CHANGE NOTICE

Affected Document: IS-GPS-800 Rev J	IRN/SCN Number XXX-XXXX-XXX	Date: DD-MMM-YYYY
Authority: RFC-00495	Proposed Change Notice PCN-IS-800J_RFC495	Date: 11-MAY-2022

Document Title: NAVSTAR GPS Space Segment / User Segment L1C Interfaces

RFC Title: 2022 Proposed Changes to the Public Documents

Reason For Change (Driver):
1. Change Pconst to Rconst and MFDconst in the CNAV and CNAV2 Integrity Support Message. The rate of unalerted constellation failures (Rconst) and the mean duration of these failures (MFDconst) characterize such failures better than the probability of an unalerted constellation failure at any given time. (Pre- RFC-1200)
2. Implement Administrative Fixes needed on any document otherwise affected by the solutions to the above problem.

Description of Change:
1. Rework Pconst to Rconst and MFDconst in all affected documents
2. Provide clarity and clean up identified administrative changes in all affected documents IS-GPS-200, IS-GPS-705 and IS-GPS-800.

Authored By: **RE:** Tony Anthony		Checked By: **RE:** Christopher J. Adams	
AUTHORIZED SIGNATURES	**REPRESENTING**		**DATE**
	PNT Technical Director, MilComm & PNT Directorate, Space Systems Command (SSC)		

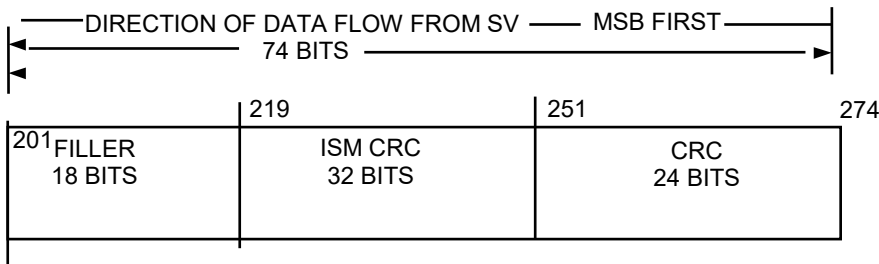DISTRIBUTION STATEMENT A: Approved for Public Release; Distribution Is Unlimited
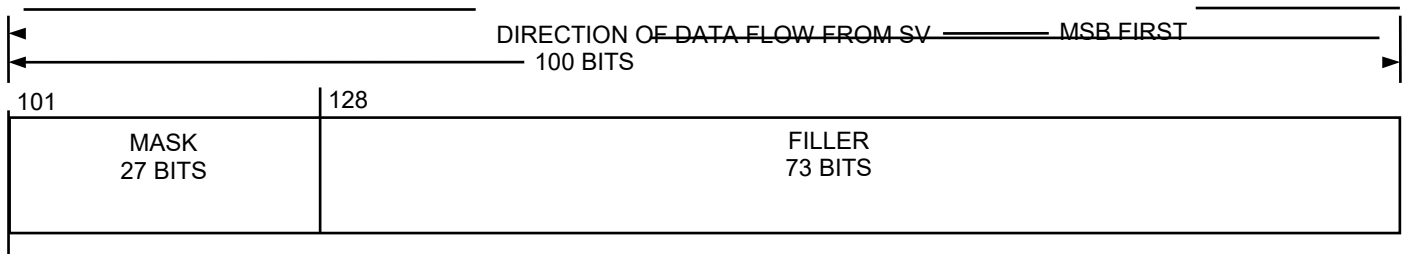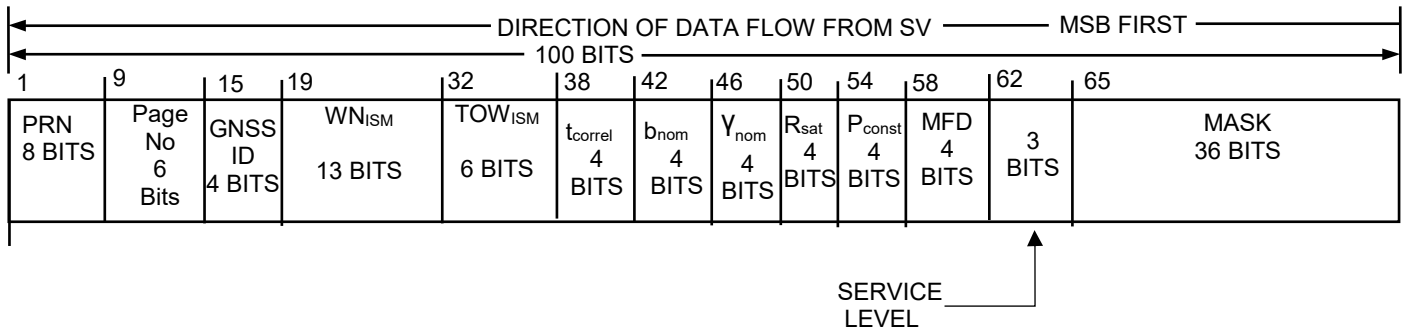
THIS DOCUMENT SPECIFIES TECHNICAL REQUIREMENTS AND NOTHING HEREIN CONTAINED SHALL BE DEEMED TO ALTER THE TERMS OF ANY CONTRACT OR PURCHASE ORDER BETWEEN ALL PARTIES AFFECTED.	Interface Control Contractor: SAIC (GPS SE&I) 200 N. Pacific Coast Highway, Suite 1800 El Segundo, CA 90245
	CODE IDENT 66RP1

IS800-1030:

Section Number:
3.5.2.0-19
WAS:

DIRECTION OF DATA FLOW FROM SV ——— MSB FIRST
100 BITS

1	9	15	19	32	38	42	46	50	54	58	62	65	
PRN 8 BITS	Page No 6 Bits	GNSS ID 4 BITS	WN_{ISM} 13 BITS	TOW_{ISM} 6 BITS	t_{correl} 4 BITS	b_{nom} 4 BITS	Y_{nom} 4 BITS	R_{sat} 4 BITS	P_{const} 4 BITS	MFD 4 BITS	3 BITS	MASK 36 BITS	

