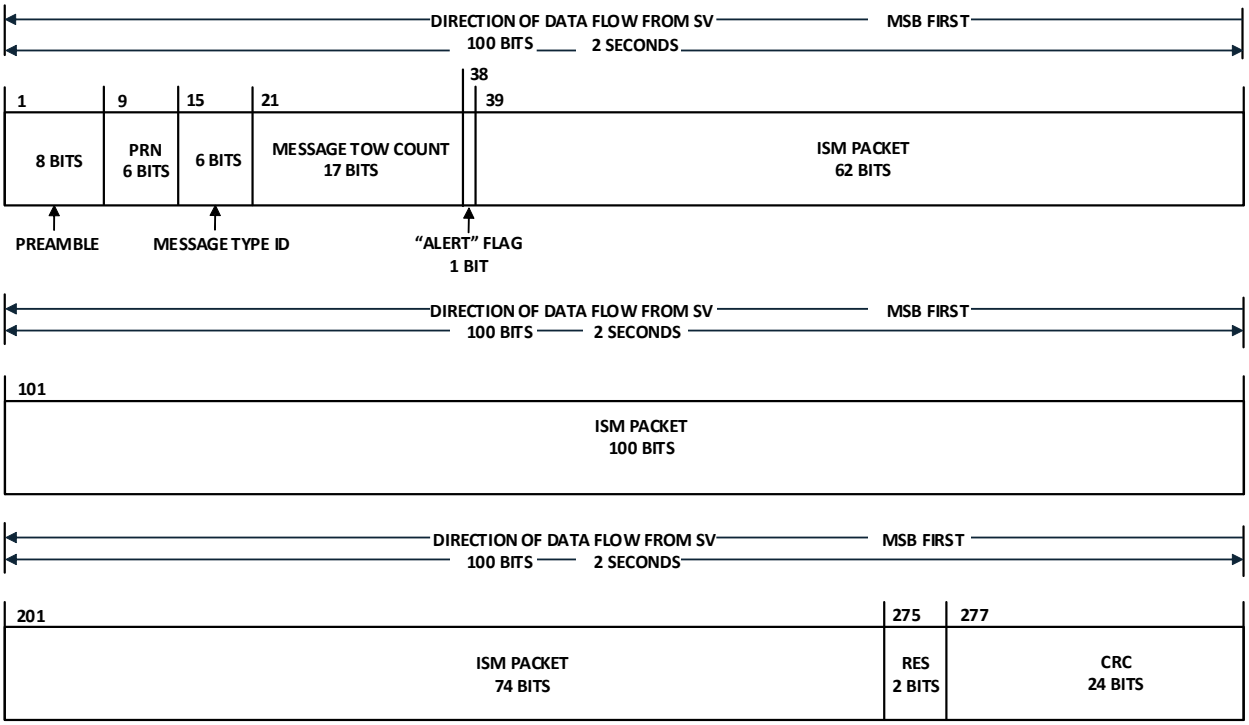
* MESSAGE TOW COUNT = 17 MSBs OF ACTUAL TOW COUNT AT START OF NEXT 6-SECOND MESSAGE

Redlines:

<graphic not available>

- Replaced the GNSS ID through ISM CRC with a 236 bit ISM Packet
- Added two Reserved bits as filler

IS:



* MESSAGE TOW COUNT = 17 MSBs OF ACTUAL TOW COUNT AT START OF NEXT 6-SECOND MESSAGE

Rationale:
Per the 2023 PICWG Special Topic, The two Reserved bits were added so the MT-40s and SF 3 Page 8 could have exactly the same bit pattern for the ISM Parameters. Because of this same bit pattern, at TIM #1, decided to repackage the ISM Parameters into the ISM Packet which changed this figure (T. Anthony)

IS705-1611:

Section Number:
20.3.3.10.0-1

WAS:
Figure 20-14a contains the structure of Message Type 40, Integrity Support Message (ISM). The contents of Message Type 40 are defined below, followed by material pertinent to the use of the ISM data. Users who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM) may use these parameters for the ARAIM algorithm as referenced in future TSO and MSO.

Redlines:
~~Figure 20-14a contains the structure of Message Type 40, Integrity Support Message (ISM). The contents of Message Type 40 are defined below, followed by material pertinent to the use of the ISM data. Users who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM) may use these parameters for the ARAIM algorithm as referenced in future TSO and MSO.~~

IS:
<DELETED OBJECT>

Rationale:
10/08/2024 CRM #52 Refactoring these documents eliminated the need for this paragraph in IS-GPS-705 (T. Anthony)

IS705-1612:

Section Number:
20.3.3.10.1

WAS:
Object Heading : 20.3.3.10.1 ISM Parameter Content

Redlines:
Object Heading : ~~20.3.3.10.1 ISM Parameter Content~~

IS:
<DELETED OBJECT>

Rationale:
10/08/2024 CRM #52 Refactoring these documents eliminated the need for this heading in IS-GPS-705 (T. Anthony)

