

Change Topic: Pseudorandom Noise (PRN) Expansion

This change package accommodates the text changes to support the proposed solution (see table below) within the public Signals-in-Space (SiS) documents. All comments must be submitted in Comments Resolution Matrix (CRM) form.

The columns in the WAS/IS table following this page are defined below:

Section Number: This number indicates the location of the text change within the document.

(WAS) <Document Title>: Contains the baseline text of the impacted document.

Proposed Heading: Contains proposed changes to existing section titles and/or the titles to new sections

Proposed Text: Contains proposed changes to baseline text.

Rationale: Contains the supporting information to explain the reason for the proposed changes.

PROBLEM STATEMENT:
Current GPS Signal-in-Space (SIS) interface documents (e.g., IS-GPS-200) specify 32 Pseudorandom Noise (PRN) codes for use by GPS receivers. As the actual size of the GPS constellation grows beyond 32 satellites, a need exists to identify additional PRN codes and associated NAV message methodology. If not resolved, the constellation cannot grow beyond 32 satellites and the residual satellites cannot be used.
SOLUTION: <i>(Proposed)</i>
Use previously reserved PRN sequences (e.g., those found in Section 6 of IS-GPS-200) for use on GPS satellites. Providing higher PRN codes (above the nominal PRN 1-32 range) for use by residual satellites which are near End-of-Life (EOL), or are otherwise less-than-perfect, will enable improved accuracy and availability of GPS PNT calculations in modernized receivers. The associated NAV message strategy precludes any impact on legacy receivers (i.e., almanac data for the lower PRN codes has no reference to the higher PRN codes making this a capability that is optionally available for newly designed receivers while being backwards compatible to existing receivers).

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Start of WAS/IS for IS-GPS-200E Changes

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
3.2.1			<p><u>Users shall only use non-dummy satellites as defined via current broadcast almanac. See Section 20.3.3.5.1.2.2 and/or Section 30.3.3.4 and/or Section 40.3.3.4 for the definition of information about the almanac. If the initial almanac is collected from P(Y) code or C/A Code it shall only be collected from PRNs 35 or 36.</u></p>	
3.2.1.1		<p>The PRN P-code for SV ID number i is a ranging code, $P_i(t)$, of 7 days in length at a chipping rate of 10.23 Mbps. The 7 day sequence is the modulo-2 sum of two sub-sequences referred to as X_1 and X_{2i}; their lengths are 15,345,000 chips and 15,345,037 chips, respectively. The X_{2i} sequence is an X2 sequence selectively delayed by 1 to 37 chips thereby allowing the basic code generation technique to produce a set of 37 mutually exclusive P-code sequences of 7 days in length. Of these, 32 are designated for use by SVs and 5 are reserved for other purposes (e.g. ground transmitters, etc.). Assignment of these code phase segments by SV-ID number (or other use) is given in Table 3-I. Additional PRN P-code sequences with assigned PRN numbers are provided in Section 6.3.5.2, Table 6-I.</p>	<p>The PRN P-code for SV ID number i is a ranging code, $P_i(t)$, of 7 days in length at a chipping rate of 10.23 Mbps. The 7 day sequence is the modulo-2 sum of two sub-sequences referred to as X_1 and X_{2i}; their lengths are 15,345,000 chips and 15,345,037 chips, respectively. The X_{2i} sequence is an X2 sequence selectively delayed by 1 to 37 chips thereby allowing the basic code generation technique to produce a set of 37 mutually exclusive P-code sequences of 7 days in length. Of these, Assignment 32 of are these designated code for phase use segments by SVs and 5 SV-ID are number reserved is for given other in purposes Table (e.g 3-la. ground transmitters, (NOTE: etc.); previous Assignment versions of these this code document phase reserved segments PRNs by 33 SV-ID through number 37 (or for other use) uses. is given Due into Table increased 3-4 system capability, PRNs 33 through 37 are being redesignated for use by SVs.)</p> <p><u>An initial Additional almanac PRN collected from P-code sequences in with the assigned upper PRN PRNs numbers must are be provided obtained in from Section PRNs 6.3.5.2, 35 Table or 6-36.</u></p>	<p>The reason for this change was to accommodate for the promotion of Table 6-I from Section 6 to Section 3 as Table 3-Ib (expanded PRNs 38-63). This note also captures the expanded utility of PRNs 33-37 which were previously not used but are now used (per Table 3-Ia and Table 3-Ib)</p>

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
3.2.1.1.1	Expanded P-Code (IIIA and subsequent blocks)			
3.2.1.1.1			<p>An expanded set of 26 P-code PRN sequences are generated by circularly shifting 26 of the original 37 sequences (over one week) by an amount corresponding to 1 day. These expanded sequences are therefore time shifted (i.e. offset) versions of 26 of the original sequences. Assignment of these expanded code phase segments by SV ID number is given in Table 3-Ib. Additional PRN P-code sequences with assigned PRN numbers are provided in Section 6.3.6.2, Table 6-I.</p>	<p>The reason for this change is to account the inclusion of higher PRNs 38-63 and to distinguish the differences between the G2 Delay and the initial G2 settings used for PRNs 1-37 and PRNs 38-63.</p>
3.2.1.3		<p>The PRN C/A-Code for SV ID number i is a Gold code, $G_i(t)$, of 1 millisecond in length at a chipping rate of 1023 Kbps. The $G_i(t)$ sequence is a linear pattern generated by the modulo-2 addition of two sub-sequences, G_1 and G_{2i}, each of which is a 1023 chip long linear pattern. The epochs of the Gold code are synchronized with the X1 epochs of the P-code. As shown in Table 3-I, the G_{2i} sequence is a G2 sequence selectively delayed by pre-assigned number of chips, thereby generating a set of different C/A-codes. Assignment of these by GPS PRN signal number is given in Table 3-I. Additional PRN C/A-code sequences with assigned PRN numbers are provided in Section 6.3.5.1, Table 6-I.</p>	<p>The PRN C/A-Code for SV ID number i is a Gold code, $G_i(t)$, of 1 millisecond in length at a chipping rate of 1023 Kbps. The $G_i(t)$ sequence is a linear pattern generated by the modulo-2 addition of two sub-sequences, G_1 and G_{2i}, each of which is a 1023 chip long linear pattern. The epochs of the Gold code are synchronized with the X1 epochs of the P-code. As shown in Table 3-Ia, the G_{2i} sequence is a G2 sequence selectively delayed by pre-assigned number of chips, thereby generating a set of different C/A-codes. Assignment of these by GPS PRN signal number is is are given in Table 3-Ia and Table 3-Ib.</p> <p>Additional</p> <p>An PRN initial almanac collected from C/A-code sequences Code within assigned the PRN upper numbers PRNs are must provided obtained in be Section from 6.3.5 PRNs 35 or 36.1, Table 6-I</p> <p>CS shall only allow transmission of either PRNs 34 or 37 of C/A code.</p>	<p>This change captures the inclusion of PRNs 33-37 (Table 3-Ia) and PRNs 38-63 (Tables 3-Ib).</p>

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
3.2.1.3.1	Expanded C/A Code (IIIA and subsequent blocks)			
3.2.1.3.1		N/A	An expanded set of 26 C/A-code PRN sequences are identified in Table 3-Ib using “G2 Delay” and “Initial G2 Setting” which is not the same as the method used in Table 3-Ia. The two-tap coder implementation method referenced and used in Table 3-Ia is not used in Table 3-Ib due to its limitation in generating C/A-code sequences. The “G2 Delay” specified in Table 3-Ib may be accomplished by using the “Initial G2 Setting” as the initialization vector for the G2 shift register of Figure 3-9. Assignment of these expanded code phase segments by SV ID number is given in Table 3-Ib. Additional PRN C/A-code sequences with assigned PRN numbers are provided in Section 6.3.5.1, Table 6-I.	The reason for this change is to account the inclusion of higher PRNs 38-63 and to distinguish the differences between the G2 Delay and the initial G2 settings used for PRNs 1-37 and PRNs 38-63.
3.2.1.4		The PRN L2 CM-code for SV ID number i is a ranging code, $C_{M,i}(t)$, which is 20 milliseconds in length at a chipping rate of 511.5 Kbps. The epochs of the L2 CM-code are synchronized with the X1 epochs of the P-code. The $C_{M,i}(t)$ sequence is a linear pattern which is short cycled every count of 10230 chips by resetting with a specified initial state. Assignment of initial states by GPS PRN signal number is given in Table 3-II. Additional PRN L2 CM-code sequence pairs are provided in Section 6.3.5.3, Table 6-II.	The PRN L2 CM-code for SV ID number i is a ranging code, $CM,i(t)$, which is 20 milliseconds in length at a chipping rate of 511.5 Kbps. The epochs of the L2 CM-code are synchronized with the X1 epochs of the P-code. The $CM,i(t)$ sequence is a linear pattern which is short cycled every count of 10230 chips by resetting with a specified initial state. Assignment of initial states by GPS PRN signal number is given in Table 3-II. Additional PRN L2 CM-code sequence pairs are provided in Section 6.3.5.3, Table 6-IIa.	This change captures the initial state changes for the C_M include of PRNs 33-37 (Table 3-IIa) and PRNs 38-63.
3.2.1.4.1	Expanded L2 CM Code			

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	(IIIA and subsequent blocks)			
3.2.1.4.1		N/A	N/A An expanded set of 26 L2 CM-Code PRN sequences are identified with assignment of initial states by SV ID number in Table 3-IIb. Additional PRN L2 CM-code sequence pairs are provided in Section 6.3.5.3, Table 6-II.	Identifies PRNs 38-63 code sequences and their associated initial states for the CM code.
3.2.1.5		The PRN L2 CL-code for SV ID number i is a ranging code, $C_{L,i}(t)$, which is 1.5 seconds in length at a chipping rate of 511.5 Kbps. The epochs of the L2 CL-code are synchronized with the X1 epochs of the P-code. The $C_{L,i}(t)$ sequence is a linear pattern which is generated using the same code generator polynomial as the one used for $C_{M,i}(t)$. However, the $C_{L,i}(t)$ sequence is short cycled by resetting with a specified initial state every code count of 767250 chips. Assignment of initial states by GPS PRN signal number is given in Table 3-II. Additional PRN L2 CL-code sequence pairs are provided in Section 6.3.5.3, Table 6-II.	The PRN L2 CL-code for SV ID number i is a ranging code, $CL,i(t)$, which is 1.5 seconds in length at a chipping rate of 511.5 Kbps. The epochs of the L2 CL-code are synchronized with the X1 epochs of the P-code. The $CL,i(t)$ sequence is a linear pattern which is generated using the same code generator polynomial as the one used for $CM,i(t)$. However, the $CL,i(t)$ sequence is short cycled by resetting with a specified initial state every code count of 767250 chips. Assignment of initial states by GPS PRN signal number is given in Table 3-II. Additional PRN L2 CL-code sequence pairs are provided in Section 6.3.5.3, Table 6-IIa.	This change captures the initial state changes for the C_L include of PRNs 33-37 (Table 3-IIa) and PRNs 38-63.
3.2.1.5.1	Expanded L2 CL-Code (IIIA and subsequent blocks).			This change captures the initial state changes for the C_L include of PRNs 33-37 (Table 3-IIa) and PRNs 38-63.
3.2.1.5.1		N/A	N/A An expanded set of 26 L2 CL-Code PRN sequences are identified with assignment of initial states by SV ID number in Table 3-IIb. Additional PRN L2 CL-code sequence pairs are provided in Section	Language inserted to