SERVICE LEVEL

DIRECTION OF DATA FLOW FROM SV ——— MSB FIRST
100 BITS

101	128
MASK 27 BITS	FILLER 73 BITS

DIRECTION OF DATA FLOW FROM SV —— MSB FIRST
74 BITS

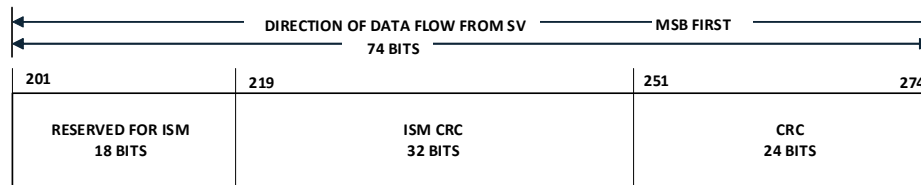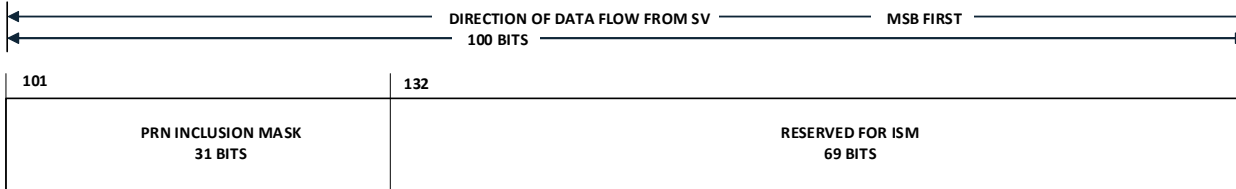| 201	219	251	274
FILLER 18 BITS	ISM CRC 32 BITS	CRC 24 BITS	

Note: Broadcast sequence of subframe 3 pages is a variable and, as such, users must not expect a fixed pattern of page sequence

Redlines:
<not available for graphics>
- MFD_{sat} has been added, pushing the other fields to the "right" 4 bits.
- P_{const} has been replaced with R_{const}, which is a rate instead of a probability.
- MFD has been renamed MFD_{const} to differentiate it from the mean duration of a satellite fault.
- FILLER at 91 bits has been renamed RESERVED FOR ISM at 87 bits.

IS:

DIRECTION OF DATA FLOW FROM SV — MSB FIRST
100 BITS

1	9	15	19	32	38	42	46	50	54	58	62	66	69
PRN 8 BITS	Page No 6 BITS	4 BITS	WN$_{ISM}$ 13 BITS	6 BITS	4 BITS	4 BITS	4 BITS	4 BITS	4 BITS	4 BITS	4 BITS	3 BITS	PRN INCLUSION MASK 32 BITS

GNSS ID – 4 BITS

TOW$_{ISM}$ t$_{correl}$ b$_{nom}$ γ$_{nom}$ R$_{sat}$ MFD$_{sat}$ R$_{const}$ MFD$_{const}$

SERVICE LEVEL

DIRECTION OF DATA FLOW FROM SV — MSB FIRST
100 BITS

101	132
PRN INCLUSION MASK 31 BITS	RESERVED FOR ISM 69 BITS

DIRECTION OF DATA FLOW FROM SV — MSB FIRST
74 BITS

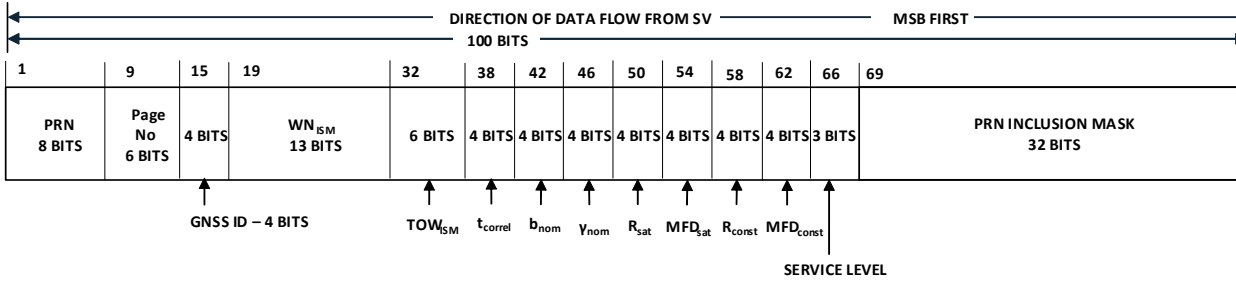| 201	219	251	274
RESERVED FOR ISM 18 BITS	ISM CRC 32 BITS	CRC 24 BITS	

Note: Broadcast sequence of subframe 3 pages is a variable and, as such, users must not expect a fixed pattern of page sequence

Rationale:
As part of the Pconst to Rconst Conversion, the figure needs adjustment of "Pxxx" to "Rxxx" and "MFDxxx" (T. Anthony)
CRM #33 4/26/2022 Restore missing "3 BITS" for SERVICE LEVEL in the diagram (T. Anthony)

IS800-1040:

Section Number:
3.5.4.7.1.0-6
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		1×10^{-3} to 3.16×10^{-10}	/hours
P_{const}	4		1×10^{-3} to 3.16×10^{-10}	
MFD	4		0.25 to 24	hours
Service Level*	3			
Mask ****	63			
* See Table 3.5-10 for Service Level Descriptions				
** See Figure 3.5-8a for complete bit allocation in Subframe 3, Page 8				
*** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor				
**** See Table 3.5-11 for Mask bit mapping				

Redlines:

Parameter	No. of Bits*~~*~~	Scale Factor (LSB)	Valid Range**~~*~~	Units
GNSS ID	4		See text	
WN_{ISM}	13	1	0 to 8191	weeks
TOW_{ISM}	6	4	0 to 164	hours
t_{correl}	4		~~0 to 12~~ See text	~~hours~~
b_{nom}	4		~~0 to 2~~ See text	~~meters~~
γ_{nom}	4		~~0 to 2~~ See text	
R_{sat}	4		~~1×10^{-3} to 3.16×10^{-10}~~See text	~~/hours~~
MFD_{sat}	4		See text	
~~P~~R_{const}	4		~~1×10^{-3} to 3.16×10^{-10}~~See text	
MFD_{const}	4		~~0.25 to 24~~ See text	~~hours~~
Service Level***	3		See text	
PRN Inclusion Mask ****	63		See text	