IS705-1613:

Section Number:
20.3.3.10.1.0-1

WAS:
Message Type 40 shall contain the parameters related to GNSS constellation and satellite integrity parameters used for ARAIM algorithms.
Object Type: <blank>

Redlines:
Message Type 40, as depicted in Figure 20-14a, shall contain the parameters related to GNSS constellation and satellite integrity parameters used for ARAIM algorithms.
Object Type: ~~<blank>~~Requirement

IS:
Message Type 40, as depicted in Figure 20-14a, shall contain the parameters related to GNSS constellation and satellite integrity parameters used for ARAIM algorithms.
Object Type: Requirement

Rationale:
10/8/2024 Reworked the 705 and 800 documents to primarily refer to ISM Packet details in IS-GPS-200. (T. Anthony)

IS705-1614:

Section Number:
20.3.3.10.1.0-2

WAS:
The bit lengths, scale factors, ranges, and units of these parameters are given in Table 20-XIa.
Object Type: <blank>

Redlines:
The ~~bit~~ISM ~~lengths,~~specific ~~scale~~parameters ~~factors,~~and ~~ranges,~~fields ~~and~~are ~~units~~contained in the ISM Packet (reference 30.3.3.10 of IS-GPS-200) whose structure is shown in Figure 30-17 of IS-GPS-200.

Users who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM), may use these parameters ~~are~~for ~~given~~the ARAIM algorithm as referenced in ~~Table~~future ~~20-XIa~~TSO and MSO.
Object Type: ~~<blank>~~Info-Only

IS:
The ISM specific parameters and fields are contained in the ISM Packet (reference 30.3.3.10 of IS-GPS-200) whose structure is shown in Figure 30-17 of IS-GPS-200.

Users who implement Advanced Receiver Autonomous Integrity Monitoring (ARAIM), may use these parameters for the ARAIM algorithm as referenced in future TSO and MSO.
Object Type: Info-Only

Rationale:
10/28/24 CRM #31 Slimmed down but repourposed to to refer the reader to the corresponding information in IS-GPS_200. (T. Anthony)
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which caused this paragraph to explain the ISM Parameters in a different way and refer to a new graphic for the ISM Packet (T. Anthony)

IS705-1615:

Section Number:
20.3.3.10.1.0-3

WAS:
The CS shall upload the current ISM parameters, when necessary, to the SVs.

Redlines:
~~The CS shall upload the current ISM parameters, when necessary, to the SVs.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1682:

Section Number:
20.3.3.10.1.0-4

WAS:
Users should use the ISM parameters with the most recent WN_{ISM} and TOW_{ISM} time stamp. All time stamps should be in the past.

Redlines:
~~Users should use the ISM parameters with the most recent WNISM and TOWISM time stamp. All time stamps should be in the past.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1658:

Section Number:
20.3.3.10.1.0-5

WAS:
Table 20-XIa – ISM Parameters

Redlines:
~~Table 20-XIa – ISM Parameters~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1618:

Section Number:
20.3.3.10.1.0-6

WAS:

Parameter	No. of Bits**	Scale Factor (LSB)	Valid Range***	Units
GNSS ID	4			
WN_{ISM}	13	1		weeks
TOW_{ISM}	6	4	0 to 164	hours
t_{correl}	4		0 to 12	hours
b_{nom}	4		0 to 2	meters
γ_{nom}	4		0 to 2	
R_{sat}	4		$1x10^{-3}$ to $3.16x10^{-10}$	/hours
P_{const}	4		$1x10^{-3}$ to $3.16x10^{-10}$	
MFD	4		0.25 to 24	hours
Service Level*	3			
Mask****	63			

* See Table 20-XIb for Service Level Descriptions

** See Figure 20-14a for complete bit allocation in Message Type 40

*** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor

**** See Table 20-XIc for Mask bit mapping

Redlines:
<DELETED OBJECT>

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1619:

Section Number:
20.3.3.10.1.1

WAS:
Object Heading : 20.3.3.10.1.1 GNSS Constellation ID

Redlines:
Object Heading : ~~20.3.3.10.1.1 GNSS Constellation ID~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1620:

Section Number:
20.3.3.10.1.1.0-1

WAS:
Bits 39 through 42 of Message Type 40 shall identify the GNSS service to which the associated ISM parameters apply.