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3.2.1.5		<p style="text-align: center;">Table 3-I. Code Phase Assignments (sheet 1 of 2)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">SV ID No.</th> <th rowspan="2">GPS PRN Signal No.</th> <th colspan="2">Code Phase Selection</th> <th colspan="2">Code Delay Chips</th> <th rowspan="2">First 10 Chips Octal* C/A</th> <th rowspan="2">First 12 Chips Octal P</th> </tr> <tr> <th>C/A(G₂)****</th> <th>(X₂)</th> <th>C/A</th> <th>P</th> </tr> </thead> <tbody> <tr><td>1</td><td>1</td><td>2 ⊕ 6</td><td>1</td><td>5</td><td>1</td><td>1440</td><td>4444</td></tr> <tr><td>2</td><td>2</td><td>3 ⊕ 7</td><td>2</td><td>6</td><td>2</td><td>1620</td><td>4000</td></tr> <tr><td>3</td><td>3</td><td>4 ⊕ 8</td><td>3</td><td>7</td><td>3</td><td>1710</td><td>4222</td></tr> <tr><td>4</td><td>4</td><td>5 ⊕ 9</td><td>4</td><td>8</td><td>4</td><td>1744</td><td>4333</td></tr> <tr><td>5</td><td>5</td><td>1 ⊕ 9</td><td>5</td><td>17</td><td>5</td><td>1133</td><td>4377</td></tr> <tr><td>6</td><td>6</td><td>2 ⊕ 10</td><td>6</td><td>18</td><td>6</td><td>1455</td><td>4355</td></tr> <tr><td>7</td><td>7</td><td>1 ⊕ 8</td><td>7</td><td>139</td><td>7</td><td>1131</td><td>4344</td></tr> <tr><td>8</td><td>8</td><td>2 ⊕ 9</td><td>8</td><td>140</td><td>8</td><td>1454</td><td>4340</td></tr> <tr><td>9</td><td>9</td><td>3 ⊕ 10</td><td>9</td><td>141</td><td>9</td><td>1626</td><td>4342</td></tr> <tr><td>10</td><td>10</td><td>2 ⊕ 3</td><td>10</td><td>251</td><td>10</td><td>1504</td><td>4343</td></tr> <tr><td>11</td><td>11</td><td>3 ⊕ 4</td><td>11</td><td>252</td><td>11</td><td>1642</td><td>—</td></tr> <tr><td>12</td><td>12</td><td>5 ⊕ 6</td><td>12</td><td>254</td><td>12</td><td>1750</td><td>—</td></tr> <tr><td>13</td><td>13</td><td>6 ⊕ 7</td><td>13</td><td>255</td><td>13</td><td>1764</td><td>—</td></tr> <tr><td>14</td><td>14</td><td>7 ⊕ 8</td><td>14</td><td>256</td><td>14</td><td>1772</td><td>—</td></tr> <tr><td>15</td><td>15</td><td>8 ⊕ 9</td><td>15</td><td>257</td><td>15</td><td>1775</td><td>—</td></tr> <tr><td>16</td><td>16</td><td>9 ⊕ 10</td><td>16</td><td>258</td><td>16</td><td>1776</td><td>—</td></tr> <tr><td>17</td><td>17</td><td>1 ⊕ 4</td><td>17</td><td>469</td><td>17</td><td>1156</td><td>—</td></tr> <tr><td>18</td><td>18</td><td>2 ⊕ 5</td><td>18</td><td>470</td><td>18</td><td>1467</td><td>—</td></tr> <tr><td>19</td><td>19</td><td>3 ⊕ 6</td><td>19</td><td>471</td><td>19</td><td>1633</td><td>4343</td></tr> </tbody> </table> <p>* In the octal notation for the first 10 chips of the C/A code as shown in this column, the first digit (1) represents a "1" for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 1 are: 1100100000).</p> <p>** C/A codes 34 and 37 are common.</p> <p>*** PRN sequences 33 through 37 are reserved for other uses (e.g. ground transmitters).</p> <p>**** The two-tap coder utilized here is only an example implementation that generates a limited set of valid C/A codes.</p> <p>⊕ = "exclusive or"</p> <p>NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.</p>	SV ID No.	GPS PRN Signal No.	Code Phase Selection		Code Delay Chips		First 10 Chips Octal* C/A	First 12 Chips Octal P	C/A(G ₂)****	(X ₂)	C/A	P	1	1	2 ⊕ 6	1	5	1	1440	4444	2	2	3 ⊕ 7	2	6	2	1620	4000	3	3	4 ⊕ 8	3	7	3	1710	4222	4	4	5 ⊕ 9	4	8	4	1744	4333	5	5	1 ⊕ 9	5	17	5	1133	4377	6	6	2 ⊕ 10	6	18	6	1455	4355	7	7	1 ⊕ 8	7	139	7	1131	4344	8	8	2 ⊕ 9	8	140	8	1454	4340	9	9	3 ⊕ 10	9	141	9	1626	4342	10	10	2 ⊕ 3	10	251	10	1504	4343	11	11	3 ⊕ 4	11	252	11	1642	—	12	12	5 ⊕ 6	12	254	12	1750	—	13	13	6 ⊕ 7	13	255	13	1764	—	14	14	7 ⊕ 8	14	256	14	1772	—	15	15	8 ⊕ 9	15	257	15	1775	—	16	16	9 ⊕ 10	16	258	16	1776	—	17	17	1 ⊕ 4	17	469	17	1156	—	18	18	2 ⊕ 5	18	470	18	1467	—	19	19	3 ⊕ 6	19	471	19	1633	4343	<p style="text-align: center;">Table 3-Ia. Code Phase Assignments (sheet 1 of 2)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">SV ID No.</th> <th rowspan="2">GPS PRN Signal No.</th> <th colspan="2">Code Phase Selection</th> <th colspan="2">Code Delay Chips</th> <th rowspan="2">First 10 Chips Octal* C/A</th> <th rowspan="2">First 12 Chips Octal P</th> </tr> <tr> <th>C/A(G₂)***</th> <th>(X₂)</th> <th>C/A</th> <th>P</th> </tr> </thead> <tbody> <tr><td>1</td><td>1</td><td>2 ⊕ 6</td><td>1</td><td>5</td><td>1</td><td>1440</td><td>4444</td></tr> <tr><td>2</td><td>2</td><td>3 ⊕ 7</td><td>2</td><td>6</td><td>2</td><td>1620</td><td>4000</td></tr> <tr><td>3</td><td>3</td><td>4 ⊕ 8</td><td>3</td><td>7</td><td>3</td><td>1710</td><td>4222</td></tr> <tr><td>4</td><td>4</td><td>5 ⊕ 9</td><td>4</td><td>8</td><td>4</td><td>1744</td><td>4333</td></tr> <tr><td>5</td><td>5</td><td>1 ⊕ 9</td><td>5</td><td>17</td><td>5</td><td>1133</td><td>4377</td></tr> <tr><td>6</td><td>6</td><td>2 ⊕ 10</td><td>6</td><td>18</td><td>6</td><td>1455</td><td>4355</td></tr> <tr><td>7</td><td>7</td><td>1 ⊕ 8</td><td>7</td><td>139</td><td>7</td><td>1131</td><td>4344</td></tr> <tr><td>8</td><td>8</td><td>2 ⊕ 9</td><td>8</td><td>140</td><td>8</td><td>1454</td><td>4340</td></tr> <tr><td>9</td><td>9</td><td>3 ⊕ 10</td><td>9</td><td>141</td><td>9</td><td>1626</td><td>4342</td></tr> <tr><td>10</td><td>10</td><td>2 ⊕ 3</td><td>10</td><td>251</td><td>10</td><td>1504</td><td>4343</td></tr> <tr><td>11</td><td>11</td><td>3 ⊕ 4</td><td>11</td><td>252</td><td>11</td><td>1642</td><td>—</td></tr> <tr><td>12</td><td>12</td><td>5 ⊕ 6</td><td>12</td><td>254</td><td>12</td><td>1750</td><td>—</td></tr> <tr><td>13</td><td>13</td><td>6 ⊕ 7</td><td>13</td><td>255</td><td>13</td><td>1764</td><td>—</td></tr> <tr><td>14</td><td>14</td><td>7 ⊕ 8</td><td>14</td><td>256</td><td>14</td><td>1772</td><td>—</td></tr> <tr><td>15</td><td>15</td><td>8 ⊕ 9</td><td>15</td><td>257</td><td>15</td><td>1775</td><td>—</td></tr> <tr><td>16</td><td>16</td><td>9 ⊕ 10</td><td>16</td><td>258</td><td>16</td><td>1776</td><td>—</td></tr> <tr><td>17</td><td>17</td><td>1 ⊕ 4</td><td>17</td><td>469</td><td>17</td><td>1156</td><td>—</td></tr> <tr><td>18</td><td>18</td><td>2 ⊕ 5</td><td>18</td><td>470</td><td>18</td><td>1467</td><td>—</td></tr> <tr><td>19</td><td>19</td><td>3 ⊕ 6</td><td>19</td><td>471</td><td>19</td><td>1633</td><td>4343</td></tr> </tbody> </table> <p>* In the octal notation for the first 10 chips of the C/A code as shown in this column, the first digit (1) represents a "1" for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 1 are: 1100100000).</p> <p>** C/A codes 34 and 37 are common.</p> <p>*** The two-tap coder utilized here is only an example implementation that generates a limited set of valid C/A codes.</p> <p>⊕ = "exclusive or"</p> <p>NOTE #1: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.</p>	SV ID No.	GPS PRN Signal No.	Code Phase Selection		Code Delay Chips		First 10 Chips Octal* C/A	First 12 Chips Octal P	C/A(G ₂)***	(X ₂)	C/A	P	1	1	2 ⊕ 6	1	5	1	1440	4444	2	2	3 ⊕ 7	2	6	2	1620	4000	3	3	4 ⊕ 8	3	7	3	1710	4222	4	4	5 ⊕ 9	4	8	4	1744	4333	5	5	1 ⊕ 9	5	17	5	1133	4377	6	6	2 ⊕ 10	6	18	6	1455	4355	7	7	1 ⊕ 8	7	139	7	1131	4344	8	8	2 ⊕ 9	8	140	8	1454	4340	9	9	3 ⊕ 10	9	141	9	1626	4342	10	10	2 ⊕ 3	10	251	10	1504	4343	11	11	3 ⊕ 4	11	252	11	1642	—	12	12	5 ⊕ 6	12	254	12	1750	—	13	13	6 ⊕ 7	13	255	13	1764	—	14	14	7 ⊕ 8	14	256	14	1772	—	15	15	8 ⊕ 9	15	257	15	1775	—	16	16	9 ⊕ 10	16	258	16	1776	—	17	17	1 ⊕ 4	17	469	17	1156	—	18	18	2 ⊕ 5	18	470	18	1467	—	19	19	3 ⊕ 6	19	471	19	1633	4343	<p>Changes accommodate the following:</p> <ol style="list-style-type: none"> 1) Name change from Table 3-I to Table 3-Ia. 2) Restriction previously placed on PRNs 33-37 (eliminate ** language) 3) Note is being inserted to make users aware the users if a PRN is NOT listed in the almanac they are not search the unlisted PRN.
SV ID No.	GPS PRN Signal No.	Code Phase Selection			Code Delay Chips		First 10 Chips Octal* C/A	First 12 Chips Octal P																																																																																																																																																																																																																																																																																																																																				
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UNCLASSIFIED

Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale

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25	25	5 ⊕ 7	25	513	25	1743																																																																																																																																																																																																																																																																																																																										
26	26	6 ⊕ 8	26	514	26	1761																																																																																																																																																																																																																																																																																																																										
27	27	7 ⊕ 9	27	515	27	1770																																																																																																																																																																																																																																																																																																																										
28	28	8 ⊕ 10	28	516	28	1774																																																																																																																																																																																																																																																																																																																										
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37**	37**	4 ⊕ 10	37	950	37	1713	4343																																																																																																																																																																																																																																																																																																																									

UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																											
3.2.1.5			<p>Table 3-Ib. Expanded Code Phase Assignments (III and subsequent blocks only)</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">SV ID No.</th> <th rowspan="2">GPS PRN Signal No.</th> <th colspan="3">Code Phase Selection</th> <th rowspan="2">P-code Relative Delay (Hours) **</th> <th rowspan="2">First 10 Chips Octal* C/A</th> <th rowspan="2">First 12 Chips Octal P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)*</th> <th>X2 Delay (Chips)</th> </tr> </thead> <tbody> <tr><td>70</td><td>38</td><td>67</td><td>0017</td><td>1</td><td>P₁(t-24)</td><td>1760</td><td>3373</td></tr> <tr><td>71</td><td>39</td><td>103</td><td>0541</td><td>2</td><td>P₂(t-24)</td><td>1236</td><td>3757</td></tr> <tr><td>72</td><td>40</td><td>91</td><td>1714</td><td>3</td><td>P₃(t-24)</td><td>0063</td><td>7545</td></tr> <tr><td>73</td><td>41</td><td>19</td><td>1151</td><td>4</td><td>P₄(t-24)</td><td>0626</td><td>5440</td></tr> <tr><td>74</td><td>42</td><td>679</td><td>1651</td><td>5</td><td>P₅(t-24)</td><td>0126</td><td>4402</td></tr> <tr><td>75</td><td>43</td><td>225</td><td>0103</td><td>6</td><td>P₆(t-24)</td><td>1674</td><td>4023</td></tr> <tr><td>76</td><td>44</td><td>625</td><td>0543</td><td>7</td><td>P₇(t-24)</td><td>1234</td><td>0233</td></tr> <tr><td>77</td><td>45</td><td>946</td><td>1506</td><td>8</td><td>P₈(t-24)</td><td>0271</td><td>2537</td></tr> <tr><td>78</td><td>46</td><td>638</td><td>1065</td><td>9</td><td>P₉(t-24)</td><td>0712</td><td>3375</td></tr> <tr><td>79</td><td>47</td><td>161</td><td>1564</td><td>10</td><td>P₁₀(t-24)</td><td>0213</td><td>3754</td></tr> <tr><td>80</td><td>48</td><td>1001</td><td>1365</td><td>11</td><td>P₁₁(t-24)</td><td>0412</td><td>3544</td></tr> <tr><td>81</td><td>49</td><td>554</td><td>1541</td><td>12</td><td>P₁₂(t-24)</td><td>0236</td><td>7440</td></tr> <tr><td>82</td><td>50</td><td>280</td><td>1327</td><td>13</td><td>P₁₃(t-24)</td><td>0450</td><td>5402</td></tr> <tr><td>83</td><td>51</td><td>710</td><td>1716</td><td>14</td><td>P₁₄(t-24)</td><td>0061</td><td>2422</td></tr> <tr><td>84</td><td>52</td><td>709</td><td>1635</td><td>15</td><td>P₁₅(t-24)</td><td>0142</td><td>1033</td></tr> <tr><td>85</td><td>53</td><td>775</td><td>1002</td><td>16</td><td>P₁₆(t-24)</td><td>0775</td><td>2637</td></tr> <tr><td>86</td><td>54</td><td>864</td><td>1015</td><td>17</td><td>P₁₇(t-24)</td><td>0762</td><td>3135</td></tr> <tr><td>87</td><td>55</td><td>558</td><td>1666</td><td>18</td><td>P₁₈(t-24)</td><td>0111</td><td>5674</td></tr> <tr><td>88</td><td>56</td><td>220</td><td>0177</td><td>19</td><td>P₁₉(t-24)</td><td>1600</td><td>4514</td></tr> <tr><td>89</td><td>57</td><td>397</td><td>1353</td><td>20</td><td>P₂₀(t-24)</td><td>0424</td><td>2064</td></tr> <tr><td>90</td><td>58</td><td>55</td><td>0426</td><td>21</td><td>P₂₁(t-24)</td><td>1351</td><td>5210</td></tr> <tr><td>91</td><td>59</td><td>898</td><td>0227</td><td>22</td><td>P₂₂(t-24)</td><td>1550</td><td>2726</td></tr> <tr><td>92</td><td>60</td><td>759</td><td>0506</td><td>23</td><td>P₂₃(t-24)</td><td>1271</td><td>1171</td></tr> <tr><td>93</td><td>61</td><td>367</td><td>0336</td><td>24</td><td>P₂₄(t-24)</td><td>1441</td><td>2656</td></tr> <tr><td>94</td><td>62</td><td>299</td><td>1333</td><td>25</td><td>P₂₅(t-24)</td><td>0444</td><td>5105</td></tr> <tr><td>95</td><td>63</td><td>1018</td><td>1745</td><td>26</td><td>P₂₆(t-24)</td><td>0032</td><td>2660</td></tr> </tbody> </table> <p>* In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 64 are: 1101010011).</p> <p>** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.</p> <p>NOTE #1: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.</p> <p>NOTE #2: PRNs 38-63 are required per this Table if a manufacturer chooses to include these PRNs in their receiver design.</p>	SV ID No.	GPS PRN Signal No.	Code Phase Selection			P-code Relative Delay (Hours) **	First 10 Chips Octal* C/A	First 12 Chips Octal P	G2 Delay (Chips)	Initial G2 Setting (Octal)*	X2 Delay (Chips)	70	38	67	0017	1	P ₁ (t-24)	1760	3373	71	39	103	0541	2	P ₂ (t-24)	1236	3757	72	40	91	1714	3	P ₃ (t-24)	0063	7545	73	41	19	1151	4	P ₄ (t-24)	0626	5440	74	42	679	1651	5	P ₅ (t-24)	0126	4402	75	43	225	0103	6	P ₆ (t-24)	1674	4023	76	44	625	0543	7	P ₇ (t-24)	1234	0233	77	45	946	1506	8	P ₈ (t-24)	0271	2537	78	46	638	1065	9	P ₉ (t-24)	0712	3375	79	47	161	1564	10	P ₁₀ (t-24)	0213	3754	80	48	1001	1365	11	P ₁₁ (t-24)	0412	3544	81	49	554	1541	12	P ₁₂ (t-24)	0236	7440	82	50	280	1327	13	P ₁₃ (t-24)	0450	5402	83	51	710	1716	14	P ₁₄ (t-24)	0061	2422	84	52	709	1635	15	P ₁₅ (t-24)	0142	1033	85	53	775	1002	16	P ₁₆ (t-24)	0775	2637	86	54	864	1015	17	P ₁₇ (t-24)	0762	3135	87	55	558	1666	18	P ₁₈ (t-24)	0111	5674	88	56	220	0177	19	P ₁₉ (t-24)	1600	4514	89	57	397	1353	20	P ₂₀ (t-24)	0424	2064	90	58	55	0426	21	P ₂₁ (t-24)	1351	5210	91	59	898	0227	22	P ₂₂ (t-24)	1550	2726	92	60	759	0506	23	P ₂₃ (t-24)	1271	1171	93	61	367	0336	24	P ₂₄ (t-24)	1441	2656	94	62	299	1333	25	P ₂₅ (t-24)	0444	5105	95	63	1018	1745	26	P ₂₆ (t-24)	0032	2660	<p>Table 6-I has been promoted to Table 3-Ib to capture PRNs 38-63 per PRN expansion.</p> <p>Note that the first 12 Octals have changed for PRNs 40, 44, 49, 52, and 60 due to the change in the sign of the equation "P_i(t) = P_{i-37x(t + xT)"}</p>
SV ID No.	GPS PRN Signal No.	Code Phase Selection				P-code Relative Delay (Hours) **	First 10 Chips Octal* C/A	First 12 Chips Octal P																																																																																																																																																																																																																							
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70	38	67	0017	1	P ₁ (t-24)	1760	3373																																																																																																																																																																																																																								
71	39	103	0541	2	P ₂ (t-24)	1236	3757																																																																																																																																																																																																																								
72	40	91	1714	3	P ₃ (t-24)	0063	7545																																																																																																																																																																																																																								
73	41	19	1151	4	P ₄ (t-24)	0626	5440																																																																																																																																																																																																																								
74	42	679	1651	5	P ₅ (t-24)	0126	4402																																																																																																																																																																																																																								
75	43	225	0103	6	P ₆ (t-24)	1674	4023																																																																																																																																																																																																																								
76	44	625	0543	7	P ₇ (t-24)	1234	0233																																																																																																																																																																																																																								
77	45	946	1506	8	P ₈ (t-24)	0271	2537																																																																																																																																																																																																																								
78	46	638	1065	9	P ₉ (t-24)	0712	3375																																																																																																																																																																																																																								
79	47	161	1564	10	P ₁₀ (t-24)	0213	3754																																																																																																																																																																																																																								
80	48	1001	1365	11	P ₁₁ (t-24)	0412	3544																																																																																																																																																																																																																								
81	49	554	1541	12	P ₁₂ (t-24)	0236	7440																																																																																																																																																																																																																								
82	50	280	1327	13	P ₁₃ (t-24)	0450	5402																																																																																																																																																																																																																								
83	51	710	1716	14	P ₁₄ (t-24)	0061	2422																																																																																																																																																																																																																								
84	52	709	1635	15	P ₁₅ (t-24)	0142	1033																																																																																																																																																																																																																								
85	53	775	1002	16	P ₁₆ (t-24)	0775	2637																																																																																																																																																																																																																								
86	54	864	1015	17	P ₁₇ (t-24)	0762	3135																																																																																																																																																																																																																								
87	55	558	1666	18	P ₁₈ (t-24)	0111	5674																																																																																																																																																																																																																								
88	56	220	0177	19	P ₁₉ (t-24)	1600	4514																																																																																																																																																																																																																								
89	57	397	1353	20	P ₂₀ (t-24)	0424	2064																																																																																																																																																																																																																								
90	58	55	0426	21	P ₂₁ (t-24)	1351	5210																																																																																																																																																																																																																								
91	59	898	0227	22	P ₂₂ (t-24)	1550	2726																																																																																																																																																																																																																								
92	60	759	0506	23	P ₂₃ (t-24)	1271	1171																																																																																																																																																																																																																								
93	61	367	0336	24	P ₂₄ (t-24)	1441	2656																																																																																																																																																																																																																								
94	62	299	1333	25	P ₂₅ (t-24)	0444	5105																																																																																																																																																																																																																								
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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

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UNCLASSIFIED

Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																						
3.2.1.5			<p style="text-align: center;">Table 3-IIb. Expanded Code Phase Assignments (III and subsequent blocks only)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">SV ID No.</th> <th rowspan="2">GPS PRN Signal No.</th> <th colspan="2">Initial Shift Register State (Octal)</th> <th colspan="2">End Shift Register State (Octal)</th> </tr> <tr> <th>L2 CM</th> <th>L2 CL</th> <th>L2 CM*</th> <th>L2 CL**</th> </tr> </thead> <tbody> <tr><td>70</td><td>38</td><td>771353753</td><td>101232630</td><td>453413162</td><td>463624741</td></tr> <tr><td>71</td><td>39</td><td>226107701</td><td>132525726</td><td>637760505</td><td>673421367</td></tr> <tr><td>72</td><td>40</td><td>022025110</td><td>315216367</td><td>612775765</td><td>703006075</td></tr> <tr><td>73</td><td>41</td><td>402466344</td><td>377046065</td><td>136315217</td><td>746566507</td></tr> <tr><td>74</td><td>42</td><td>752566114</td><td>655351360</td><td>264252240</td><td>444022714</td></tr> 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<tr><td>84</td><td>52</td><td>767360553</td><td>463506741</td><td>330610170</td><td>750231416</td></tr> <tr><td>85</td><td>53</td><td>023127030</td><td>617127534</td><td>744312067</td><td>541445326</td></tr> <tr><td>86</td><td>54</td><td>431343777</td><td>026050332</td><td>154235152</td><td>316216573</td></tr> <tr><td>87</td><td>55</td><td>747317317</td><td>733774235</td><td>525024652</td><td>007360406</td></tr> <tr><td>88</td><td>56</td><td>045706125</td><td>751477772</td><td>535207413</td><td>112114774</td></tr> <tr><td>89</td><td>57</td><td>002744276</td><td>417631550</td><td>655375733</td><td>042303316</td></tr> <tr><td>90</td><td>58</td><td>060036467</td><td>052247456</td><td>316666241</td><td>353150521</td></tr> <tr><td>91</td><td>59</td><td>217744147</td><td>560404163</td><td>525453337</td><td>044511154</td></tr> <tr><td>92</td><td>60</td><td>603340174</td><td>417751005</td><td>114323414</td><td>244410144</td></tr> <tr><td>93</td><td>61</td><td>326616775</td><td>004302173</td><td>755234667</td><td>562324657</td></tr> <tr><td>94</td><td>62</td><td>063240065</td><td>715005045</td><td>526032633</td><td>027501534</td></tr> <tr><td>95</td><td>63</td><td>111460621</td><td>001154457</td><td>602375063</td><td>521240373</td></tr> </tbody> </table> <p style="text-align: center;">* Short cycled period = 10230 ** Short cycled period = 767250.</p> <p style="text-align: center;">NOTE #1: There are many other available initial register states which can be used for other signal transmitters including any additional SVs in future.</p> <p style="text-align: center;">NOTE #2: PRNs 38-63 are required per this Table if a manufacturer chooses to include these PRNs in their receiver design.</p>	SV ID No.	GPS PRN Signal No.	Initial Shift Register State (Octal)		End Shift Register State (Octal)		L2 CM	L2 CL	L2 CM*	L2 CL**	70	38	771353753	101232630	453413162	463624741	71	39	226107701	132525726	637760505	673421367	72	40	022025110	315216367	612775765	703006075	73	41	402466344	377046065	136315217	746566507	74	42	752566114	655351360	264252240	444022714	75	43	702011164	435776513	113027466	136645570	76	44	041216771	744242321	774524245	645752300	77	45	047457275	024346717	161633757	656113341	78	46	266333164	562646415	603442167	015705106	79	47	713167356	731455342	213146546	002757466	80	48	060546335	723352536	721323277	100273370	81	49	355173035	000013134	207073253	304463615	82	50	617201036	011566642	130632332	054341657	83	51	157465571	475432222	606370621	333276704	84	52	767360553	463506741	330610170	750231416	85	53	023127030	617127534	744312067	541445326	86	54	431343777	026050332	154235152	316216573	87	55	747317317	733774235	525024652	007360406	88	56	045706125	751477772	535207413	112114774	89	57	002744276	417631550	655375733	042303316	90	58	060036467	052247456	316666241	353150521	91	59	217744147	560404163	525453337	044511154	92	60	603340174	417751005	114323414	244410144	93	61	326616775	004302173	755234667	562324657	94	62	063240065	715005045	526032633	027501534	95	63	111460621	001154457	602375063	521240373	Table 3-IIb promoted from Table 6-II to reflect the additional code phase assignments for PRNs 38-63.
SV ID No.	GPS PRN Signal No.	Initial Shift Register State (Octal)				End Shift Register State (Octal)																																																																																																																																																																				
		L2 CM	L2 CL	L2 CM*	L2 CL**																																																																																																																																																																					
70	38	771353753	101232630	453413162	463624741																																																																																																																																																																					
71	39	226107701	132525726	637760505	673421367																																																																																																																																																																					
72	40	022025110	315216367	612775765	703006075																																																																																																																																																																					
73	41	402466344	377046065	136315217	746566507																																																																																																																																																																					
74	42	752566114	655351360	264252240	444022714																																																																																																																																																																					
75	43	702011164	435776513	113027466	136645570																																																																																																																																																																					
76	44	041216771	744242321	774524245	645752300																																																																																																																																																																					
77	45	047457275	024346717	161633757	656113341																																																																																																																																																																					
78	46	266333164	562646415	603442167	015705106																																																																																																																																																																					
79	47	713167356	731455342	213146546	002757466																																																																																																																																																																					
80	48	060546335	723352536	721323277	100273370																																																																																																																																																																					
81	49	355173035	000013134	207073253	304463615																																																																																																																																																																					
82	50	617201036	011566642	130632332	054341657																																																																																																																																																																					
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92	60	603340174	417751005	114323414	244410144																																																																																																																																																																					
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95	63	111460621	001154457	602375063	521240373																																																																																																																																																																					
3.2.2		The NAV data, D(t), includes SV ephemerides, system time, SV clock behavior data, status messages and C/A to P (or Y) code handover information, etc. The 50 bps data is modulo-2	The NAV data, D(t), includes SV ephemerides, system time, SV clock behavior data, status messages and C/A to P (or Y) code handover information, etc. The 50 bps data is modulo-2 added to the P(Y)-	The language has been																																																																																																																																																																						

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		<p>added to the P(Y)- and C/A- codes; the resultant bit-trains are used to modulate the L1 and L2 carriers. For a given SV, the data train D(t), if present, is common to the P(Y)- and C/A- codes on both the L1 and L2 channels. The content and characteristics of the NAV data, D(t), are given in Appendix II of this document.</p>	<p>and C/A- codes; the resultant bit-trains are used to modulate the L1 and L2 carriers. For a given SV, the data train D(t), if present, is common to the P(Y)- and C/A- codes on both the L1 and L2 channels. The content and characteristics of the NAV data, D(t), are given in Appendix II of this document for legacy NAV (LNAV) data added to the lower set of PRN numbers (PRN 1-32) and Appendix IV of this document for LNAV data added to the upper set of PRN numbers (PRN 33-63).</p>	<p>inserted here to reflect the addition of Appendix IV to reference the D(t) message structure as it applies to the upper PRNs (38-63).</p>
3.3.2.1		<p>The $P_i(t)$ pattern (P-code) is generated by the modulo-2 summation of two PRN codes, $X_1(t)$ and $X_2(t - iT)$, where T is the period of one P-code chip and equals $(1.023E7)^{-1}$ seconds, while i is an integer from 1 through 37. This allows the generation of 37 unique P(t) code phases (identified in Table 3-1) using the same basic code generator.</p>	<p>The $P_i(t)$ pattern (P-code) is generated by the modulo-2 summation of two PRN codes, $X_1(t)$ and $X_2(t - iT)$, where T is the period of one P-code chip and equals $(1.023E7)^{-1}$ seconds, while i is an integer from 1 through 37. This allows the generation of 37 unique P(t) code phases (identified in Table 3-1a) using the same basic code generator.</p> <p>Expanded P-code PRN sequences, $P_i(t)$ where $38 \leq i \leq 63$, are described as follows:</p> <p>$P_i(t) = P_{i-37}(t + T)$,</p> <p>where i is an integer from 38 to 63 and T is defined to equal 24 hours.</p> <p>As an example, the P-code sequence for PRN 38 is the same sequence as PRN 1 shifted 24 hours into a week (i.e. 1st chip of PRN 38 at beginning of week is the same chip for PRN 1 at 24 hours after beginning of week). The list of expanded P-code PRN assignments is identified in Table 3-1b.</p> <p>The linear $G_i(t)$ pattern (C/A-code) is the modulo-2 sum of two 1023-bit linear patterns, G_1 and G_2. The latter sequence is selectively delayed by an integer number of chips to produce many different $G(t)$ patterns (defined in Tables 3-1a and 3-1b).</p> <p>The $CM_{,i}(t)$ pattern (L2 CM-code) is a linear pattern which is reset with a specified initial state every code count of 10230 chips. Different initial states are used to generate different $CM_{,i}(t)$ patterns (defined in Tables 3-1a and 3-1b).</p> <p>The $CL_{,i}(t)$ pattern (L2 CL-code) is also a linear pattern but with a longer reset period of 767250 chips. Different initial states are used to generate different $CL_{,i}(t)$ patterns (defined in Tables 3-1a and 3-</p>	<p>Language implemented to detail the equations used to generate PRNs > 37 (38-63).</p>