* See Figure 3.5-8a for complete bit allocation in Subframe 3, Page 8
** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor~~.~~
*** See Table 3.5-10 for Service Level Descriptions
**** See Table 3.5-11 for PRN Inclusion Mask bit mapping

IS:

Parameter	No. of Bits*	Scale Factor (LSB)	Valid Range**	Units
GNSS ID	4		See text	
WN_{ISM}	13	1	0 to 8191	weeks
TOW_{ISM}	6	4	0 to 164	hours
t_{correl}	4		See text	
b_{nom}	4		See text	
γ_{nom}	4		See text	
R_{sat}	4		See text	
MFD_{sat}	4		See text	
R_{const}	4		See text	
MFD_{const}	4		See text	
Service Level***	3		See text	
PRN Inclusion Mask ****	63		See text	

* See Figure 3.5-8a for complete bit allocation in Subframe 3, Page 8
** Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor
*** See Table 3.5-10 for Service Level Descriptions
**** See Table 3.5-11 for PRN Inclusion Mask bit mapping

Rationale:

As part of the Pconst to Rconst Conversion, the table needs adjustment of "Pxxx" to "Rxxx" and "MFDxxx" (T. Anthony)

CRM #12 4/26/2022 Update the Redlines and IS Versions to be consistent. Here added "PRN Inclusion into Note **** (T. Anthony)

5/18/2022 CRM #2 Restored the 2nd note to "Unless otherwise indicated in this column, valid range is the maximum range attainable with indicated bit allocation and scale factor" because th replacement note alluded to the existence of RSAM, which we decided to not document in public documents during RFC-444 (T. Anthony)

IS800-1058:

Section Number:
3.5.4.7.1.7.0-1
WAS:
Bits 50 through 53 of Subframe 3, Page 8 shall provide the assumed Satellite Fault Rate (R_{sat}) value for ARAIM at the current time for the associated GNSS constellation.
Redlines:
Bits 50 through 53 of Subframe 3, Page 8 shall provide the assumed ~~Satellite~~satellite ~~Fault~~fault ~~Rate~~rate (Rsat) value for ARAIM at the current time for the associated GNSS constellation.
IS:
Bits 50 through 53 of Subframe 3, Page 8 shall provide the assumed satellite fault rate (R_{sat}) value for ARAIM at the current time for the associated GNSS constellation.
Rationale:
CRM #3 4/26/2022 uncapitalize "satellite fault rate" (T. Anthony)

IS800-1063:

Section Number:
3.5.4.7.1.8
WAS:
Object Heading 3.5.4.7.1.8 Constellation Fault Probability
Redlines:
Object Heading 3.5.4.7.1.8 ~~Constellation~~Mean ~~Fault~~Duration ~~Probability~~of a Satellite Fault
IS:
Object Heading 3.5.4.7.1.8 Mean Duration of a Satellite Fault
Rationale:
As part of the Pconst to Rconst Conversion, adding MFDsat (T. Anthony)
CRM #31 4/26/2022 The precedent was set in RFC-450 to expand MFD to mean duration of a xxx fault. (T. Anthony)

IS800-1064:

Section Number:
3.5.4.7.1.8.0-1
WAS:
Bits 54 through 57 of Subframe 3, Page 8 shall provide the assumed Constellation Fault Probability (P_{const}) value for the ARAIM at the current time for the associated GNSS constellation.
Redlines:
Bits 54 through 57 of Subframe 3, Page 8 shall provide the assumed ~~Constellation~~mean ~~Fault~~duration ~~Probability~~of a satellite fault (~~Pconst~~MFDsat) value for ~~the~~ ARAIM at the current time for the associated GNSS constellation.
IS:
Bits 54 through 57 of Subframe 3, Page 8 shall provide the assumed mean duration of a satellite fault (MFD_{sat}) value for ARAIM at the current time for the associated GNSS constellation.
Rationale:
As part of the Pconst to Rconst Conversion, adding MFDsat (T. Anthony)
CRM #31 4/26/2022 The precedent was set in RFC-450 to expand MFD to mean duration of a xxx fault. (T. Anthony)

IS800-1065:

Section Number:
3.5.4.7.1.8.0-2
WAS:
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
Redlines:
The four bits are defined as follows:
0000 = ~~3~~0.~~16 x 10⁻³~~25 hours
0001 = ~~1 x~~0.33 ~~10⁻³~~hours
0010 = ~~3~~0.~~16 x 10⁻⁴~~50 hours
0011 = ~~1 x 10⁻⁴~~0.67 hours
0100 = ~~3~~0.~~16 x 10⁻⁵~~83 hours
0101 = 1~~x 10⁻⁵~~hour
0110 = ~~3~~1.~~16 x~~25 ~~10⁻⁶~~hours
0111 = 1~~x~~.50 ~~10⁻⁶~~hours
1000 = ~~3~~1.~~16 x~~75 ~~10⁻⁷~~hours
1001 = ~~1 x~~2 ~~10⁻⁷~~hours
1010 = 3.~~16 x 10⁻⁸~~hours
1011 = ~~1 x~~4 ~~10⁻⁸~~hours
1100 = ~~3.16 x~~7 ~~10⁻⁹~~hours
1101 = ~~1 x~~ 10⁻⁹ hours
1110 = ~~3.16 x~~17 ~~10⁻¹⁰~~hours
1111 = ~~RESERVED~~24 hours

IS:
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

Rationale:
As part of the Pconst to Rconst Conversion, added the lexicon for MFD (T. Anthony)

IS800-1060:

Section Number:
3.5.4.7.1.9
WAS:
Object Heading 3.5.4.7.1.9 Mean Fault Duration
Redlines:
Object Heading 3.5.4.7.1.9 ~~Mean~~Constellation Fault ~~Duration~~Rate
IS:
Object Heading 3.5.4.7.1.9 Constellation Fault Rate
Rationale:
As part of the Pconst to Rconst Conversion, placed the constellation fault rate here to be consistent with the other public documents (T. Anthony)

IS800-1061:

Section Number:
3.5.4.7.1.9.0-1
WAS:
Bits 58 through 61 of Subframe 3, Page 8 shall provide the assumed Mean Fault Duration (MFD) value for the ARAIM at the current time for the associated GNSS constellation.
Redlines:
Bits 58 through 61 of Subframe 3, Page 8 shall provide the assumed ~~Mean~~constellation ~~Fault~~fault ~~Duration~~rate (~~MFD~~Rconst) value for ~~the~~ ARAIM at the current time for the associated GNSS constellation.
IS:
Bits 58 through 61 of Subframe 3, Page 8 shall provide the assumed constellation fault rate (R_{const}) value for ARAIM at the current time for the associated GNSS constellation.
Rationale:
As part of the Pconst to Rconst Conversion, placed the constellation fault rate here. (T. Anthony)