Redlines:
~~Bits 39 through 42 of Message Type 40 shall identify the GNSS service to which the associated ISM parameters apply.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1621:

Section Number:
20.3.3.10.1.1.0-2

WAS:
The four bits are defined as follows:
0000 = No Data Available
0001 = Galileo
0010 = GLONASS
0011 = BeiDou
0100 = GPS
0101 = SBAS
0110 = QZSS
0111 = IRNSS
1000 through 1111 = Reserved for other systems

Redlines:
~~The four bits are defined as follows:~~
~~0000 = No Data Available~~
~~0001 = Galileo~~
~~0010 = GLONASS~~
~~0011 = BeiDou~~
~~0100 = GPS~~
~~0101 = SBAS~~
~~0110 = QZSS~~
~~0111 = IRNSS~~
~~1000 through 1111 = Reserved for other systems~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1661:

Section Number:
20.3.3.10.1.1.0-3

WAS:
If users see four bits of '0000', users will ignore the entire ISM.

Redlines:
~~If users see four bits of '0000', users will ignore the entire ISM.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1622:

Section Number:
20.3.3.10.1.2

WAS:
Object Heading : 20.3.3.10.1.2 ISM Effectivity Time Stamp Week Number

Redlines:
Object Heading : ~~20.3.3.10.1.2 ISM Effectivity Time Stamp Week Number~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1623:

Section Number:
20.3.3.10.1.2.0-1

WAS:
Bits 43 through 55 of Message Type 40 shall provide the ISM Week Number (WN_{ISM}) applicable to the start of the time of validity for a given ISM data issue.

Redlines:
~~Bits 43 through 55 of Message Type 40 shall provide the ISM Week Number (WNISM) applicable to the start of the time of validity for a given ISM data issue.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1624:

Section Number:
20.3.3.10.1.2.0-2

WAS:
This parameter describes the time stamp, in terms of weeks, for the ISM parameters.

Redlines:
~~This parameter describes the time stamp, in terms of weeks, for the ISM parameters.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1625:

Section Number:
20.3.3.10.1.3

WAS:
Object Heading : 20.3.3.10.1.3 ISM Effectivity Time Stamp Time of Week

Redlines:
Object Heading : ~~20.3.3.10.1.3 ISM Effectivity Time Stamp Time of Week~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1626:

Section Number:
20.3.3.10.1.3.0-1

WAS:
Bits 56 through 61 of Message Type 40 shall provide the ISM Time of Week (TOW_{ISM}) applicable to the start of the time of validity for a given ISM data issue.

Redlines:
~~Bits 56 through 61 of Message Type 40 shall provide the ISM Time of Week (TOWISM) applicable to the start of the time of validity for a given ISM data issue.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1627:

Section Number:
20.3.3.10.1.3.0-2

WAS:
This parameter describes the time stamp, in terms of hours, for the ISM parameters.

Redlines:
~~This parameter describes the time stamp, in terms of hours, for the ISM parameters.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1634:

Section Number:
20.3.3.10.1.4

WAS:
Object Heading : 20.3.3.10.1.4 Correlation Time Constant

Redlines:
Object Heading : ~~20.3.3.10.1.4 Correlation Time Constant~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1635:

Section Number:
20.3.3.10.1.4.0-1

WAS:
Bits 62 through 65 of Message Type 40 shall provide the assumed Correlation Time Constant (t_{correl}) value for the ARAIM at the current time for the associated GNSS constellation.

Redlines:
~~Bits 62 through 65 of Message Type 40 shall provide the assumed Correlation Time Constant (tcorrel) value for the ARAIM at the current time for the associated GNSS constellation.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1660:

Section Number:
20.3.3.10.1.4.0-2

WAS:
The four bits are defined as follows:
0000 = 0.25 hours
0001 = 0.33 hours
0010 = 0.50 hours
0011 = 0.67 hours
0100 = 0.83 hours
0101 = 1.00 hour
0110 = 1.17 hours
0111 = 1.33 hours
1000 = 1.50 hours
1001 = 2.10 hours
1010 = 3.00 hours
1011 = 4.20 hours
1100 = 6.00 hours
1101 = 8.50 hours
1110 = 12.00 hours
1111 = RESERVED

Redlines:
~~The four bits are defined as follows:~~
~~0000 = 0.25 hours~~
~~0001 = 0.33 hours~~
~~0010 = 0.50 hours~~
~~0011 = 0.67 hours~~
~~0100 = 0.83 hours~~
~~0101 = 1.00 hour~~
~~0110 = 1.17 hours~~
~~0111 = 1.33 hours~~
~~1000 = 1.50 hours~~
~~1001 = 2.10 hours~~
~~1010 = 3.00 hours~~
~~1011 = 4.20 hours~~
~~1100 = 6.00 hours~~
~~1101 = 8.50 hours~~
~~1110 = 12.00 hours~~
~~1111 = RESERVED~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1649:

Section Number:
20.3.3.10.1.5

WAS:
Object Heading : 20.3.3.10.1.5 Additive Term for Nominal Pseudorange Error Bias

Redlines:
Object Heading : ~~20.3.3.10.1.5 Additive Term for Nominal Pseudorange Error Bias~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1650:

Section Number:
20.3.3.10.1.5.0-1

WAS:
Bits 66 through 69 of Message Type 40 shall provide the assumed Additive Term (b_{nom}) value for ARAIM at the current time for the associated GNSS constellation.