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			<p>11b).</p> <p>For a given SV-ID, two different initial states are used to generate different CL,i(t) and CM,i(t) patterns.</p> <p>Section 6.3.5 provides a selected subset of additional P-, L2 CM-, L2 CL-, and the C/A-code sequences with assigned PRN numbers.</p>	
3.3.2.2		<p>Figure 3-6 shows a functional P-code mechanization. Signal component timing is shown in Figure 3-7, while the end-of-week reset timing and the final code vector states are given in Tables 3-VI and 3-VII, respectively.</p>	<p>Figure 3-6 shows a functional P-code mechanization for the original 37 unique P(t) code phases. Signal component timing for these original P(t) code phases is shown in Figure 3-7, while the end-of-week reset timing and the final code vector states are given in Tables 3-VI and 3-VII, respectively.</p>	<p>More exacting language placed here to reference the mechanization for the original 37 unique P(t) code phases.</p>

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3.3.2.3				<p>Note added to point out the the diagram is valid for PRNs 1-32. In order for the diagram be valid for the higher PRNs the G1 Register should be XOR-ed directly to the G2 Register in order to make Gi. These PRNs do not use the Phase Select Logic box for G2i generation.</p>
		<p>Figure 3-10: Example C/A-Code Generation</p> <p style="color: red; border: 1px solid red; border-radius: 50%; padding: 2px; display: inline-block;">Note: valid for C/A PRNs 1-32. For PRNs 33-63, the G1 Register should be XOR-ed directly to the G2 Register in order to make Gi. These PRNs do not use the Phase Select Logic box for G2i generation.</p>		

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		Figure 3-10. Example C/A-Code Generation		
3.3.3		The content and format of the NAV data, D(t), and the CNAV data, D _C (t), are given in Appendices II and III, respectively, of this document.	The content and format of the NAV LNAV data, D(t), are given in Appendices II/IV of this document . The content and format of the CNAV data, D_C D _C (t), are given in Appendices II and Appendix III, Appendix III , respectively, of this document.	Language placed here as a correct reference for the CNAV and LNAV data and format with in IS-GPS-200.
6.3.6	Additional PRN Code sequences expansion Sequences			
6.3.6		The additional PRN sequences provided in this section are for information only. The additional PRN sequences identified in this section are not applicable to Block II/IIA, IIR/IIR-M, IIF SVs. In addition, the current valid range for GPS PRN signal number for C/A- and P-code is 1 - 37 as specified in Table 3-I. The PRN sequences provided in this section are for other L1/L2 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, and potential use in the future by GPS.	The additional PRN sequences provided in this section are for information only. The additional PRN sequences identified in this section are not applicable to Block II/IIA, IIR/IIR-M, IIF GPS SVs. In addition, the current valid range ranges for GPS PRN signal number for C/A- and P-code is are 1--37 and 38-63 as specified in Table 3- Ia Ia and Table 3- Ib Ib . The PRN sequences provided in this section are for other L1/L2 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, and potential use in the future by GPS.	Update additional PRN to use Legacy NAV (LNAV)
6.3.6.1		The PRN C/A-code is described in Section 3.2.1.3 and 36 legacy C/A-code sequences are assigned by SV-ID number in Table 3-I. An additional set of 173 C/A-code PRN sequences are selected and assigned with PRN numbers in this section as shown in Table 6-I.	The PRN C/A-code is described in Section 3.2.1.3 and 36 62 legacy unique C/A-code sequences are assigned by SV-ID number in Table Tables 3-Ia and 3-Ib . An additional set of 173 147 C/A-code PRN sequences are selected and assigned with PRN numbers in this section as shown in Table 6-I.	Language describes the PRNs > 63

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				and the references to them with respect to the C/A code.
6.3.6.1		Among the 173 additional sequences; PRN numbers 38 through 63 are reserved for future GPS SVs; PRN numbers 64 through 119 are reserved for future Ground Based Augmentation System (GBAS) and other augmentation systems;	Among the 173 147 additional sequences; PRN numbers 38 through 63 are reserved for future GPS SVs; PRN numbers 64 through 119 are reserved for future Ground Based Augmentation System (GBAS) and other augmentation systems;	
6.3.6.1		PRN numbers 120 through 158 are reserved for SBAS; and PRN numbers 159 through 210 are reserved for other Global Navigation Satellite System (GNSS) applications.	PRN numbers 120 through 158 are reserved for SBAS; <u>PRN numbers 64 through 119</u> and PRN numbers 159 through 210 are reserved for other Global Navigation Satellite System (GNSS) applications.	
6.3.6.1		It should be noted that, in Table 6-I, the C/A-code sequences are identified by “G2 Delay” and “Initial G2 Setting” which is not the same as the method used in Table 3-I. The two-tap coder implementation method referenced and used in Table 3-I is not used in Table 6-I due to its limitation in generating C/A-code sequences. The “G2 Delay” specified in Table 6-I may be accomplished by using the “Initial G2 Setting” as the initialization vector for the G2 shift register of Figure 3-9.	It should be noted that, in Table 6-I, the C/A-code sequences are identified by “G2 Delay” and “Initial G2 Setting” which is are not the same as the method used in Table 3- Ia . The two-tap coder implementation method referenced and used in Table 3- Ia is not used in Table 6-I due to its limitation in generating C/A-code sequences. The “G2 Delay” specified in Table 6-I may be accomplished by using the “Initial G2 Setting” as the initialization vector for the G2 shift register <u>of Figure 3-9. For higher order PRNs (>37) the two-tap output mask is not used and the output of the G2 register becomes tap -10 (10th tap) which is labeled as the "output" in</u> Figure 3-9.	
6.3.6.2		The PRN P-code set of 37 mutually exclusive sequences are described in Section 3.2.1.1, and assignment of these code segments by SV-ID number is given in Table 3-I. An additional set of 173 P-code PRN sequences are described in this section. Among the 173 additional sequences; PRN numbers 38 through 63 are reserved for future GPS SVs; PRN numbers 64 through 119 are reserved for future GBAS and other augmentation systems; and PRN numbers 120 through 210 are reserved for other future applications. For GPS application, the CNAV data, $D_c(t)$, which may include additional future military message types, will be modulo-2 added to the P-code sequences of PRN numbers 38 through 63. The P-code PRN numbers and their code sequences defined in Table 6-I are not for general use and will be approved, controlled, and managed by the GPSW.	The PRN P-code set of 37 63 mutually exclusive sequences are described in Section 3.2.1.1, and assignment of these code segments by SV-ID number is given in Table Tables 3- Ia and 3-Ib . An additional set of 173 147 P-code PRN sequences are described in this section. Among the 173 147 additional sequences; PRN numbers 38 through 63 are reserved for future GPS SVs; PRN numbers 64 through 119 are reserved for future GBAS and other augmentation systems; and PRN numbers 120 through 210 are reserved for other future applications. For GPS application, the CNAV data, $D_c(t)$, which may include additional future military message types, will be modulo-2 added to the P-code sequences of PRN numbers 38 through GNSS 63 applications. The P-code PRN numbers and their code sequences defined in Table 6-I are not for general use and will be approved, controlled, and managed by the GPSW GPS Directorate.	Language describes the PRNs > 63 and the references to them with respect to the P-code.
6.3.6.2.1		The generation of 37 mutually exclusive P-code PRN sequences are described in Section 3.3.2.2. The additional set of 173 P-code PRN sequences are generated by circularly shifting each of the original 37 sequences (over one week) by an amount corresponding to 1, 2, 3, 4, or 5 days. The additional sequences are therefore time shifted (i.e. offset) versions of the	The generation of 37 mutually exclusive P-code PRN sequences are described in Section 3.3.2.2. The An additional set of 173 147 P-code PRN sequences are generated by circularly shifting each of the original 37 sequences (over one week) by an amount corresponding to 1, 2, 3, 4, or 5 days. The additional sequences are therefore time shifted (i.e. offset) versions of the original 37 sequences.	Language addresses PRNs > than

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		<p>original 37 sequences. These offset P-code PRN sequences, $P_i(t)$, are described as follows:</p> $P_i(t) = P_{i-37x}(t - xT),$ <p>where i is an integer from 38 to 210, x is an integer portion of $(i-1)/37$, and T is defined to equal 24 hours.</p>	<p>These offset P-code PRN sequences, $P_i(t)$, are described as follows:</p> $P_i(t) = P_{i-37x}(t \pm xT),$ <p>where i is an integer from 3864 to 210, x is an integer portion of $(i-1)/37$, and T is defined to equal 24 hours.</p> <p>As an example, P-code sequence for PRN 91 would be the same sequence as PRN 17 shifted 48 hours into a week (i.e. 1st chip of PRN 91 at beginning of week is the same chip for PRN 17 at 48 hours after beginning of week). The complete list of the additional P-code PRN assignments is shown in Table 6-I. Any assignment of a P-code PRN number and its code sequence for any additional SV and/or other L1/L2 signal applications will be selected from the sequences of Table 6-I.</p>	255.