IS800-1062:

Section Number:
3.5.4.7.1.9.0-2
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~~3.~~25~~16 ~~hours~~x 10^{-4} /hour
0001 = ~~0.33~~1 ~~hours~~x 10^{-4} /hour
0010 = ~~0~~3.~~50~~16 ~~hours~~x 10^{-5} /hour
0011 = ~~0.67~~1 ~~hours~~x 10^{-5} /hour
0100 = ~~0~~3.~~83~~16 ~~hours~~x 10^{-6} /hour
0101 = 1 x 10^{-6} /hour
0110 = ~~1~~3.~~25~~16 ~~hours~~x 10^{-7} /hour
0111 = 1.~~50 hours~~x 10^{-7} /hour
1000 = ~~1~~3.~~75~~16 ~~hours~~x 10^{-8} /hour
1001 = ~~2~~1 ~~hours~~x 10^{-8} /hour
1010 = 3.16 ~~hours~~x 10^{-9} /hour
1011 = ~~4~~1 ~~hours~~x 10^{-9} /hour
1100 = ~~7~~3.16 ~~hours~~x 10^{-10} /hour
1101 = 1 x 10^{-10} ~~hours~~/hour
1110 = ~~17~~3.16 ~~hours~~x 10^{-11} /hour
1111 = ~~24 hours~~RESERVED

IS:

The four bits are defined as follows:

$0000 = 3.16 \times 10^{-4}$ /hour
$0001 = 1 \times 10^{-4}$ /hour
$0010 = 3.16 \times 10^{-5}$ /hour
$0011 = 1 \times 10^{-5}$ /hour
$0100 = 3.16 \times 10^{-6}$ /hour
$0101 = 1 \times 10^{-6}$ /hour
$0110 = 3.16 \times 10^{-7}$ /hour
$0111 = 1 \times 10^{-7}$ /hour
$1000 = 3.16 \times 10^{-8}$ /hour
$1001 = 1 \times 10^{-8}$ /hour
$1010 = 3.16 \times 10^{-9}$ /hour
$1011 = 1 \times 10^{-9}$ /hour
$1100 = 3.16 \times 10^{-10}$ /hour
$1101 = 1 \times 10^{-10}$ /hour
$1110 = 3.16 \times 10^{-11}$ /hour
$1111 = \text{RESERVED}$

Rationale:

As part of the Pconst to Rconst Conversion, the Constellation Fault Rate needs a lexicon that is a rate. (T. Anthony)

IS800-1176:
Insertion after object IS800-1060
Section Number:
3.5.4.7.1.10
WAS:
<INSERTED OBJECT>
Redlines:
Object Heading 3.5.4.7.1.10 Mean Duration of a Constellation Fault
Object Type: Header
IS:
Object Heading 3.5.4.7.1.10 Mean Duration of a Constellation Fault
Object Type: Header
Rationale:
As part of the Pconst to Rconst Conversion,nMFDconst needs to be added to this message. (T. Anthony)
CRM #32 4/26/2022 The precedent was set in RFC-450 to expand MFD to mean duration of a xxx fault. (T. Anthony)

IS800-1177:
Insertion below object IS800-1176
Section Number:
3.5.4.7.1.10.0-1
WAS:
<INSERTED OBJECT>
Redlines:
Bits 62 through 65 of Subframe 3, Page 8 shall provide the assumed mean duration of a constellation fault (MFDconst) value for ARAIM at the current time for the associated GNSS constellation.
Object Type: Requirement
IS:
Bits 62 through 65 of Subframe 3, Page 8 shall provide the assumed mean duration of a constellation fault (MFD_{const}) value for ARAIM at the current time for the associated GNSS constellation.
Object Type: Requirement
Rationale:
As part of the Pconst to Rconst Conversion, MFDconst needs to be added to this message (T. Anthony)
CRM #13 4/26/2022 Added "." to end of sentence. (T. Anthony)
CRM #32 4/26/2022 The precedent was set in RFC-450 to expand MFD to mean duration of a xxx fault. (T. Anthony)

IS800-1178:
Insertion after object IS800-1177
Section Number:
3.5.4.7.1.10.0-2
WAS:
<INSERTED OBJECT>
Redlines:
The four bits are defined as follows:
0000 = 0.25 hours
0001 = 0.5 hours
0010 = 1 hour
0011 = 2 hours
0100 = 4 hours
0101 = 6 hours
0110 = 8 hours
0111 = 10 hours
1000 = 12 hours
1001 = 16 hours
1010 = 20 hours
1011 = 24 hours
1100 = 30 hours
1101 = 36 hours
1110 = 42 hours
1111 = 48 hours
Object Type: Info-Only
IS:
The four bits are defined as follows:
0000 = 0.25 hours
0001 = 0.5 hours
0010 = 1 hour
0011 = 2 hours
0100 = 4 hours
0101 = 6 hours
0110 = 8 hours
0111 = 10 hours
1000 = 12 hours
1001 = 16 hours
1010 = 20 hours
1011 = 24 hours
1100 = 30 hours
1101 = 36 hours
1110 = 42 hours
1111 = 48 hours
Object Type: Info-Only
Rationale:
As part of the Pconst to Rconst Conversion, MFDconst needs a lexicon in units of time. (T. Anthony)

IS800-1067:

Section Number:
3.5.4.7.1.11.0-1
WAS:
Bits 62 through 64 of Subframe 3, Page 8 shall provide the Service Level, as described in Table 3.5-10, applicable to a given page of the ISM data issue.
Redlines:
Bits 6266 through 6468 of Subframe 3, Page 8 shall provide the Service Level, as described in Table 3.5-10, applicable to a given page of the ISM data issue.
IS:
Bits 66 through 68 of Subframe 3, Page 8 shall provide the Service Level, as described in Table 3.5-10, applicable to a given page of the ISM data issue.
Rationale:
As part of the Pconst to Rconst Conversion, this message field has moved. (T. Anthony)

IS800-1068:

Section Number:
3.5.4.7.1.11.0-2
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:
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
Rationale:
This field has been reformatted to manage white space uniformly among lexicon descriptions. (T. Anthony)

IS800-1071:

Section Number:
3.5.4.7.1.12
WAS:
Object Heading 3.5.4.7.1.12 Satellite Mask
Redlines:
Object Heading 3.5.4.7.1.12 ~~Satellite~~PRN Inclusion Mask
IS:
Object Heading 3.5.4.7.1.12 PRN Inclusion Mask
Rationale:
As part of the Pconst to Rconst Conversion, this field has a more descriptive name. (T. Anthony)

IS800-1072:

Section Number:
3.5.4.7.1.12.0-1
WAS:
Bits 65 through 127 of Subframe 3, Page 8 shall provide the PRN inclusion mask. Refer to Table 3.5-11 for complete GNSS PRN mapping.
Object Type: <blank>
Redlines:
Bits ~~65~~69 through ~~127~~131 of Subframe 3, Page 8 shall provide the PRN inclusion mask. Refer to Table 3.5-11 for complete GNSS PRN mapping.
Object Type: ~~<blank>~~Requirement
IS:
Bits 69 through 131 of Subframe 3, Page 8 shall provide the PRN inclusion mask. Refer to Table 3.5-11 for complete GNSS PRN mapping.
Object Type: Requirement
Rationale:
As part of the Pconst to Rconst Conversion, this field has moved in the message. (T. Anthony)

IS800-1077:

Section Number:
3.5.4.7.1.12.0-3
WAS:
Table 3.5-11 PRN Mapping
Redlines:
Table 3.5-11 PRN Inclusion Mask Mapping
IS:
Table 3.5-11 PRN Inclusion Mask Mapping
Rationale:
CRM #24 4/26/2022 Update TItle to match Table 3.5-9 Note **** (T. Anthony)

IS800-1078:

Section Number:
3.5.4.7.1.12.0-4
WAS:

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
65	SVID 1	Freq. 1	RCN 1	PRN 1	PRN 120	PRN 183	PRN ID-1
66	SVID 2	Freq. 2	RCN 2	PRN 2	PRN 121	PRN 184	PRN ID-2
67	SVID 3	Freq. 3	RCN 3	PRN 3	PRN 122	PRN 185	PRN ID-3
68	SVID 4	Freq. 4	RCN 4	PRN 4	PRN 123	PRN 186	PRN ID-4
69	SVID 5	Freq. 5	RCN 5	PRN 5	PRN 124	PRN 187	PRN ID-5
70	SVID 6	Freq. 6	RCN 6	PRN 6	PRN 125	PRN 188	PRN ID-6
71	SVID 7	Freq. 7	RCN 7	PRN 7	PRN 126	PRN 189	PRN ID-7
72	SVID 8	Freq. 8	RCN 8	PRN 8	PRN 127	PRN 190	Reserved
73	SVID 9	Freq. 9	RCN 9	PRN 9	PRN 128	PRN 191	Reserved
74	SVID 10	Freq. 10	RCN 10	PRN 10	PRN 129	PRN 192	Reserved
75	SVID 11	Freq. 11	RCN 11	PRN 11	PRN 130	PRN 193	Reserved
76	SVID 12	Freq. 12	RCN 12	PRN 12	PRN 131	PRN 194	Reserved
77	SVID 13	Freq. 13	RCN 13	PRN 13	PRN 132	PRN 195	Reserved
78	SVID 14	Freq. 14	RCN 14	PRN 14	PRN 133	PRN 196	Reserved
79	SVID 15	Freq. 15	RCN 15	PRN 15	PRN 134	PRN 197	Reserved
80	SVID 16	Freq. 16	RCN 16	PRN 16	PRN 135	PRN 198	Reserved
81	SVID 17	Freq. 17	RCN 17	PRN 17	PRN 136	PRN 199	Reserved
82	SVID 18	Freq. 18	RCN 18	PRN 18	PRN 137	PRN 200	Reserved
83	SVID 19	Freq. 19	RCN 19	PRN 19	PRN 138	PRN 201	Reserved
84	SVID 20	Freq. 20	RCN 20	PRN 20	PRN 139	PRN 202	Reserved
85	SVID 21	Freq. 21	RCN 21	PRN 21	PRN 140	Reserved	Reserved
86	SVID 22	Freq. 22	RCN 22	PRN 22	PRN 141	Reserved	Reserved
87	SVID 23	Freq. 23	RCN 23	PRN 23	PRN 142	Reserved	Reserved
88	SVID 24	Freq. 24	RCN 24	PRN 24	PRN 143	Reserved	Reserved
89	SVID 25	Freq. 25	RCN 25	PRN 25	PRN 144	Reserved	Reserved
90	SVID 26	Freq. 26	RCN 26	PRN 26	PRN 145	Reserved	Reserved
91	SVID 27	Freq. 27	RCN 27	PRN 27	PRN 146	Reserved	Reserved
92	SVID 28	Freq. 28	RCN 28	PRN 28	PRN 147	Reserved	Reserved
93	SVID 29	Freq. 29	RCN 29	PRN 29	PRN 148	Reserved	Reserved
94	SVID 30	Freq. 30	RCN 30	PRN 30	PRN 149	Reserved	Reserved
95	SVID 31	Freq. 31	RCN 31	PRN 31	PRN 150	Reserved	Reserved
96	SVID 32	Freq. 32	RCN 32	PRN 32	PRN 151	Reserved	Reserved
97	SVID 33	Reserved	RCN 33	PRN 33	PRN 152	Reserved	Reserved
98	SVID 34	Reserved	RCN 34	PRN 34	PRN 153	Reserved	Reserved
99	SVID 35	Reserved	RCN 35	PRN 35	PRN 154	Reserved	Reserved
100	SVID 36	Reserved	RCN 36	PRN 36	PRN 155	Reserved	Reserved
101	Reserved	Reserved	RCN 37	PRN 37	PRN 156	Reserved	Reserved
102	Reserved	Reserved	Reserved	PRN 38	PRN 157	Reserved	Reserved
103	Reserved	Reserved	Reserved	PRN 39	PRN 158	Reserved	Reserved
104	Reserved	Reserved	Reserved	PRN 40	Reserved	Reserved	Reserved
105	Reserved	Reserved	Reserved	PRN 41	Reserved	Reserved	Reserved
106	Reserved	Reserved	Reserved	PRN 42	Reserved	Reserved	Reserved
107	Reserved	Reserved	Reserved	PRN 43	Reserved	Reserved	Reserved
108	Reserved	Reserved	Reserved	PRN 44	Reserved	Reserved	Reserved
109	Reserved	Reserved	Reserved	PRN 45	Reserved	Reserved	Reserved
110	Reserved	Reserved	Reserved	PRN 46	Reserved	Reserved	Reserved
111	Reserved	Reserved	Reserved	PRN 47	Reserved	Reserved	Reserved