Redlines:
~~Bits 66 through 69 of Message Type 40 shall provide the assumed Additive Term (bnom) value for ARAIM at the current time for the associated GNSS constellation.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1651:

Section Number:
20.3.3.10.1.5.0-2

WAS:
The four bits are defined as follows:
0000 = 0.00 meters
0001 = 0.13 meters
0010 = 0.25 meters
0011 = 0.38 meters
0100 = 0.50 meters
0101 = 0.63 meters
0110 = 0.75 meters
0111 = 0.88 meters
1000 = 1.00 meter
1001 = 1.13 meters
1010 = 1.25 meters
1011 = 1.38 meters
1100 = 1.50 meters
1101 = 1.63 meters
1110 = 1.75 meters
1111 = 2.00 meters

Redlines:
~~The four bits are defined as follows:~~
~~0000 = 0.00 meters~~
~~0001 = 0.13 meters~~
~~0010 = 0.25 meters~~
~~0011 = 0.38 meters~~
~~0100 = 0.50 meters~~
~~0101 = 0.63 meters~~
~~0110 = 0.75 meters~~
~~0111 = 0.88 meters~~
~~1000 = 1.00 meter~~
~~1001 = 1.13 meters~~
~~1010 = 1.25 meters~~
~~1011 = 1.38 meters~~
~~1100 = 1.50 meters~~
~~1101 = 1.63 meters~~
~~1110 = 1.75 meters~~
~~1111 = 2.00 meters~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1652:

Section Number:
20.3.3.10.1.6

WAS:
Object Heading : 20.3.3.10.1.6 Scalar Term for Nominal Pseudorange Error Bias

Redlines:
Object Heading : ~~20.3.3.10.1.6 Scalar Term for Nominal Pseudorange Error Bias~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1653:

Section Number:
20.3.3.10.1.6.0-1

WAS:
Bits 70 through 73 of Message Type 40 shall provide the assumed Scalar Term (γ_{nom}) value for ARAIM at the current time for the associated GNSS constellation.

Redlines:
~~Bits 70 through 73 of Message Type 40 shall provide the assumed Scalar Term (γ_{nom}) value for ARAIM at the current time for the associated GNSS constellation.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1654:

Section Number:
20.3.3.10.1.6.0-2

WAS:
The four bits are defined as follows:
0000 = 0.00
0001 = 0.13
0010 = 0.25
0011 = 0.38
0100 = 0.50
0101 = 0.63
0110 = 0.75
0111 = 0.88
1000 = 1.00
1001 = 1.13
1010 = 1.25
1011 = 1.38
1100 = 1.50
1101 = 1.63
1110 = 1.75
1111 = 2.00

Redlines:
~~The four bits are defined as follows:~~
~~0000 = 0.00~~
~~0001 = 0.13~~
~~0010 = 0.25~~
~~0011 = 0.38~~
~~0100 = 0.50~~
~~0101 = 0.63~~
~~0110 = 0.75~~
~~0111 = 0.88~~
~~1000 = 1.00~~
~~1001 = 1.13~~
~~1010 = 1.25~~
~~1011 = 1.38~~
~~1100 = 1.50~~
~~1101 = 1.63~~
~~1110 = 1.75~~
~~1111 = 2.00~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1643:

Section Number:
20.3.3.10.1.7

WAS:
Object Heading : 20.3.3.10.1.7 Satellite Fault Rate

Redlines:
Object Heading : ~~20.3.3.10.1.7 Satellite Fault Rate~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (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 Rate (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 Rate (Rsat) value for ARAIM at the current time for the associated GNSS constellation.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1645:

Section Number:
20.3.3.10.1.7.0-2

WAS:
The four bits are defined as follows:
0000 = 3.16 x 10^{-3} /hours
0001 = 1 x 10^{-3} /hours
0010 = 3.16 x 10^{-4} /hours
0011 = 1 x 10^{-4} /hours
0100 = 3.16 x 10^{-5} /hours
0101 = 1 x 10^{-5} /hours
0110 = 3.16 x 10^{-6} /hours
0111 = 1 x 10^{-6} /hours
1000 = 3.16 x 10^{-7} /hours
1001 = 1 x 10^{-7} /hours
1010 = 3.16 x 10^{-8} /hours
1011 = 1 x 10^{-8} /hours
1100 = 3.16 x 10^{-9} /hours
1101 = 1 x 10^{-9} /hours
1110 = 3.16 x 10^{-10} /hours
1111 = RESERVED