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Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																			
6.3.6.2.1		<p style="text-align: center;">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 1 of 6)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">PRN Signal No. *</th> <th colspan="3" style="text-align: center;">C/A</th> <th colspan="3" style="text-align: center;">P</th> </tr> <tr> <th style="text-align: center;">G2 Delay (Chips)</th> <th style="text-align: center;">Initial G2 Setting (Octal)**</th> <th style="text-align: center;">First 10 Chips (Octal)**</th> <th style="text-align: center;">X2 Delay (Chips)</th> <th style="text-align: center;">P-code Relative Delay (Hours) ***</th> <th style="text-align: center;">First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>38</td><td>67</td><td>0017</td><td>1760</td><td>1</td><td>P₁(t-24)</td><td>3373</td></tr> <tr><td>39</td><td>103</td><td>0541</td><td>1236</td><td>2</td><td>P₂(t-24)</td><td>3757</td></tr> <tr><td>40</td><td>91</td><td>1714</td><td>0063</td><td>3</td><td>P₃(t-24)</td><td>3545</td></tr> <tr><td>41</td><td>19</td><td>1151</td><td>0626</td><td>4</td><td>P₄(t-24)</td><td>5440</td></tr> <tr><td>42</td><td>679</td><td>1651</td><td>0126</td><td>5</td><td>P₅(t-24)</td><td>4402</td></tr> <tr><td>43</td><td>225</td><td>0103</td><td>1674</td><td>6</td><td>P₆(t-24)</td><td>4023</td></tr> <tr><td>44</td><td>625</td><td>0543</td><td>1234</td><td>7</td><td>P₇(t-24)</td><td>4233</td></tr> <tr><td>45</td><td>946</td><td>1506</td><td>0271</td><td>8</td><td>P₈(t-24)</td><td>2337</td></tr> <tr><td>46</td><td>638</td><td>1065</td><td>0712</td><td>9</td><td>P₉(t-24)</td><td>3375</td></tr> <tr><td>47</td><td>161</td><td>1564</td><td>0213</td><td>10</td><td>P₁₀(t-24)</td><td>3754</td></tr> <tr><td>48</td><td>1001</td><td>1365</td><td>0412</td><td>11</td><td>P₁₁(t-24)</td><td>3544</td></tr> <tr><td>49</td><td>554</td><td>1541</td><td>0236</td><td>12</td><td>P₁₂(t-24)</td><td>3440</td></tr> <tr><td>50</td><td>280</td><td>1327</td><td>0450</td><td>13</td><td>P₁₃(t-24)</td><td>5402</td></tr> <tr><td>51</td><td>710</td><td>1716</td><td>0061</td><td>14</td><td>P₁₄(t-24)</td><td>2423</td></tr> <tr><td>52</td><td>709</td><td>1635</td><td>0142</td><td>15</td><td>P₁₅(t-24)</td><td>5033</td></tr> <tr><td>53</td><td>775</td><td>1002</td><td>0775</td><td>16</td><td>P₁₆(t-24)</td><td>2637</td></tr> <tr><td>54</td><td>864</td><td>1015</td><td>0762</td><td>17</td><td>P₁₇(t-24)</td><td>3135</td></tr> <tr><td>55</td><td>558</td><td>1666</td><td>0111</td><td>18</td><td>P₁₈(t-24)</td><td>5674</td></tr> <tr><td>56</td><td>220</td><td>0177</td><td>1600</td><td>19</td><td>P₁₉(t-24)</td><td>4514</td></tr> <tr><td>57</td><td>397</td><td>1353</td><td>0424</td><td>20</td><td>P₂₀(t-24)</td><td>2064</td></tr> <tr><td>58</td><td>55</td><td>0426</td><td>1351</td><td>21</td><td>P₂₁(t-24)</td><td>5210</td></tr> <tr><td>59</td><td>898</td><td>0227</td><td>1550</td><td>22</td><td>P₂₂(t-24)</td><td>2726</td></tr> <tr><td>60</td><td>759</td><td>0506</td><td>1271</td><td>23</td><td>P₂₃(t-24)</td><td>5171</td></tr> <tr><td>61</td><td>367</td><td>0336</td><td>1441</td><td>24</td><td>P₂₄(t-24)</td><td>2656</td></tr> <tr><td>62</td><td>299</td><td>1333</td><td>0444</td><td>25</td><td>P₂₅(t-24)</td><td>5105</td></tr> <tr><td>63</td><td>1018</td><td>1745</td><td>0032</td><td>26</td><td>P₂₆(t-24)</td><td>2660</td></tr> </tbody> </table> <p style="text-align: center;">* PRN sequences 38 through 63 are reserved for GPS.</p> <p style="text-align: center;">** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. 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47	161	1564	0213	10	P ₁₀ (t-24)	3754																																																																																																																																																																																																	
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56	220	0177	1600	19	P ₁₉ (t-24)	4514																																																																																																																																																																																																	
57	397	1353	0424	20	P ₂₀ (t-24)	2064																																																																																																																																																																																																	
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See Section 6.3.5.2.1.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)	64	729	0254	1523	27	P ₂₇ (t-24)	5112	65	695	1602	0175	28	P ₂₈ (t-24)	4667	66	780	1160	0617	29	P ₂₉ (t-24)	2111	67	801	1114	0663	30	P ₃₀ (t-24)	5266	68	788	1342	0435	31	P ₃₁ (t-24)	4711	69	732	0025	1752	32	P ₃₂ (t-24)	4166	70	34	1523	0254	33	P ₃₃ (t-24)	2251	71	320	1046	0731	34	P ₃₄ (t-24)	5306	72	327	0404	1373	35	P ₃₅ (t-24)	4761	73	389	1445	0332	36	P ₃₆ (t-24)	2152	74	407	1054	0723	37	P ₃₇ (t-24)	5247	75	525	0072	1705	1	P ₁ (t-48)	5736	76	405	0262	1515	2	P ₂ (t-48)	2575	77	221	0077	1700	3	P ₃ (t-48)	3054	78	761	0521	1256	4	P ₄ (t-48)	3604	79	260	1400	0377	5	P ₅ (t-48)	3520	80	326	1010	0767	6	P ₆ (t-48)	5472	81	955	1441	0336	7	P ₇ (t-48)	4417	82	653	0365	1412	8	P ₈ (t-48)	2025	83	699	0270	1507	9	P ₉ (t-48)	3230	84	422	0263	1514	10	P ₁₀ (t-48)	5736	85	188	0613	1164	11	P ₁₁ (t-48)	4575	86	438	0277	1500	12	P ₁₂ (t-48)	2054	87	959	1562	0215	13	P ₁₃ (t-48)	3204	88	539	1674	0103	14	P ₁₄ (t-48)	3720	89	879	1113	0664	15	P ₁₅ (t-48)	5572	90	677	1245	0532	16	P ₁₆ (t-48)	4457	91	586	0606	1171	17	P ₁₇ (t-48)	4005	92	153	0136	1641	18	P ₁₈ (t-48)	2220	93	792	0256	1521	19	P ₁₉ (t-48)	3332	94	814	1550	0227	20	P ₂₀ (t-48)	3777	95	446	1234	0543	21	P ₂₁ (t-48)	3555	<p align="center">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 1 of 5)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)*</th> <th>First 10 Chips (Octal)**</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours)**</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>64</td><td>729</td><td>0254</td><td>1523</td><td>27</td><td>P₂₇(t-24)</td><td>5112</td></tr> <tr><td>65</td><td>695</td><td>1602</td><td>0175</td><td>28</td><td>P₂₈(t-24)</td><td>4667</td></tr> <tr><td>66</td><td>780</td><td>1160</td><td>0617</td><td>29</td><td>P₂₉(t-24)</td><td>6111</td></tr> <tr><td>67</td><td>801</td><td>1114</td><td>0663</td><td>30</td><td>P₃₀(t-24)</td><td>5266</td></tr> <tr><td>68</td><td>788</td><td>1342</td><td>0435</td><td>31</td><td>P₃₁(t-24)</td><td>4711</td></tr> <tr><td>69</td><td>732</td><td>0025</td><td>1752</td><td>32</td><td>P₃₂(t-24)</td><td>0166</td></tr> <tr><td>70</td><td>34</td><td>1523</td><td>0254</td><td>33</td><td>P₃₃(t-24)</td><td>6251</td></tr> <tr><td>71</td><td>320</td><td>1046</td><td>0731</td><td>34</td><td>P₃₄(t-24)</td><td>5306</td></tr> <tr><td>72</td><td>327</td><td>0404</td><td>1373</td><td>35</td><td>P₃₅(t-24)</td><td>0761</td></tr> <tr><td>73</td><td>389</td><td>1445</td><td>0332</td><td>36</td><td>P₃₆(t-24)</td><td>6152</td></tr> <tr><td>74</td><td>407</td><td>1054</td><td>0723</td><td>37</td><td>P₃₇(t-24)</td><td>1247</td></tr> <tr><td>75</td><td>525</td><td>0072</td><td>1705</td><td>1</td><td>P₁(t-48)</td><td>1736</td></tr> <tr><td>76</td><td>405</td><td>0262</td><td>1515</td><td>2</td><td>P₂(t-48)</td><td>2575</td></tr> <tr><td>77</td><td>221</td><td>0077</td><td>1700</td><td>3</td><td>P₃(t-48)</td><td>3054</td></tr> <tr><td>78</td><td>761</td><td>0521</td><td>1256</td><td>4</td><td>P₄(t-48)</td><td>3604</td></tr> <tr><td>79</td><td>260</td><td>1400</td><td>0377</td><td>5</td><td>P₅(t-48)</td><td>7520</td></tr> <tr><td>80</td><td>326</td><td>1010</td><td>0767</td><td>6</td><td>P₆(t-48)</td><td>5472</td></tr> <tr><td>81</td><td>955</td><td>1441</td><td>0336</td><td>7</td><td>P₇(t-48)</td><td>0417</td></tr> <tr><td>82</td><td>653</td><td>0365</td><td>1412</td><td>8</td><td>P₈(t-48)</td><td>2025</td></tr> <tr><td>83</td><td>699</td><td>0270</td><td>1507</td><td>9</td><td>P₉(t-48)</td><td>7230</td></tr> <tr><td>84</td><td>422</td><td>0263</td><td>1514</td><td>10</td><td>P₁₀(t-48)</td><td>5736</td></tr> <tr><td>85</td><td>188</td><td>0613</td><td>1164</td><td>11</td><td>P₁₁(t-48)</td><td>0575</td></tr> <tr><td>86</td><td>438</td><td>0277</td><td>1500</td><td>12</td><td>P₁₂(t-48)</td><td>2054</td></tr> <tr><td>87</td><td>959</td><td>1562</td><td>0215</td><td>13</td><td>P₁₃(t-48)</td><td>3204</td></tr> <tr><td>88</td><td>539</td><td>1674</td><td>0103</td><td>14</td><td>P₁₄(t-48)</td><td>7720</td></tr> <tr><td>89</td><td>879</td><td>1113</td><td>0664</td><td>15</td><td>P₁₅(t-48)</td><td>5572</td></tr> <tr><td>90</td><td>677</td><td>1245</td><td>0532</td><td>16</td><td>P₁₆(t-48)</td><td>4457</td></tr> <tr><td>91</td><td>586</td><td>0606</td><td>1171</td><td>17</td><td>P₁₇(t-48)</td><td>0005</td></tr> <tr><td>92</td><td>153</td><td>0136</td><td>1641</td><td>18</td><td>P₁₈(t-48)</td><td>2220</td></tr> <tr><td>93</td><td>792</td><td>0256</td><td>1521</td><td>19</td><td>P₁₉(t-48)</td><td>3332</td></tr> <tr><td>94</td><td>814</td><td>1550</td><td>0227</td><td>20</td><td>P₂₀(t-48)</td><td>3777</td></tr> <tr><td>95</td><td>446</td><td>1234</td><td>0543</td><td>21</td><td>P₂₁(t-48)</td><td>3555</td></tr> </tbody> </table> <p>* In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 64 are: 1101010011).</p> <p>** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.</p> <p>NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)*	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)**	First 12 Chips (Octal)	64	729	0254	1523	27	P ₂₇ (t-24)	5112	65	695	1602	0175	28	P ₂₈ (t-24)	4667	66	780	1160	0617	29	P ₂₉ (t-24)	6111	67	801	1114	0663	30	P ₃₀ (t-24)	5266	68	788	1342	0435	31	P ₃₁ (t-24)	4711	69	732	0025	1752	32	P ₃₂ (t-24)	0166	70	34	1523	0254	33	P ₃₃ (t-24)	6251	71	320	1046	0731	34	P ₃₄ (t-24)	5306	72	327	0404	1373	35	P ₃₅ (t-24)	0761	73	389	1445	0332	36	P ₃₆ (t-24)	6152	74	407	1054	0723	37	P ₃₇ (t-24)	1247	75	525	0072	1705	1	P ₁ (t-48)	1736	76	405	0262	1515	2	P ₂ (t-48)	2575	77	221	0077	1700	3	P ₃ (t-48)	3054	78	761	0521	1256	4	P ₄ (t-48)	3604	79	260	1400	0377	5	P ₅ (t-48)	7520	80	326	1010	0767	6	P ₆ (t-48)	5472	81	955	1441	0336	7	P ₇ (t-48)	0417	82	653	0365	1412	8	P ₈ (t-48)	2025	83	699	0270	1507	9	P ₉ (t-48)	7230	84	422	0263	1514	10	P ₁₀ (t-48)	5736	85	188	0613	1164	11	P ₁₁ (t-48)	0575	86	438	0277	1500	12	P ₁₂ (t-48)	2054	87	959	1562	0215	13	P ₁₃ (t-48)	3204	88	539	1674	0103	14	P ₁₄ (t-48)	7720	89	879	1113	0664	15	P ₁₅ (t-48)	5572	90	677	1245	0532	16	P ₁₆ (t-48)	4457	91	586	0606	1171	17	P ₁₇ (t-48)	0005	92	153	0136	1641	18	P ₁₈ (t-48)	2220	93	792	0256	1521	19	P ₁₉ (t-48)	3332	94	814	1550	0227	20	P ₂₀ (t-48)	3777	95	446	1234	0543	21	P ₂₁ (t-48)	3555	<p>Table 6-I is now Sheet 1 of 5 (previously 2 of 6)</p> <p>Note that the red circled 'First 12 octal chips' are the resulting changes from $P_i(t) = P_{i-37x}(t - xT)$ to $P_i(t) = P_{i-37x}(t \pm xT)$.</p>
PRN Signal No.	C/A			P																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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69	732	0025	1752	32	P ₃₂ (t-24)	4166																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
70	34	1523	0254	33	P ₃₃ (t-24)	2251																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
71	320	1046	0731	34	P ₃₄ (t-24)	5306																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
72	327	0404	1373	35	P ₃₅ (t-24)	4761																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
73	389	1445	0332	36	P ₃₆ (t-24)	2152																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
74	407	1054	0723	37	P ₃₇ (t-24)	5247																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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78	761	0521	1256	4	P ₄ (t-48)	3604																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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80	326	1010	0767	6	P ₆ (t-48)	5472																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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72	327	0404	1373	35	P ₃₅ (t-24)	0761																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
73	389	1445	0332	36	P ₃₆ (t-24)	6152																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
74	407	1054	0723	37	P ₃₇ (t-24)	1247																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
75	525	0072	1705	1	P ₁ (t-48)	1736																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
76	405	0262	1515	2	P ₂ (t-48)	2575																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
77	221	0077	1700	3	P ₃ (t-48)	3054																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
78	761	0521	1256	4	P ₄ (t-48)	3604																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
79	260	1400	0377	5	P ₅ (t-48)	7520																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
80	326	1010	0767	6	P ₆ (t-48)	5472																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
81	955	1441	0336	7	P ₇ (t-48)	0417																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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83	699	0270	1507	9	P ₉ (t-48)	7230																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
84	422	0263	1514	10	P ₁₀ (t-48)	5736																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
85	188	0613	1164	11	P ₁₁ (t-48)	0575																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
86	438	0277	1500	12	P ₁₂ (t-48)	2054																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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88	539	1674	0103	14	P ₁₄ (t-48)	7720																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
89	879	1113	0664	15	P ₁₅ (t-48)	5572																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
90	677	1245	0532	16	P ₁₆ (t-48)	4457																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
91	586	0606	1171	17	P ₁₇ (t-48)	0005																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
92	153	0136	1641	18	P ₁₈ (t-48)	2220																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
93	792	0256	1521	19	P ₁₉ (t-48)	3332																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
94	814	1550	0227	20	P ₂₀ (t-48)	3777																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
95	446	1234	0543	21	P ₂₁ (t-48)	3555																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.3.6.2.1		<p align="center">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 3 of 6)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)**</th> <th>First 10 Chips (Octal)**</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours)***</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>96</td><td>264</td><td>0260</td><td>1517</td><td>22</td><td>P₂₂(t-48)</td><td>3444</td></tr> <tr><td>97</td><td>1015</td><td>1455</td><td>0322</td><td>23</td><td>P₂₃(t-48)</td><td>3400</td></tr> <tr><td>98</td><td>278</td><td>1535</td><td>0242</td><td>24</td><td>P₂₄(t-48)</td><td>5422</td></tr> <tr><td>99</td><td>536</td><td>0746</td><td>1031</td><td>25</td><td>P₂₅(t-48)</td><td>2433</td></tr> <tr><td>100</td><td>819</td><td>1033</td><td>0744</td><td>26</td><td>P₂₆(t-48)</td><td>3037</td></tr> <tr><td>101</td><td>156</td><td>1213</td><td>0564</td><td>27</td><td>P₂₇(t-48)</td><td>5635</td></tr> <tr><td>102</td><td>957</td><td>0710</td><td>1067</td><td>28</td><td>P₂₈(t-48)</td><td>2534</td></tr> <tr><td>103</td><td>159</td><td>0721</td><td>1056</td><td>29</td><td>P₂₉(t-48)</td><td>5074</td></tr> <tr><td>104</td><td>712</td><td>1763</td><td>0014</td><td>30</td><td>P₃₀(t-48)</td><td>4614</td></tr> <tr><td>105</td><td>885</td><td>1751</td><td>0026</td><td>31</td><td>P₃₁(t-48)</td><td>2124</td></tr> <tr><td>106</td><td>461</td><td>0435</td><td>1342</td><td>32</td><td>P₃₂(t-48)</td><td>5270</td></tr> <tr><td>107</td><td>248</td><td>0735</td><td>1042</td><td>33</td><td>P₃₃(t-48)</td><td>2716</td></tr> <tr><td>108</td><td>713</td><td>0771</td><td>1006</td><td>34</td><td>P₃₄(t-48)</td><td>5165</td></tr> <tr><td>109</td><td>126</td><td>0140</td><td>1637</td><td>35</td><td>P₃₅(t-48)</td><td>4650</td></tr> <tr><td>110</td><td>807</td><td>0111</td><td>1666</td><td>36</td><td>P₃₆(t-48)</td><td>2106</td></tr> <tr><td>111</td><td>279</td><td>0656</td><td>1121</td><td>37</td><td>P₃₇(t-48)</td><td>5261</td></tr> <tr><td>112</td><td>122</td><td>1016</td><td>0761</td><td>1</td><td>P₁(t-72)</td><td>2752</td></tr> <tr><td>113</td><td>197</td><td>0462</td><td>1315</td><td>2</td><td>P₂(t-72)</td><td>5147</td></tr> <tr><td>114</td><td>693</td><td>1011</td><td>0766</td><td>3</td><td>P₃(t-72)</td><td>4641</td></tr> <tr><td>115</td><td>632</td><td>0552</td><td>1225</td><td>4</td><td>P₄(t-72)</td><td>2102</td></tr> <tr><td>116</td><td>771</td><td>0045</td><td>1732</td><td>5</td><td>P₅(t-72)</td><td>5263</td></tr> <tr><td>117</td><td>467</td><td>1104</td><td>0673</td><td>6</td><td>P₆(t-72)</td><td>2713</td></tr> <tr><td>118</td><td>647</td><td>0557</td><td>1220</td><td>7</td><td>P₇(t-72)</td><td>3167</td></tr> <tr><td>119</td><td>203</td><td>0364</td><td>1413</td><td>8</td><td>P₈(t-72)</td><td>3651</td></tr> <tr><td>120</td><td>145</td><td>1106</td><td>0671</td><td>9</td><td>P₉(t-72)</td><td>3506</td></tr> <tr><td>121</td><td>175</td><td>1241</td><td>0536</td><td>10</td><td>P₁₀(t-72)</td><td>5461</td></tr> <tr><td>122</td><td>52</td><td>0267</td><td>1510</td><td>11</td><td>P₁₁(t-72)</td><td>4412</td></tr> <tr><td>123</td><td>21</td><td>0232</td><td>1545</td><td>12</td><td>P₁₂(t-72)</td><td>2027</td></tr> <tr><td>124</td><td>237</td><td>1617</td><td>0160</td><td>13</td><td>P₁₃(t-72)</td><td>5231</td></tr> <tr><td>125</td><td>235</td><td>1076</td><td>0701</td><td>14</td><td>P₁₄(t-72)</td><td>2736</td></tr> </tbody> </table> <p>** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 111110000)</p> <p>*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)	96	264	0260	1517	22	P ₂₂ (t-48)	3444	97	1015	1455	0322	23	P ₂₃ (t-48)	3400	98	278	1535	0242	24	P ₂₄ (t-48)	5422	99	536	0746	1031	25	P ₂₅ (t-48)	2433	100	819	1033	0744	26	P ₂₆ (t-48)	3037	101	156	1213	0564	27	P ₂₇ (t-48)	5635	102	957	0710	1067	28	P ₂₈ (t-48)	2534	103	159	0721	1056	29	P ₂₉ (t-48)	5074	104	712	1763	0014	30	P ₃₀ (t-48)	4614	105	885	1751	0026	31	P ₃₁ (t-48)	2124	106	461	0435	1342	32	P ₃₂ (t-48)	5270	107	248	0735	1042	33	P ₃₃ (t-48)	2716	108	713	0771	1006	34	P ₃₄ (t-48)	5165	109	126	0140	1637	35	P ₃₅ (t-48)	4650	110	807	0111	1666	36	P ₃₆ (t-48)	2106	111	279	0656	1121	37	P ₃₇ (t-48)	5261	112	122	1016	0761	1	P ₁ (t-72)	2752	113	197	0462	1315	2	P ₂ (t-72)	5147	114	693	1011	0766	3	P ₃ (t-72)	4641	115	632	0552	1225	4	P ₄ (t-72)	2102	116	771	0045	1732	5	P ₅ (t-72)	5263	117	467	1104	0673	6	P ₆ (t-72)	2713	118	647	0557	1220	7	P ₇ (t-72)	3167	119	203	0364	1413	8	P ₈ (t-72)	3651	120	145	1106	0671	9	P ₉ (t-72)	3506	121	175	1241	0536	10	P ₁₀ (t-72)	5461	122	52	0267	1510	11	P ₁₁ (t-72)	4412	123	21	0232	1545	12	P ₁₂ (t-72)	2027	124	237	1617	0160	13	P ₁₃ (t-72)	5231	125	235	1076	0701	14	P ₁₄ (t-72)	2736	<p align="center">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 2 of 5)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)*</th> <th>First 10 Chips (Octal)*</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours)**</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>96</td><td>264</td><td>0260</td><td>1517</td><td>22</td><td>P₂₂(t-48)</td><td>3444</td></tr> <tr><td>97</td><td>1015</td><td>1455</td><td>0322</td><td>23</td><td>P₂₃(t-48)</td><td>7400</td></tr> 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(For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 64 are: 1101010011).