112	Reserved	Reserved	Reserved	PRN 48	Reserved	Reserved	Reserved
113	Reserved	Reserved	Reserved	PRN 49	Reserved	Reserved	Reserved
114	Reserved	Reserved	Reserved	PRN 50	Reserved	Reserved	Reserved
115	Reserved	Reserved	Reserved	PRN 51	Reserved	Reserved	Reserved
116	Reserved	Reserved	Reserved	PRN 52	Reserved	Reserved	Reserved
117	Reserved	Reserved	Reserved	PRN 53	Reserved	Reserved	Reserved
118	Reserved	Reserved	Reserved	PRN 54	Reserved	Reserved	Reserved
119	Reserved	Reserved	Reserved	PRN 55	Reserved	Reserved	Reserved
120	Reserved	Reserved	Reserved	PRN 56	Reserved	Reserved	Reserved
121	Reserved	Reserved	Reserved	PRN 57	Reserved	Reserved	Reserved
122	Reserved	Reserved	Reserved	PRN 58	Reserved	Reserved	Reserved
123	Reserved	Reserved	Reserved	PRN 59	Reserved	Reserved	Reserved
124	Reserved	Reserved	Reserved	PRN 60	Reserved	Reserved	Reserved
125	Reserved	Reserved	Reserved	PRN 61	Reserved	Reserved	Reserved
126	Reserved	Reserved	Reserved	PRN 62	Reserved	Reserved	Reserved
127	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:

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
~~65~~69	SVID 1	Freq. 1	RCN 1	PRN 1	PRN 120	PRN 183	PRN ID-1
~~66~~70	SVID 2	Freq. 2	RCN 2	PRN 2	PRN 121	PRN 184	PRN ID-2
~~67~~71	SVID 3	Freq. 3	RCN 3	PRN 3	PRN 122	PRN 185	PRN ID-3
~~68~~72	SVID 4	Freq. 4	RCN 4	PRN 4	PRN 123	PRN 186	PRN ID-4
~~69~~73	SVID 5	Freq. 5	RCN 5	PRN 5	PRN 124	PRN 187	PRN ID-5
~~70~~74	SVID 6	Freq. 6	RCN 6	PRN 6	PRN 125	PRN 188	PRN ID-6
~~71~~75	SVID 7	Freq. 7	RCN 7	PRN 7	PRN 126	PRN 189	PRN ID-7
~~72~~76	SVID 8	Freq. 8	RCN 8	PRN 8	PRN 127	PRN 190	Reserved
~~73~~77	SVID 9	Freq. 9	RCN 9	PRN 9	PRN 128	PRN 191	Reserved
~~74~~78	SVID 10	Freq. 10	RCN 10	PRN 10	PRN 129	PRN 192	Reserved
~~75~~79	SVID 11	Freq. 11	RCN 11	PRN 11	PRN 130	PRN 193	Reserved
~~76~~80	SVID 12	Freq. 12	RCN 12	PRN 12	PRN 131	PRN 194	Reserved
~~77~~81	SVID 13	Freq. 13	RCN 13	PRN 13	PRN 132	PRN 195	Reserved
~~78~~82	SVID 14	Freq. 14	RCN 14	PRN 14	PRN 133	PRN 196	Reserved
~~79~~83	SVID 15	Freq. 15	RCN 15	PRN 15	PRN 134	PRN 197	Reserved
~~80~~84	SVID 16	Freq. 16	RCN 16	PRN 16	PRN 135	PRN 198	Reserved
~~81~~85	SVID 17	Freq. 17	RCN 17	PRN 17	PRN 136	PRN 199	Reserved
~~82~~86	SVID 18	Freq. 18	RCN 18	PRN 18	PRN 137	PRN 200	Reserved
~~83~~87	SVID 19	Freq. 19	RCN 19	PRN 19	PRN 138	PRN 201	Reserved
~~84~~88	SVID 20	Freq. 20	RCN 20	PRN 20	PRN 139	PRN 202	Reserved
~~85~~89	SVID 21	Freq. 21	RCN 21	PRN 21	PRN 140	Reserved	Reserved
~~86~~90	SVID 22	Freq. 22	RCN 22	PRN 22	PRN 141	Reserved	Reserved
~~87~~91	SVID 23	Freq. 23	RCN 23	PRN 23	PRN 142	Reserved	Reserved
~~88~~92	SVID 24	Freq. 24	RCN 24	PRN 24	PRN 143	Reserved	Reserved
~~89~~93	SVID 25	Freq. 25	RCN 25	PRN 25	PRN 144	Reserved	Reserved
~~90~~94	SVID 26	Freq. 26	RCN 26	PRN 26	PRN 145	Reserved	Reserved
~~91~~95	SVID 27	Freq. 27	RCN 27	PRN 27	PRN 146	Reserved	Reserved
~~92~~96	SVID 28	Freq. 28	RCN 28	PRN 28	PRN 147	Reserved	Reserved
~~93~~97	SVID 29	Freq. 29	RCN 29	PRN 29	PRN 148	Reserved	Reserved
~~94~~98	SVID 30	Freq. 30	RCN 30	PRN 30	PRN 149	Reserved	Reserved
~~95~~99	SVID 31	Freq. 31	RCN 31	PRN 31	PRN 150	Reserved	Reserved
~~96~~100	SVID 32	Freq. 32	RCN 32	PRN 32	PRN 151	Reserved	Reserved
~~97~~101	SVID 33	Reserved	RCN 33	PRN 33	PRN 152	Reserved	Reserved
~~98~~102	SVID 34	Reserved	RCN 34	PRN 34	PRN 153	Reserved	Reserved
~~99~~103	SVID 35	Reserved	RCN 35	PRN 35	PRN 154	Reserved	Reserved
~~100~~104	SVID 36	Reserved	RCN 36	PRN 36	PRN 155	Reserved	Reserved
~~101~~105	Reserved	Reserved	RCN 37	PRN 37	PRN 156	Reserved	Reserved
~~102~~106	Reserved	Reserved	Reserved	PRN 38	PRN 157	Reserved	Reserved
~~103~~107	Reserved	Reserved	Reserved	PRN 39	PRN 158	Reserved	Reserved
~~104~~108	Reserved	Reserved	Reserved	PRN 40	Reserved	Reserved	Reserved
~~105~~109	Reserved	Reserved	Reserved	PRN 41	Reserved	Reserved	Reserved
~~106~~110	Reserved	Reserved	Reserved	PRN 42	Reserved	Reserved	Reserved
~~107~~111	Reserved	Reserved	Reserved	PRN 43	Reserved	Reserved	Reserved
~~108~~112	Reserved	Reserved	Reserved	PRN 44	Reserved	Reserved	Reserved
~~109~~113	Reserved	Reserved	Reserved	PRN 45	Reserved	Reserved	Reserved
~~110~~114	Reserved	Reserved	Reserved	PRN 46	Reserved	Reserved	Reserved
~~111~~115	Reserved	Reserved	Reserved	PRN 47	Reserved	Reserved	Reserved
~~112~~116	Reserved	Reserved	Reserved	PRN 48	Reserved	Reserved	Reserved
~~113~~117	Reserved	Reserved	Reserved	PRN 49	Reserved	Reserved	Reserved
~~114~~118	Reserved	Reserved	Reserved	PRN 50	Reserved	Reserved	Reserved
~~115~~119	Reserved	Reserved	Reserved	PRN 51	Reserved	Reserved	Reserved
~~116~~120	Reserved	Reserved	Reserved	PRN 52	Reserved	Reserved	Reserved
~~117~~121	Reserved	Reserved	Reserved	PRN 53	Reserved	Reserved	Reserved
~~118~~122	Reserved	Reserved	Reserved	PRN 54	Reserved	Reserved	Reserved
~~119~~123	Reserved	Reserved	Reserved	PRN 55	Reserved	Reserved	Reserved
~~120~~124	Reserved	Reserved	Reserved	PRN 56	Reserved	Reserved	Reserved
~~121~~125	Reserved	Reserved	Reserved	PRN 57	Reserved	Reserved	Reserved
~~122~~126	Reserved	Reserved	Reserved	PRN 58	Reserved	Reserved	Reserved