Redlines:
~~The four bits are defined as follows:~~
~~0000 = 3.16 x 10-3 /hours~~
~~0001 = 1 x 10-3 /hours~~
~~0010 = 3.16 x 10-4 /hours~~
~~0011 = 1 x 10-4 /hours~~
~~0100 = 3.16 x 10-5 /hours~~
~~0101 = 1 x 10-5 /hours~~
~~0110 = 3.16 x 10-6 /hours~~
~~0111 = 1 x 10-6 /hours~~
~~1000 = 3.16 x 10-7 /hours~~
~~1001 = 1 x 10-7 /hours~~
~~1010 = 3.16 x 10-8 /hours~~
~~1011 = 1 x 10-8 /hours~~
~~1100 = 3.16 x 10-9 /hours~~
~~1101 = 1 x 10-9 /hours~~
~~1110 = 3.16 x 10-10 /hours~~
~~1111 = RESERVED~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1631:

Section Number:
20.3.3.10.1.9

WAS:
Object Heading : 20.3.3.10.1.9 Constellation Fault Probability

Redlines:
Object Heading : ~~20.3.3.10.1.9 Constellation Fault Probability~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1632:

Section Number:
20.3.3.10.1.9.0-1

WAS:
Bits 78 through 81 of Message Type 40 shall provide the assumed Constellation Fault Probability (P_{const})value for ARAIM at the current time for the associated GNSS constellation.

Redlines:
~~Bits 78 through 81 of Message Type 40 shall provide the assumed Constellation Fault Probability (Pconst)value for ARAIM at the current time for the associated GNSS constellation.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1633:

Section Number:
20.3.3.10.1.9.0-2

WAS:
The four bits are defined as follows:
0000 = 3.16×10^{-3}
0001 = 1×10^{-3}
0010 = 3.16×10^{-4}
0011 = 1×10^{-4}
0100 = 3.16×10^{-5}
0101 = 1×10^{-5}
0110 = 3.16×10^{-6}
0111 = 1×10^{-6}
1000 = 3.16×10^{-7}
1001 = 1×10^{-7}
1010 = 3.16×10^{-8}
1011 = 1×10^{-8}
1100 = 3.16×10^{-9}
1101 = 1×10^{-9}
1110 = 3.16×10^{-10}
1111 = RESERVED

Redlines:
~~The four bits are defined as follows:~~
~~0000 = 3.16 x 10-3~~
~~0001 = 1 x 10-3~~
~~0010 = 3.16 x 10-4~~
~~0011 = 1 x 10-4~~
~~0100 = 3.16 x 10-5~~
~~0101 = 1 x 10-5~~
~~0110 = 3.16 x 10-6~~
~~0111 = 1 x 10-6~~
~~1000 = 3.16 x 10-7~~
~~1001 = 1 x 10-7~~
~~1010 = 3.16 x 10-8~~
~~1011 = 1 x 10-8~~
~~1100 = 3.16 x 10-9~~
~~1101 = 1 x 10-9~~
~~1110 = 3.16 x 10-10~~
~~1111 = RESERVED~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1646:

Section Number:
20.3.3.10.1.10

WAS:
Object Heading : 20.3.3.10.1.10 Mean Fault Duration

Redlines:
Object Heading : ~~20.3.3.10.1.10 Mean Fault Duration~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1647:

Section Number:
20.3.3.10.1.10.0-1

WAS:
Bits 82 through 85 of Message Type 40 shall provide the assumed Mean Fault Duration (MFD) value for ARAIM at the current time for the associated GNSS constellation.

Redlines:
~~Bits 82 through 85 of Message Type 40 shall provide the assumed Mean Fault Duration (MFD) value for ARAIM at the current time for the associated GNSS constellation.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1648:

Section Number:
20.3.3.10.1.10.0-2

WAS:
The four bits are defined as follows:
0000 = 0.25 hours
0001 = 0.33 hours
0010 = 0.50 hours
0011 = 0.67 hours
0100 = 0.83 hours
0101 = 1 hour
0110 = 1.25 hours
0111 = 1.50 hours
1000 = 1.75 hours
1001 = 2 hours
1010 = 3 hours
1011 = 4 hours
1100 = 7 hours
1101 = 10 hours
1110 = 17 hours
1111 = 24 hours

Redlines:
~~The four bits are defined as follows:~~
~~0000 = 0.25 hours~~
~~0001 = 0.33 hours~~
~~0010 = 0.50 hours~~
~~0011 = 0.67 hours~~
~~0100 = 0.83 hours~~
~~0101 = 1 hour~~
~~0110 = 1.25 hours~~
~~0111 = 1.50 hours~~
~~1000 = 1.75 hours~~
~~1001 = 2 hours~~
~~1010 = 3 hours~~
~~1011 = 4 hours~~
~~1100 = 7 hours~~
~~1101 = 10 hours~~
~~1110 = 17 hours~~
~~1111 = 24 hours~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1628:

Section Number:
20.3.3.10.1.11

WAS:
Object Heading : 20.3.3.10.1.11 Service Level

Redlines:
Object Heading : ~~20.3.3.10.1.11 Service Level~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1629:

Section Number:
20.3.3.10.1.11.0-1

WAS:
Bits 86 through 88 of Message Type 40 shall provide the Service Level, as described in Table 20-XIb, applicable to a given page of the ISM data issue.

Redlines:
~~Bits 86 through 88 of Message Type 40 shall provide the Service Level, as described in Table 20-XIb, applicable to a given page of the ISM data issue.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1630:

Section Number:
20.3.3.10.1.11.0-2

WAS:
Three bits are allocated to the four identified service levels as follows:
000 = Level 1
001 = Level 2
010 = Level 3
011 = Level 4
100 to 111 = Reserved for future use

Redlines:
~~Three bits are allocated to the four identified service levels as follows:~~
~~000 = Level 1~~
~~001 = Level 2~~
~~010 = Level 3~~
~~011 = Level 4~~
~~100 to 111 = Reserved for future use~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1659:

Section Number:
20.3.3.10.1.11.0-3

WAS:
Table 20-XIb - Service Level

Redlines:
~~Table 20-XIb - Service Level~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1657:

Section Number:
20.3.3.10.1.11.0-4

WAS:

Service Level	Severity	Description
Level 1	No Data Available	Service Level indicates that users may resort to the Performance Values for integrity solutions instead of this ISM. Users should not use this ISM
Level 2	Non-Safety of Life Use	Service Level indicates that users may only use these parameters for non-safety of life (i.e., uncertified ARAIM) applications.
Level 3	Safety of Life Use (Horizontal)	Service Level indicates that the user should only use these parameters for the applications requiring integrity less than or equivalent to H-ARAIM solutions.
Level 4	Safety of Life Use (Vertical)	Service Level indicates that the user should only use these parameters for the applications requiring integrity less than or equivalent to V-ARAIM solutions.

Redlines:
<DELETED OBJECT>

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1640:

Section Number:
20.3.3.10.1.12

WAS:
Object Heading : 20.3.3.10.1.12 Satellite Mask

Redlines:
Object Heading : ~~20.3.3.10.1.12 Satellite Mask~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1641:

Section Number:
20.3.3.10.1.12.0-1

WAS:
Bits 89 through 151 of Message Type 40 shall provide the PRN inclusion mask. Refer to Table 20-XIc for complete GNSS PRN mapping.

Redlines:
~~Bits 89 through 151 of Message Type 40 shall provide the PRN inclusion mask. Refer to Table 20-XIc for complete GNSS PRN mapping.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1642:

Section Number:
20.3.3.10.1.12.0-2

WAS:
The applicability of each PRN is indicated by:
0 = Information in the current ISM does not apply to this PRN
1 = Information in the current ISM does apply to this PRN

Redlines:
~~The applicability of each PRN is indicated by:~~
~~0 = Information in the current ISM does not apply to this PRN~~
~~1 = Information in the current ISM does apply to this PRN~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1662:

Section Number:
20.3.3.10.1.12.0-3

WAS:
Table 20-XIc PRN Mapping

Redlines:
~~Table 20-XIc PRN Mapping~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1663:

Section Number:
20.3.3.10.1.12.0-4

WAS:

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
89	SVID 1	Freq. 1	RCN 1	PRN 1	PRN 120	PRN 183	PRN ID-1
90	SVID 2	Freq. 2	RCN 2	PRN 2	PRN 121	PRN 184	PRN ID-2
91	SVID 3	Freq. 3	RCN 3	PRN 3	PRN 122	PRN 185	PRN ID-3
92	SVID 4	Freq. 4	RCN 4	PRN 4	PRN 123	PRN 186	PRN ID-4
93	SVID 5	Freq. 5	RCN 5	PRN 5	PRN 124	PRN 187	PRN ID-5
94	SVID 6	Freq. 6	RCN 6	PRN 6	PRN 125	PRN 188	PRN ID-6
95	SVID 7	Freq. 7	RCN 7	PRN 7	PRN 126	PRN 189	PRN ID-7
96	SVID 8	Freq. 8	RCN 8	PRN 8	PRN 127	PRN 190	Reserved
97	SVID 9	Freq. 9	RCN 9	PRN 9	PRN 128	PRN 191	Reserved
98	SVID 10	Freq. 10	RCN 10	PRN 10	PRN 129	PRN 192	Reserved
99	SVID 11	Freq. 11	RCN 11	PRN 11	PRN 130	PRN 193	Reserved
100	SVID 12	Freq. 12	RCN 12	PRN 12	PRN 131	PRN 194	Reserved
101	SVID 13	Freq. 13	RCN 13	PRN 13	PRN 132	PRN 195	Reserved
102	SVID 14	Freq. 14	RCN 14	PRN 14	PRN 133	PRN 196	Reserved
103	SVID 15	Freq. 15	RCN 15	PRN 15	PRN 134	PRN 197	Reserved
104	SVID 16	Freq. 16	RCN 16	PRN 16	PRN 135	PRN 198	Reserved
105	SVID 17	Freq. 17	RCN 17	PRN 17	PRN 136	PRN 199	Reserved
106	SVID 18	Freq. 18	RCN 18	PRN 18	PRN 137	PRN 200	Reserved
107	SVID 19	Freq. 19	RCN 19	PRN 19	PRN 138	PRN 201	Reserved
108	SVID 20	Freq. 20	RCN 20	PRN 20	PRN 139	PRN 202	Reserved
109	SVID 21	Freq. 21	RCN 21	PRN 21	PRN 140	Reserved	Reserved
110	SVID 22	Freq. 22	RCN 22	PRN 22	PRN 141	Reserved	Reserved
111	SVID 23	Freq. 23	RCN 23	PRN 23	PRN 142	Reserved	Reserved
112	SVID 24	Freq. 24	RCN 24	PRN 24	PRN 143	Reserved	Reserved
113	SVID 25	Freq. 25	RCN 25	PRN 25	PRN 144	Reserved	Reserved
114	SVID 26	Freq. 26	RCN 26	PRN 26	PRN 145	Reserved	Reserved
115	SVID 27	Freq. 27	RCN 27	PRN 27	PRN 146	Reserved	Reserved
116	SVID 28	Freq. 28	RCN 28	PRN 28	PRN 147	Reserved	Reserved
117	SVID 29	Freq. 29	RCN 29	PRN 29	PRN 148	Reserved	Reserved
118	SVID 30	Freq. 30	RCN 30	PRN 30	PRN 149	Reserved	Reserved
119	SVID 31	Freq. 31	RCN 31	PRN 31	PRN 150	Reserved	Reserved
120	SVID 32	Freq. 32	RCN 32	PRN 32	PRN 151	Reserved	Reserved
121	SVID 33	Reserved	RCN 33	PRN 33	PRN 152	Reserved	Reserved
122	SVID 34	Reserved	RCN 34	PRN 34	PRN 153	Reserved	Reserved
123	SVID 35	Reserved	RCN 35	PRN 35	PRN 154	Reserved	Reserved
124	SVID 36	Reserved	RCN 36	PRN 36	PRN 155	Reserved	Reserved
125	Reserved	Reserved	RCN 37	PRN 37	PRN 156	Reserved	Reserved
126	Reserved	Reserved	Reserved	PRN 38	PRN 157	Reserved	Reserved
127	Reserved	Reserved	Reserved	PRN 39	PRN 158	Reserved	Reserved
128	Reserved	Reserved	Reserved	PRN 40	Reserved	Reserved	Reserved
129	Reserved	Reserved	Reserved	PRN 41	Reserved	Reserved	Reserved
130	Reserved	Reserved	Reserved	PRN 42	Reserved	Reserved	Reserved
131	Reserved	Reserved	Reserved	PRN 43	Reserved	Reserved	Reserved
132	Reserved	Reserved	Reserved	PRN 44	Reserved	Reserved	Reserved
133	Reserved	Reserved	Reserved	PRN 45	Reserved	Reserved	Reserved

134	Reserved	Reserved	Reserved	PRN 46	Reserved	Reserved	Reserved
135	Reserved	Reserved	Reserved	PRN 47	Reserved	Reserved	Reserved
136	Reserved	Reserved	Reserved	PRN 48	Reserved	Reserved	Reserved
137	Reserved	Reserved	Reserved	PRN 49	Reserved	Reserved	Reserved
138	Reserved	Reserved	Reserved	PRN 50	Reserved	Reserved	Reserved
139	Reserved	Reserved	Reserved	PRN 51	Reserved	Reserved	Reserved
140	Reserved	Reserved	Reserved	PRN 52	Reserved	Reserved	Reserved
141	Reserved	Reserved	Reserved	PRN 53	Reserved	Reserved	Reserved
142	Reserved	Reserved	Reserved	PRN 54	Reserved	Reserved	Reserved
143	Reserved	Reserved	Reserved	PRN 55	Reserved	Reserved	Reserved
144	Reserved	Reserved	Reserved	PRN 56	Reserved	Reserved	Reserved
145	Reserved	Reserved	Reserved	PRN 57	Reserved	Reserved	Reserved
146	Reserved	Reserved	Reserved	PRN 58	Reserved	Reserved	Reserved
147	Reserved	Reserved	Reserved	PRN 59	Reserved	Reserved	Reserved
148	Reserved	Reserved	Reserved	PRN 60	Reserved	Reserved	Reserved
149	Reserved	Reserved	Reserved	PRN 61	Reserved	Reserved	Reserved
150	Reserved	Reserved	Reserved	PRN 62	Reserved	Reserved	Reserved
151	Reserved	Reserved	Reserved	PRN 63	Reserved	Reserved	Reserved