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
~~123~~127	Reserved	Reserved	Reserved	PRN 59	Reserved	Reserved	Reserved
~~124~~128	Reserved	Reserved	Reserved	PRN 60	Reserved	Reserved	Reserved
~~125~~129	Reserved	Reserved	Reserved	PRN 61	Reserved	Reserved	Reserved
~~126~~130	Reserved	Reserved	Reserved	PRN 62	Reserved	Reserved	Reserved
~~127~~131	Reserved	Reserved	Reserved	PRN 63	Reserved	Reserved	Reserved
SVID = Space Vehicle ID Freq. = Carrier Frequency Number RCN = Ranging Code Number PRN = Pseudorandom Noise Number							

IS:

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
69	SVID 1	Freq. 1	RCN 1	PRN 1	PRN 120	PRN 183	PRN ID-1
70	SVID 2	Freq. 2	RCN 2	PRN 2	PRN 121	PRN 184	PRN ID-2
71	SVID 3	Freq. 3	RCN 3	PRN 3	PRN 122	PRN 185	PRN ID-3
72	SVID 4	Freq. 4	RCN 4	PRN 4	PRN 123	PRN 186	PRN ID-4
73	SVID 5	Freq. 5	RCN 5	PRN 5	PRN 124	PRN 187	PRN ID-5
74	SVID 6	Freq. 6	RCN 6	PRN 6	PRN 125	PRN 188	PRN ID-6
75	SVID 7	Freq. 7	RCN 7	PRN 7	PRN 126	PRN 189	PRN ID-7
76	SVID 8	Freq. 8	RCN 8	PRN 8	PRN 127	PRN 190	Reserved
77	SVID 9	Freq. 9	RCN 9	PRN 9	PRN 128	PRN 191	Reserved
78	SVID 10	Freq. 10	RCN 10	PRN 10	PRN 129	PRN 192	Reserved
79	SVID 11	Freq. 11	RCN 11	PRN 11	PRN 130	PRN 193	Reserved
80	SVID 12	Freq. 12	RCN 12	PRN 12	PRN 131	PRN 194	Reserved
81	SVID 13	Freq. 13	RCN 13	PRN 13	PRN 132	PRN 195	Reserved
82	SVID 14	Freq. 14	RCN 14	PRN 14	PRN 133	PRN 196	Reserved
83	SVID 15	Freq. 15	RCN 15	PRN 15	PRN 134	PRN 197	Reserved
84	SVID 16	Freq. 16	RCN 16	PRN 16	PRN 135	PRN 198	Reserved
85	SVID 17	Freq. 17	RCN 17	PRN 17	PRN 136	PRN 199	Reserved
86	SVID 18	Freq. 18	RCN 18	PRN 18	PRN 137	PRN 200	Reserved
87	SVID 19	Freq. 19	RCN 19	PRN 19	PRN 138	PRN 201	Reserved
88	SVID 20	Freq. 20	RCN 20	PRN 20	PRN 139	PRN 202	Reserved
89	SVID 21	Freq. 21	RCN 21	PRN 21	PRN 140	Reserved	Reserved
90	SVID 22	Freq. 22	RCN 22	PRN 22	PRN 141	Reserved	Reserved
91	SVID 23	Freq. 23	RCN 23	PRN 23	PRN 142	Reserved	Reserved
92	SVID 24	Freq. 24	RCN 24	PRN 24	PRN 143	Reserved	Reserved
93	SVID 25	Freq. 25	RCN 25	PRN 25	PRN 144	Reserved	Reserved
94	SVID 26	Freq. 26	RCN 26	PRN 26	PRN 145	Reserved	Reserved
95	SVID 27	Freq. 27	RCN 27	PRN 27	PRN 146	Reserved	Reserved
96	SVID 28	Freq. 28	RCN 28	PRN 28	PRN 147	Reserved	Reserved
97	SVID 29	Freq. 29	RCN 29	PRN 29	PRN 148	Reserved	Reserved
98	SVID 30	Freq. 30	RCN 30	PRN 30	PRN 149	Reserved	Reserved
99	SVID 31	Freq. 31	RCN 31	PRN 31	PRN 150	Reserved	Reserved
100	SVID 32	Freq. 32	RCN 32	PRN 32	PRN 151	Reserved	Reserved
101	SVID 33	Reserved	RCN 33	PRN 33	PRN 152	Reserved	Reserved
102	SVID 34	Reserved	RCN 34	PRN 34	PRN 153	Reserved	Reserved
103	SVID 35	Reserved	RCN 35	PRN 35	PRN 154	Reserved	Reserved
104	SVID 36	Reserved	RCN 36	PRN 36	PRN 155	Reserved	Reserved
105	Reserved	Reserved	RCN 37	PRN 37	PRN 156	Reserved	Reserved
106	Reserved	Reserved	Reserved	PRN 38	PRN 157	Reserved	Reserved
107	Reserved	Reserved	Reserved	PRN 39	PRN 158	Reserved	Reserved
108	Reserved	Reserved	Reserved	PRN 40	Reserved	Reserved	Reserved
109	Reserved	Reserved	Reserved	PRN 41	Reserved	Reserved	Reserved
110	Reserved	Reserved	Reserved	PRN 42	Reserved	Reserved	Reserved
111	Reserved	Reserved	Reserved	PRN 43	Reserved	Reserved	Reserved
112	Reserved	Reserved	Reserved	PRN 44	Reserved	Reserved	Reserved
113	Reserved	Reserved	Reserved	PRN 45	Reserved	Reserved	Reserved
114	Reserved	Reserved	Reserved	PRN 46	Reserved	Reserved	Reserved
115	Reserved	Reserved	Reserved	PRN 47	Reserved	Reserved	Reserved
116	Reserved	Reserved	Reserved	PRN 48	Reserved	Reserved	Reserved
117	Reserved	Reserved	Reserved	PRN 49	Reserved	Reserved	Reserved
118	Reserved	Reserved	Reserved	PRN 50	Reserved	Reserved	Reserved
119	Reserved	Reserved	Reserved	PRN 51	Reserved	Reserved	Reserved