SVID = Space Vehicle ID
Freq. = Carrier Frequency Number
RCN = Ranging Code Number
PRN = Pseudorandom Noise Number

Redlines:
<DELETED OBJECT>

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1664:

Section Number:
20.3.3.10.1.14

WAS:
Object Heading : 20.3.3.10.1.14 Integrity Support Message Cyclic Redundancy Check

Redlines:
Object Heading : ~~20.3.3.10.1.14 Integrity Support Message Cyclic Redundancy Check~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1665:

Section Number:
20.3.3.10.1.14.0-1

WAS:
Bits 245 through 276 of MT-40 are a 32-bit Cyclic Redundancy Check (CRC) specific to the ISM parameters. The ISM CRC will cover only the ISM parameters in Message Type 40, (Bits 39 to 244). Refer to DO-246E-Change 1 document for more details on the ISM CRC.

Redlines:
~~Bits 245 through 276 of MT-40 are a 32-bit Cyclic Redundancy Check (CRC) specific to the ISM parameters. The ISM CRC will cover only the ISM parameters in Message Type 40, (Bits 39 to 244). Refer to DO-246E-Change 1 document for more details on the ISM CRC.~~

IS:
<DELETED OBJECT>

Rationale:
8/21/2024: At TIM, decided to repackage the ISM Parameters into the ISM Packet which references IS-GPS-200 and eliminates duplicate information in IS-GPS-705 and IS-GPS-800. (T. Anthony)

IS705-1745:
Insertion after object IS705-1612

Section Number:
20.3.3.10.2

WAS:
<INSERTED OBJECT>

Redlines:
Object Heading 20.3.3.10.2 Use of GPS ISM Data
Object Type: Header

IS:
Object Heading 20.3.3.10.2 Use of GPS ISM Data
Object Type: Header

Rationale:
10/28/2024 Per the AWG, added GPS to indicate the following formula is only relevant to GPS signals. (T. Anthony)
10/10/2022 Create "Use of ISM Data" section to define the formula for bnom. (T. Anthony)

IS705-1746:
Insertion below object IS705-1745

Section Number:
20.3.3.10.2.0-1

WAS:
<INSERTED OBJECT>

Redlines:
To calculate the nominal pseudorange error bias (b_{nom}), see 30.3.3.10.2 of IS-GPS-200.
Object Type: Requirement

IS:
To calculate the nominal pseudorange error bias (b_{nom}), see 30.3.3.10.2 of IS-GPS-200.
Object Type: Requirement

Rationale:
10/28/24 Per the AWG, change back to referring to the formula in IS-GPS-200. (T. Anthony)
10/9/2024 Per the 10/4 agreement, this section was brought back to the RFC-495 SCN text so we could make references to how IAURA is calculated, which is slightly different for each of the civil signals. Also, using this formula should be a Requirement (T. Anthony)
9/5/2024 Per the 21-Aug TIM, changed beta to "b" in keeping with a change to the corresponding paragraph in IS-GPS-200 (T. Anthony)
8/21/2024 At the TIM, it was decided this section should reference the corresponding section of IS-GPS-200 instead of repeating the formula here (T. Anthony)
10/10/2022 Create “Use of ISM Data” section to define the formula for bnom. (T. Anthony)
10/10/2022 Redesignated bnom as βnom. (T. Anthony)

IS705-1748:
Insertion after object IS705-1747

Section Number:
20.3.3.10.2.0-3

WAS:
<INSERTED OBJECT>

Redlines:
Where IAURA in that formula is described in sections 20.3.3.1.1, 20.3.3.1.1.4, and 20.3.3.2.4.
Object Type: Info-Only

IS:
Where IAURA in that formula is described in sections 20.3.3.1.1, 20.3.3.1.1.4, and 20.3.3.2.4.
Object Type: Info-Only

Rationale:
10/28/24 Per the AWG, change back to referring to the formula in IS-GPS-200. (T. Anthony)
10/8/2024 CRM #15, #27, #28 brought the bnom formula back to provide context for IAURA references which are somewhat different in each of the three civil SiS documents (T. Anthony)
10/10/2022 Create "Use of ISM Data" section to define the formula for bnom. (T. Anthony)

 # CP Status = 'In Review': 52

# of inserted requirements: 1
# of modified requirements: 1
# of deleted requirements: 0
# of TBDs: 0
# of TBRs: 0
of (added/modified) effectivities: 0
of VCRM additions: 1
# of VCRM modifications: 0
# of VCRM deletions: 46
# of descriptive texts: 2
of (added/modified) tables: 3
of (added/modified) figures: 1