Bits	Galileo	GLONASS	BeiDou	GPS	SBAS	QZSS	IRNSS
120	Reserved	Reserved	Reserved	PRN 52	Reserved	Reserved	Reserved
121	Reserved	Reserved	Reserved	PRN 53	Reserved	Reserved	Reserved
122	Reserved	Reserved	Reserved	PRN 54	Reserved	Reserved	Reserved
123	Reserved	Reserved	Reserved	PRN 55	Reserved	Reserved	Reserved
124	Reserved	Reserved	Reserved	PRN 56	Reserved	Reserved	Reserved
125	Reserved	Reserved	Reserved	PRN 57	Reserved	Reserved	Reserved
126	Reserved	Reserved	Reserved	PRN 58	Reserved	Reserved	Reserved
127	Reserved	Reserved	Reserved	PRN 59	Reserved	Reserved	Reserved
128	Reserved	Reserved	Reserved	PRN 60	Reserved	Reserved	Reserved
129	Reserved	Reserved	Reserved	PRN 61	Reserved	Reserved	Reserved
130	Reserved	Reserved	Reserved	PRN 62	Reserved	Reserved	Reserved
131	Reserved	Reserved	Reserved	PRN 63	Reserved	Reserved	Reserved

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

Rationale:
CRM #14, #26 4/26/2022 Update the PRN Inclusion Mask because the entire field has moved right by 4 bits (T. Anthony)

IS800-1179:
Insertion after object IS800-1071
Section Number:
3.5.4.7.1.13
WAS:
<INSERTED OBJECT>
Redlines:
Object Heading 3.5.4.7.1.13 Reserved for ISM
Object Type: Header
IS:
Object Heading 3.5.4.7.1.13 Reserved for ISM
Object Type: Header
Rationale:
As part of the Pconst to Rconst Conversion, the message format has changed to have bits reserved for ISM use. (T. Anthony)

IS800-1180:
Insertion below object IS800-1179
Section Number:
3.5.4.7.1.13.0-1
WAS:
<INSERTED OBJECT>
Redlines:
Bits 132 through 218 of Subframe 3, Page 8 are reserved for future ISM use.
Object Type: Info-Only
IS:
Bits 132 through 218 of Subframe 3, Page 8 are reserved for future ISM use.
Object Type: Info-Only
Rationale:
As part of the Pconst to Rconst Conversion, the message format has changed to have bits reserved for ISM use. (T. Anthony)
CRM #15, #21, #34 4/26/2022 Paste error where MT-40 was used where the a subframe (Subframe 3, Page 8) is appropriate for CNAV-2 (T. Anthony)

IS800-1080:

Section Number:
3.5.4.7.1.14.0-1
WAS:
Bits 219 through 250 of Subframe 3, Page 8 are a 32-bit Cyclic Redundancy Check (CRC) specific to the ISM parameters. The ISM CRC will cover only the ISM parameters in Subframe 3, Page 8, (Bits 15 to 218). Refer to DO-246E-Change 1 document for more details on the ISM CRC.
Redlines:
Bits 219 through 250 of Subframe 3, Page 8 are a 32-bit Cyclic Redundancy Check (CRC) specific to the ISM parameters. The ISM CRC will cover only the ISM parameters in Subframe 3, Page 8, (~~B~~bits 15 ~~to~~through 218). Refer to DO-246E-Change 1 document for more details on the ISM CRC.
IS:
Bits 219 through 250 of Subframe 3, Page 8 are a 32-bit Cyclic Redundancy Check (CRC) specific to the ISM parameters. The ISM CRC will cover only the ISM parameters in Subframe 3, Page 8 (bits 15 through 218). Refer to DO-246E-Change 1 document for more details on the ISM CRC.
Rationale:
CRM #29 4/26/2022 Bit range was confusing using "nn to nn" form so converted to "nn through nn" to include the upper bound as always intended (T. Anthony) As of 6/6/2022, removed the comma just before the "(bits nn through nn)" and converted the "Bits" to lower case (T. Anthony)

 # CP Status = 'In Review': 21

# 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: 0
# of VCRM modifications: 0
# of VCRM deletions: 0
# of descriptive texts: 12
of (added/modified) tables: 2
of (added/modified) figures: 0