</p> <p>** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.</p> <p>NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)*	First 10 Chips (Octal)*	X2 Delay (Chips)	P-code Relative Delay (Hours)**	First 12 Chips (Octal)	96	264	0260	1517	22	P ₂₂ (t-48)	3444	97	1015	1455	0322	23	P ₂₃ (t-48)	7400	98	278	1535	0242	24	P ₂₄ (t-48)	1422	99	536	0746	1031	25	P ₂₅ (t-48)	2433	100	819	1033	0744	26	P ₂₆ (t-48)	7037	101	156	1213	0564	27	P ₂₇ (t-48)	1635	102	957	0710	1067	28	P ₂₈ (t-48)	6534	103	159	0721	1056	29	P ₂₉ (t-48)	5074	104	712	1763	0014	30	P ₃₀ (t-48)	0614	105	885	1751	0026	31	P ₃₁ (t-48)	6124	106	461	0435	1342	32	P ₃₂ (t-48)	1270	107	248	0735	1042	33	P ₃₃ (t-48)	6716	108	713	0771	1006	34	P ₃₄ (t-48)	5165	109	126	0140	1637	35	P ₃₅ (t-48)	0650	110	807	0111	1666	36	P ₃₆ (t-48)	6106	111	279	0656	1121	37	P ₃₇ (t-48)	5261	112	122	1016	0761	1	P ₁ (t-72)	6752	113	197	0462	1315	2	P ₂ (t-72)	5147	114	693	1011	0766	3	P ₃ (t-72)	0641	115	632	0552	1225	4	P ₄ (t-72)	6102	116	771	0045	1732	5	P ₅ (t-72)	1263	117	467	1104	0673	6	P ₆ (t-72)	2713	118	647	0557	1220	7	P ₇ (t-72)	3167	119	203	0364	1413	8	P ₈ (t-72)	3651	120	145	1106	0671	9	P ₉ (t-72)	7506	121	175	1241	0536	10	P ₁₀ (t-72)	5461	122	52	0267	1510	11	P ₁₁ (t-72)	0412	123	21	0232	1545	12	P ₁₂ (t-72)	6027	124	237	1617	0160	13	P ₁₃ (t-72)	1231	125	235	1076	0701	14	P ₁₄ (t-72)	2736	<p>Table 6-I is now Sheet 2 of 5 (previously 3)</p>
PRN Signal No.	C/A			P																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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103	159	0721	1056	29	P ₂₉ (t-48)	5074																																																																																																																																																																																																																																																																																																																																																																																																																																																												
104	712	1763	0014	30	P ₃₀ (t-48)	4614																																																																																																																																																																																																																																																																																																																																																																																																																																																												
105	885	1751	0026	31	P ₃₁ (t-48)	2124																																																																																																																																																																																																																																																																																																																																																																																																																																																												
106	461	0435	1342	32	P ₃₂ (t-48)	5270																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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108	713	0771	1006	34	P ₃₄ (t-48)	5165																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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112	122	1016	0761	1	P ₁ (t-72)	2752																																																																																																																																																																																																																																																																																																																																																																																																																																																												
113	197	0462	1315	2	P ₂ (t-72)	5147																																																																																																																																																																																																																																																																																																																																																																																																																																																												
114	693	1011	0766	3	P ₃ (t-72)	4641																																																																																																																																																																																																																																																																																																																																																																																																																																																												
115	632	0552	1225	4	P ₄ (t-72)	2102																																																																																																																																																																																																																																																																																																																																																																																																																																																												
116	771	0045	1732	5	P ₅ (t-72)	5263																																																																																																																																																																																																																																																																																																																																																																																																																																																												
117	467	1104	0673	6	P ₆ (t-72)	2713																																																																																																																																																																																																																																																																																																																																																																																																																																																												
118	647	0557	1220	7	P ₇ (t-72)	3167																																																																																																																																																																																																																																																																																																																																																																																																																																																												
119	203	0364	1413	8	P ₈ (t-72)	3651																																																																																																																																																																																																																																																																																																																																																																																																																																																												
120	145	1106	0671	9	P ₉ (t-72)	3506																																																																																																																																																																																																																																																																																																																																																																																																																																																												
121	175	1241	0536	10	P ₁₀ (t-72)	5461																																																																																																																																																																																																																																																																																																																																																																																																																																																												
122	52	0267	1510	11	P ₁₁ (t-72)	4412																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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124	237	1617	0160	13	P ₁₃ (t-72)	5231																																																																																																																																																																																																																																																																																																																																																																																																																																																												
125	235	1076	0701	14	P ₁₄ (t-72)	2736																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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	G2 Delay (Chips)	Initial G2 Setting (Octal)*	First 10 Chips (Octal)*	X2 Delay (Chips)	P-code Relative Delay (Hours)**	First 12 Chips (Octal)																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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99	536	0746	1031	25	P ₂₅ (t-48)	2433																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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106	461	0435	1342	32	P ₃₂ (t-48)	1270																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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108	713	0771	1006	34	P ₃₄ (t-48)	5165																																																																																																																																																																																																																																																																																																																																																																																																																																																												
109	126	0140	1637	35	P ₃₅ (t-48)	0650																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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111	279	0656	1121	37	P ₃₇ (t-48)	5261																																																																																																																																																																																																																																																																																																																																																																																																																																																												
112	122	1016	0761	1	P ₁ (t-72)	6752																																																																																																																																																																																																																																																																																																																																																																																																																																																												
113	197	0462	1315	2	P ₂ (t-72)	5147																																																																																																																																																																																																																																																																																																																																																																																																																																																												
114	693	1011	0766	3	P ₃ (t-72)	0641																																																																																																																																																																																																																																																																																																																																																																																																																																																												
115	632	0552	1225	4	P ₄ (t-72)	6102																																																																																																																																																																																																																																																																																																																																																																																																																																																												
116	771	0045	1732	5	P ₅ (t-72)	1263																																																																																																																																																																																																																																																																																																																																																																																																																																																												
117	467	1104	0673	6	P ₆ (t-72)	2713																																																																																																																																																																																																																																																																																																																																																																																																																																																												
118	647	0557	1220	7	P ₇ (t-72)	3167																																																																																																																																																																																																																																																																																																																																																																																																																																																												
119	203	0364	1413	8	P ₈ (t-72)	3651																																																																																																																																																																																																																																																																																																																																																																																																																																																												
120	145	1106	0671	9	P ₉ (t-72)	7506																																																																																																																																																																																																																																																																																																																																																																																																																																																												
121	175	1241	0536	10	P ₁₀ (t-72)	5461																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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124	237	1617	0160	13	P ₁₃ (t-72)	1231																																																																																																																																																																																																																																																																																																																																																																																																																																																												
125	235	1076	0701	14	P ₁₄ (t-72)	2736																																																																																																																																																																																																																																																																																																																																																																																																																																																												

UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.3.6.2.1		<p align="center">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 4 of 6)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)**</th> <th>First 10 Chips (Octal)**</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours) ***</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>126</td><td>886</td><td>1764</td><td>0013</td><td>15</td><td>P₁₅(t-72)</td><td>3175</td></tr> <tr><td>127</td><td>657</td><td>0717</td><td>1060</td><td>16</td><td>P₁₆(t-72)</td><td>5654</td></tr> <tr><td>128</td><td>634</td><td>1532</td><td>0245</td><td>17</td><td>P₁₇(t-72)</td><td>2504</td></tr> <tr><td>129</td><td>762</td><td>1250</td><td>0527</td><td>18</td><td>P₁₈(t-72)</td><td>5060</td></tr> <tr><td>130</td><td>355</td><td>0341</td><td>1436</td><td>19</td><td>P₁₉(t-72)</td><td>2612</td></tr> <tr><td>131</td><td>1012</td><td>0551</td><td>1226</td><td>20</td><td>P₂₀(t-72)</td><td>3127</td></tr> <tr><td>132</td><td>176</td><td>0520</td><td>1257</td><td>21</td><td>P₂₁(t-72)</td><td>5671</td></tr> <tr><td>133</td><td>603</td><td>1731</td><td>0046</td><td>22</td><td>P₂₂(t-72)</td><td>4516</td></tr> <tr><td>134</td><td>130</td><td>0706</td><td>1071</td><td>23</td><td>P₂₃(t-72)</td><td>4065</td></tr> <tr><td>135</td><td>359</td><td>1216</td><td>0561</td><td>24</td><td>P₂₄(t-72)</td><td>4210</td></tr> <tr><td>136</td><td>595</td><td>0740</td><td>1037</td><td>25</td><td>P₂₅(t-72)</td><td>4326</td></tr> <tr><td>137</td><td>68</td><td>1007</td><td>0770</td><td>26</td><td>P₂₆(t-72)</td><td>4371</td></tr> <tr><td>138</td><td>386</td><td>0450</td><td>1327</td><td>27</td><td>P₂₇(t-72)</td><td>2356</td></tr> <tr><td>139</td><td>797</td><td>0305</td><td>1472</td><td>28</td><td>P₂₈(t-72)</td><td>5345</td></tr> <tr><td>140</td><td>456</td><td>1653</td><td>0124</td><td>29</td><td>P₂₉(t-72)</td><td>4740</td></tr> <tr><td>141</td><td>499</td><td>1411</td><td>0366</td><td>30</td><td>P₃₀(t-72)</td><td>2142</td></tr> <tr><td>142</td><td>883</td><td>1644</td><td>0133</td><td>31</td><td>P₃₁(t-72)</td><td>5243</td></tr> <tr><td>143</td><td>307</td><td>1312</td><td>0465</td><td>32</td><td>P₃₂(t-72)</td><td>2703</td></tr> <tr><td>144</td><td>127</td><td>1060</td><td>0717</td><td>33</td><td>P₃₃(t-72)</td><td>5163</td></tr> <tr><td>145</td><td>211</td><td>1560</td><td>0217</td><td>34</td><td>P₃₄(t-72)</td><td>4653</td></tr> <tr><td>146</td><td>121</td><td>0035</td><td>1742</td><td>35</td><td>P₃₅(t-72)</td><td>4107</td></tr> <tr><td>147</td><td>118</td><td>0355</td><td>1422</td><td>36</td><td>P₃₆(t-72)</td><td>4261</td></tr> <tr><td>148</td><td>163</td><td>0335</td><td>1442</td><td>37</td><td>P₃₇(t-72)</td><td>4312</td></tr> <tr><td>149</td><td>628</td><td>1254</td><td>0523</td><td>1</td><td>P₁(t-96)</td><td>2525</td></tr> <tr><td>150</td><td>853</td><td>1041</td><td>0736</td><td>2</td><td>P₂(t-96)</td><td>3070</td></tr> <tr><td>151</td><td>484</td><td>0142</td><td>1635</td><td>3</td><td>P₃(t-96)</td><td>5616</td></tr> <tr><td>152</td><td>289</td><td>1641</td><td>0136</td><td>4</td><td>P₄(t-96)</td><td>2525</td></tr> <tr><td>153</td><td>811</td><td>1504</td><td>0273</td><td>5</td><td>P₅(t-96)</td><td>3070</td></tr> <tr><td>154</td><td>202</td><td>0751</td><td>1026</td><td>6</td><td>P₆(t-96)</td><td>3616</td></tr> <tr><td>155</td><td>1021</td><td>1774</td><td>0003</td><td>7</td><td>P₇(t-96)</td><td>3525</td></tr> </tbody> </table> <p>*** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)</p> <p>*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours) ***	First 12 Chips (Octal)	126	886	1764	0013	15	P ₁₅ (t-72)	3175	127	657	0717	1060	16	P ₁₆ (t-72)	5654	128	634	1532	0245	17	P ₁₇ (t-72)	2504	129	762	1250	0527	18	P ₁₈ (t-72)	5060	130	355	0341	1436	19	P ₁₉ (t-72)	2612	131	1012	0551	1226	20	P ₂₀ (t-72)	3127	132	176	0520	1257	21	P ₂₁ (t-72)	5671	133	603	1731	0046	22	P ₂₂ (t-72)	4516	134	130	0706	1071	23	P ₂₃ (t-72)	4065	135	359	1216	0561	24	P ₂₄ (t-72)	4210	136	595	0740	1037	25	P ₂₅ (t-72)	4326	137	68	1007	0770	26	P ₂₆ (t-72)	4371	138	386	0450	1327	27	P ₂₇ (t-72)	2356	139	797	0305	1472	28	P ₂₈ (t-72)	5345	140	456	1653	0124	29	P ₂₉ (t-72)	4740	141	499	1411	0366	30	P ₃₀ (t-72)	2142	142	883	1644	0133	31	P ₃₁ (t-72)	5243	143	307	1312	0465	32	P ₃₂ (t-72)	2703	144	127	1060	0717	33	P ₃₃ (t-72)	5163	145	211	1560	0217	34	P ₃₄ (t-72)	4653	146	121	0035	1742	35	P ₃₅ (t-72)	4107	147	118	0355	1422	36	P ₃₆ (t-72)	4261	148	163	0335	1442	37	P ₃₇ (t-72)	4312	149	628	1254	0523	1	P ₁ (t-96)	2525	150	853	1041	0736	2	P ₂ (t-96)	3070	151	484	0142	1635	3	P ₃ (t-96)	5616	152	289	1641	0136	4	P ₄ (t-96)	2525	153	811	1504	0273	5	P ₅ (t-96)	3070	154	202	0751	1026	6	P ₆ (t-96)	3616	155	1021	1774	0003	7	P ₇ (t-96)	3525	<p align="center">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 3 of 5)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)*</th> <th>First 10 Chips (Octal)*</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours) **</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>126</td><td>886</td><td>1764</td><td>0013</td><td>15</td><td>P₁₅(t-72)</td><td>7175</td></tr> <tr><td>127</td><td>657</td><td>0717</td><td>1060</td><td>16</td><td>P₁₆(t-72)</td><td>1654</td></tr> 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(For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 64 are: 1101010011).</p> <p>** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.</p> <p>NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)*	First 10 Chips (Octal)*	X2 Delay (Chips)	P-code Relative Delay (Hours) **	First 12 Chips (Octal)	126	886	1764	0013	15	P ₁₅ (t-72)	7175	127	657	0717	1060	16	P ₁₆ (t-72)	1654	128	634	1532	0245	17	P ₁₇ (t-72)	6504	129	762	1250	0527	18	P ₁₈ (t-72)	1060	130	355	0341	1436	19	P ₁₉ (t-72)	2612	131	1012	0551	1226	20	P ₂₀ (t-72)	7127	132	176	0520	1257	21	P ₂₁ (t-72)	5671	133	603	1731	0046	22	P ₂₂ (t-72)	4516	134	130	0706	1071	23	P ₂₃ (t-72)	4065	135	359	1216	0561	24	P ₂₄ (t-72)	4210	136	595	0740	1037	25	P ₂₅ (t-72)	4326	137	68	1007	0770	26	P ₂₆ (t-72)	0371	138	386	0450	1327	27	P ₂₇ (t-72)	6356	139	797	0305	1472	28	P ₂₈ (t-72)	5345	140	456	1653	0124	29	P ₂₉ (t-72)	0740	141	499	1411	0366	30	P ₃₀ (t-72)	6142	142	883	1644	0133	31	P ₃₁ (t-72)	1243	143	307	1312	0465	32	P ₃₂ (t-72)	6703	144	127	1060	0717	33	P ₃₃ (t-72)	5163	145	211	1560	0217	34	P ₃₄ (t-72)	4653	146	121	0035	1742	35	P ₃₅ (t-72)	4107	147	118	0355	1422	36	P ₃₆ (t-72)	4261	148	163	0335	1442	37	P ₃₇ (t-72)	0312	149	628	1254	0523	1	P ₁ (t-96)	2525	150	853	1041	0736	2	P ₂ (t-96)	7070	151	484	0142	1635	3	P ₃ (t-96)	1616	152	289	1641	0136	4	P ₄ (t-96)	2525	153	811	1504	0273	5	P ₅ (t-96)	3070	154	202	0751	1026	6	P ₆ (t-96)	3616	155	1021	1774	0003	7	P ₇ (t-96)	7525	<p>Table 6-I is now Sheet 3 of 5 (previously 4 of 6)</p>
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138	386	0450	1327	27	P ₂₇ (t-72)	6356																																																																																																																																																																																																																																																																																																																																																																																																																																																												
139	797	0305	1472	28	P ₂₈ (t-72)	5345																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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142	883	1644	0133	31	P ₃₁ (t-72)	1243																																																																																																																																																																																																																																																																																																																																																																																																																																																												
143	307	1312	0465	32	P ₃₂ (t-72)	6703																																																																																																																																																																																																																																																																																																																																																																																																																																																												
144	127	1060	0717	33	P ₃₃ (t-72)	5163																																																																																																																																																																																																																																																																																																																																																																																																																																																												
145	211	1560	0217	34	P ₃₄ (t-72)	4653																																																																																																																																																																																																																																																																																																																																																																																																																																																												
146	121	0035	1742	35	P ₃₅ (t-72)	4107																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																																																																																														
6.3.6.2.1		<p align="center">Table 6-I Additional C/A-P-Code Phase Assignments (sheet 5 of 6)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)**</th> <th>First 10 Chips (Octal)**</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours)***</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>156</td><td>463</td><td>0107</td><td>1670</td><td>8</td><td>P₈(t-96)</td><td>5470</td></tr> <tr><td>157</td><td>568</td><td>1153</td><td>0624</td><td>9</td><td>P₉(t-96)</td><td>4416</td></tr> <tr><td>158</td><td>904</td><td>1542</td><td>0235</td><td>10</td><td>P₁₀(t-96)</td><td>4025</td></tr> <tr><td>159</td><td>670</td><td>1223</td><td>0554</td><td>11</td><td>P₁₁(t-96)</td><td>4230</td></tr> <tr><td>160</td><td>230</td><td>1702</td><td>0075</td><td>12</td><td>P₁₂(t-96)</td><td>4336</td></tr> <tr><td>161</td><td>911</td><td>0436</td><td>1341</td><td>13</td><td>P₁₃(t-96)</td><td>2375</td></tr> <tr><td>162</td><td>684</td><td>1735</td><td>0042</td><td>14</td><td>P₁₄(t-96)</td><td>5354</td></tr> <tr><td>163</td><td>309</td><td>1662</td><td>0115</td><td>15</td><td>P₁₅(t-96)</td><td>2744</td></tr> <tr><td>164</td><td>644</td><td>1570</td><td>0207</td><td>16</td><td>P₁₆(t-96)</td><td>5140</td></tr> <tr><td>165</td><td>932</td><td>1573</td><td>0204</td><td>17</td><td>P₁₇(t-96)</td><td>4642</td></tr> <tr><td>166</td><td>12</td><td>0201</td><td>1576</td><td>18</td><td>P₁₈(t-96)</td><td>4103</td></tr> <tr><td>167</td><td>314</td><td>0635</td><td>1142</td><td>19</td><td>P₁₉(t-96)</td><td>2263</td></tr> <tr><td>168</td><td>891</td><td>1737</td><td>0040</td><td>20</td><td>P₂₀(t-96)</td><td>5313</td></tr> <tr><td>169</td><td>212</td><td>1670</td><td>0107</td><td>21</td><td>P₂₁(t-96)</td><td>2767</td></tr> <tr><td>170</td><td>185</td><td>0134</td><td>1643</td><td>22</td><td>P₂₂(t-96)</td><td>5151</td></tr> <tr><td>171</td><td>675</td><td>1224</td><td>0553</td><td>23</td><td>P₂₃(t-96)</td><td>2646</td></tr> <tr><td>172</td><td>503</td><td>1460</td><td>0317</td><td>24</td><td>P₂₄(t-96)</td><td>3101</td></tr> <tr><td>173</td><td>150</td><td>1362</td><td>0415</td><td>25</td><td>P₂₅(t-96)</td><td>5662</td></tr> <tr><td>174</td><td>395</td><td>1654</td><td>0123</td><td>26</td><td>P₂₆(t-96)</td><td>4513</td></tr> <tr><td>175</td><td>345</td><td>0510</td><td>1267</td><td>27</td><td>P₂₇(t-96)</td><td>2067</td></tr> <tr><td>176</td><td>846</td><td>0242</td><td>1535</td><td>28</td><td>P₂₈(t-96)</td><td>3211</td></tr> <tr><td>177</td><td>798</td><td>1142</td><td>0635</td><td>29</td><td>P₂₉(t-96)</td><td>3726</td></tr> <tr><td>178</td><td>992</td><td>1017</td><td>0760</td><td>30</td><td>P₃₀(t-96)</td><td>3571</td></tr> <tr><td>179</td><td>357</td><td>1070</td><td>0707</td><td>31</td><td>P₃₁(t-96)</td><td>3456</td></tr> <tr><td>180</td><td>995</td><td>0501</td><td>1276</td><td>32</td><td>P₃₂(t-96)</td><td>3405</td></tr> <tr><td>181</td><td>877</td><td>0455</td><td>1322</td><td>33</td><td>P₃₃(t-96)</td><td>3420</td></tr> <tr><td>182</td><td>112</td><td>1566</td><td>0211</td><td>34</td><td>P₃₄(t-96)</td><td>5432</td></tr> <tr><td>183</td><td>144</td><td>0215</td><td>1562</td><td>35</td><td>P₃₅(t-96)</td><td>4437</td></tr> <tr><td>184</td><td>476</td><td>1003</td><td>0774</td><td>36</td><td>P₃₆(t-96)</td><td>2035</td></tr> <tr><td>185</td><td>193</td><td>1454</td><td>0323</td><td>37</td><td>P₃₇(t-96)</td><td>5234</td></tr> </tbody> </table> <p>** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 111110000)</p> <p>*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)	156	463	0107	1670	8	P ₈ (t-96)	5470	157	568	1153	0624	9	P ₉ (t-96)	4416	158	904	1542	0235	10	P ₁₀ (t-96)	4025	159	670	1223	0554	11	P ₁₁ (t-96)	4230	160	230	1702	0075	12	P ₁₂ (t-96)	4336	161	911	0436	1341	13	P ₁₃ (t-96)	2375	162	684	1735	0042	14	P ₁₄ (t-96)	5354	163	309	1662	0115	15	P ₁₅ (t-96)	2744	164	644	1570	0207	16	P ₁₆ (t-96)	5140	165	932	1573	0204	17	P ₁₇ (t-96)	4642	166	12	0201	1576	18	P ₁₈ (t-96)	4103	167	314	0635	1142	19	P ₁₉ (t-96)	2263	168	891	1737	0040	20	P ₂₀ (t-96)	5313	169	212	1670	0107	21	P ₂₁ (t-96)	2767	170	185	0134	1643	22	P ₂₂ (t-96)	5151	171	675	1224	0553	23	P ₂₃ (t-96)	2646	172	503	1460	0317	24	P ₂₄ (t-96)	3101	173	150	1362	0415	25	P ₂₅ (t-96)	5662	174	395	1654	0123	26	P ₂₆ (t-96)	4513	175	345	0510	1267	27	P ₂₇ (t-96)	2067	176	846	0242	1535	28	P ₂₈ (t-96)	3211	177	798	1142	0635	29	P ₂₉ (t-96)	3726	178	992	1017	0760	30	P ₃₀ (t-96)	3571	179	357	1070	0707	31	P ₃₁ (t-96)	3456	180	995	0501	1276	32	P ₃₂ (t-96)	3405	181	877	0455	1322	33	P ₃₃ (t-96)	3420	182	112	1566	0211	34	P ₃₄ (t-96)	5432	183	144	0215	1562	35	P ₃₅ (t-96)	4437	184	476	1003	0774	36	P ₃₆ (t-96)	2035	185	193	1454	0323	37	P ₃₇ (t-96)	5234	<p align="center">Table 6-I Additional C/A-P-Code Phase Assignment (sheet 4 of 5)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="3">C/A</th> <th colspan="3">P</th> </tr> <tr> <th>G2 Delay (Chips)</th> <th>Initial G2 Setting (Octal)**</th> <th>First 10 Chips (Octal)**</th> <th>X2 Delay (Chips)</th> <th>P-code Relative Delay (Hours)***</th> <th>First 12 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>156</td><td>463</td><td>0107</td><td>1670</td><td>8</td><td>P₈(t-96)</td><td>5470</td></tr> <tr><td>157</td><td>568</td><td>1153</td><td>0624</td><td>9</td><td>P₉(t-96)</td><td>4416</td></tr> <tr><td>158</td><td>904</td><td>1542</td><td>0235</td><td>10</td><td>P₁₀(t-96)</td><td>4025</td></tr> <tr><td>159</td><td>670</td><td>1223</td><td>0554</td><td>11</td><td>P₁₁(t-96)</td><td>4230</td></tr> <tr><td>160</td><td>230</td><td>1702</td><td>0075</td><td>12</td><td>P₁₂(t-96)</td><td>0336</td></tr> <tr><td>161</td><td>911</td><td>0436</td><td>1341</td><td>13</td><td>P₁₃(t-96)</td><td>6375</td></tr> <tr><td>162</td><td>684</td><td>1735</td><td>0042</td><td>14</td><td>P₁₄(t-96)</td><td>1354</td></tr> <tr><td>163</td><td>309</td><td>1662</td><td>0115</td><td>15</td><td>P₁₅(t-96)</td><td>6744</td></tr> <tr><td>164</td><td>644</td><td>1570</td><td>0207</td><td>16</td><td>P₁₆(t-96)</td><td>5140</td></tr> <tr><td>165</td><td>932</td><td>1573</td><td>0204</td><td>17</td><td>P₁₇(t-96)</td><td>4642</td></tr> <tr><td>166</td><td>12</td><td>0201</td><td>1576</td><td>18</td><td>P₁₈(t-96)</td><td>0103</td></tr> <tr><td>167</td><td>314</td><td>0635</td><td>1142</td><td>19</td><td>P₁₉(t-96)</td><td>6263</td></tr> <tr><td>168</td><td>891</td><td>1737</td><td>0040</td><td>20</td><td>P₂₀(t-96)</td><td>1313</td></tr> <tr><td>169</td><td>212</td><td>1670</td><td>0107</td><td>21</td><td>P₂₁(t-96)</td><td>6767</td></tr> <tr><td>170</td><td>185</td><td>0134</td><td>1643</td><td>22</td><td>P₂₂(t-96)</td><td>1151</td></tr> <tr><td>171</td><td>675</td><td>1224</td><td>0553</td><td>23</td><td>P₂₃(t-96)</td><td>2646</td></tr> <tr><td>172</td><td>503</td><td>1460</td><td>0317</td><td>24</td><td>P₂₄(t-96)</td><td>7101</td></tr> <tr><td>173</td><td>150</td><td>1362</td><td>0415</td><td>25</td><td>P₂₅(t-96)</td><td>5662</td></tr> <tr><td>174</td><td>395</td><td>1654</td><td>0123</td><td>26</td><td>P₂₆(t-96)</td><td>0513</td></tr> <tr><td>175</td><td>345</td><td>0510</td><td>1267</td><td>27</td><td>P₂₇(t-96)</td><td>2067</td></tr> <tr><td>176</td><td>846</td><td>0242</td><td>1535</td><td>28</td><td>P₂₈(t-96)</td><td>3211</td></tr> <tr><td>177</td><td>798</td><td>1142</td><td>0635</td><td>29</td><td>P₂₉(t-96)</td><td>3726</td></tr> <tr><td>178</td><td>992</td><td>1017</td><td>0760</td><td>30</td><td>P₃₀(t-96)</td><td>3571</td></tr> <tr><td>179</td><td>357</td><td>1070</td><td>0707</td><td>31</td><td>P₃₁(t-96)</td><td>3456</td></tr> <tr><td>180</td><td>995</td><td>0501</td><td>1276</td><td>32</td><td>P₃₂(t-96)</td><td>3405</td></tr> <tr><td>181</td><td>877</td><td>0455</td><td>1322</td><td>33</td><td>P₃₃(t-96)</td><td>7420</td></tr> <tr><td>182</td><td>112</td><td>1566</td><td>0211</td><td>34</td><td>P₃₄(t-96)</td><td>5432</td></tr> <tr><td>183</td><td>144</td><td>0215</td><td>1562</td><td>35</td><td>P₃₅(t-96)</td><td>0437</td></tr> <tr><td>184</td><td>476</td><td>1003</td><td>0774</td><td>36</td><td>P₃₆(t-96)</td><td>6035</td></tr> <tr><td>185</td><td>193</td><td>1454</td><td>0323</td><td>37</td><td>P₃₇(t-96)</td><td>1234</td></tr> </tbody> </table> <p>** In the octal notation for the first 10 chips of the C/A-code or the initial settings as shown in this table, the first digit (1/0) represents a "1" or "0", respectively, for the first chip and the last three digits are the conventional octal representation of the remaining 9 chips. (For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 64 are: 1101010011).</p> <p>*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)	156	463	0107	1670	8	P ₈ (t-96)	5470	157	568	1153	0624	9	P ₉ (t-96)	4416	158	904	1542	0235	10	P ₁₀ (t-96)	4025	159	670	1223	0554	11	P ₁₁ (t-96)	4230	160	230	1702	0075	12	P ₁₂ (t-96)	0336	161	911	0436	1341	13	P ₁₃ (t-96)	6375	162	684	1735	0042	14	P ₁₄ (t-96)	1354	163	309	1662	0115	15	P ₁₅ (t-96)	6744	164	644	1570	0207	16	P ₁₆ (t-96)	5140	165	932	1573	0204	17	P ₁₇ (t-96)	4642	166	12	0201	1576	18	P ₁₈ (t-96)	0103	167	314	0635	1142	19	P ₁₉ (t-96)	6263	168	891	1737	0040	20	P ₂₀ (t-96)	1313	169	212	1670	0107	21	P ₂₁ (t-96)	6767	170	185	0134	1643	22	P ₂₂ (t-96)	1151	171	675	1224	0553	23	P ₂₃ (t-96)	2646	172	503	1460	0317	24	P ₂₄ (t-96)	7101	173	150	1362	0415	25	P ₂₅ (t-96)	5662	174	395	1654	0123	26	P ₂₆ (t-96)	0513	175	345	0510	1267	27	P ₂₇ (t-96)	2067	176	846	0242	1535	28	P ₂₈ (t-96)	3211	177	798	1142	0635	29	P ₂₉ (t-96)	3726	178	992	1017	0760	30	P ₃₀ (t-96)	3571	179	357	1070	0707	31	P ₃₁ (t-96)	3456	180	995	0501	1276	32	P ₃₂ (t-96)	3405	181	877	0455	1322	33	P ₃₃ (t-96)	7420	182	112	1566	0211	34	P ₃₄ (t-96)	5432	183	144	0215	1562	35	P ₃₅ (t-96)	0437	184	476	1003	0774	36	P ₃₆ (t-96)	6035	185	193	1454	0323	37	P ₃₇ (t-96)	1234	<p>Table 6-I is now Sheet 4 of 5 (previously 5 of 6)</p>
PRN Signal No.	C/A			P																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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161	911	0436	1341	13	P ₁₃ (t-96)	2375																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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165	932	1573	0204	17	P ₁₇ (t-96)	4642																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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170	185	0134	1643	22	P ₂₂ (t-96)	5151																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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174	395	1654	0123	26	P ₂₆ (t-96)	4513																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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178	992	1017	0760	30	P ₃₀ (t-96)	3571																																																																																																																																																																																																																																																																																																																																																																																																																																																												
179	357	1070	0707	31	P ₃₁ (t-96)	3456																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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	G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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174	395	1654	0123	26	P ₂₆ (t-96)	0513																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																								
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(For example, the first 10 chips of the C/A code for PRN Signal Assembly No. 38 are: 1111110000)</p> <p>*** P_i(t-N): P-code sequence of PRN number i shifted by N hours. See Section 6.3.5.2.1.</p>	PRN Signal No.	C/A			P			G2 Delay (Chips)	Initial G2 Setting (Octal)**	First 10 Chips (Octal)**	X2 Delay (Chips)	P-code Relative Delay (Hours)***	First 12 Chips (Octal)	186	109	1665	0112	1	P ₁ (t-120)	5067	187	445	0471	1306	2	P ₂ (t-120)	2611	188	291	1750	0027	3	P ₃ (t-120)	5126	189	87	0307	1470	4	P ₄ (t-120)	4671	190	399	0272	1505	5	P ₅ (t-120)	4116	191	292	0764	1013	6	P ₆ (t-120)	2265	192	901	1422	0355	7	P ₇ (t-120)	5310	193	339	1050	0727	8	P ₈ (t-120)	2766	194	208	1607	0170	9	P ₉ (t-120)	5151	195	711	1747	0030	10	P ₁₀ (t-120)	2646	196	189	1305	0472	11	P ₁₁ (t-120)	3101	197	263	0540	1237	12	P ₁₂ (t-120)	3662	198	537	1363	0414	13	P ₁₃ (t-120)	5513	199	663	0727	1050	14	P ₁₄ (t-120)	4467	200	942	0147	1630	15	P ₁₅ (t-120)	4011	201	173	1206	0571	16	P ₁₆ (t-120)	4226	202	900	1045	0732	17	P ₁₇ (t-120)	4331	203	30	0476	1301	18	P ₁₈ (t-120)	4376	204	500	0604	1173	19	P ₁₉ (t-120)	2355	205	935	1757	0020	20	P ₂₀ (t-120)	5344	206	556	1330	0447	21	P ₂₁ (t-120)	4740	207	373	0663	1114	22	P ₂₂ (t-120)	2142	208	85	1436	0341	23	P ₂₃ (t-120)	5243	209	652	0753	1024	24	P ₂₄ (t-120)	2703	210	310	0731	1046	25	P ₂₅ (t-120)	5163	<p align="center">Table 6-I. 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198	537	1363	0414	13	P ₁₃ (t-120)	5513																																																																																																																																																																																																																																																																																																																																																																																						
199	663	0727	1050	14	P ₁₄ (t-120)	4467																																																																																																																																																																																																																																																																																																																																																																																						
200	942	0147	1630	15	P ₁₅ (t-120)	4011																																																																																																																																																																																																																																																																																																																																																																																						
201	173	1206	0571	16	P ₁₆ (t-120)	4226																																																																																																																																																																																																																																																																																																																																																																																						
202	900	1045	0732	17	P ₁₇ (t-120)	4331																																																																																																																																																																																																																																																																																																																																																																																						
203	30	0476	1301	18	P ₁₈ (t-120)	0376																																																																																																																																																																																																																																																																																																																																																																																						
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205	935	1757	0020	20	P ₂₀ (t-120)	5344																																																																																																																																																																																																																																																																																																																																																																																						
206	556	1330	0447	21	P ₂₁ (t-120)	0740																																																																																																																																																																																																																																																																																																																																																																																						
207	373	0663	1114	22	P ₂₂ (t-120)	6142																																																																																																																																																																																																																																																																																																																																																																																						
208	85	1436	0341	23	P ₂₃ (t-120)	1243																																																																																																																																																																																																																																																																																																																																																																																						
209	652	0753	1024	24	P ₂₄ (t-120)	6703																																																																																																																																																																																																																																																																																																																																																																																						
210	310	0731	1046	25	P ₂₅ (t-120)	1163																																																																																																																																																																																																																																																																																																																																																																																						
6.3.6.3		<p>The PRN L2 CM-code and L2 CL-code are described in Sections 3.2.1.4 and 3.2.1.5, respectively, and 37 L2 CM-/L2 CL-code sequence pairs are assigned by SV-ID number in Table 3-II. An additional set of 78 L2 CM-/L2 CL-code PRN sequence pairs are selected and assigned with PRN numbers in this section as shown in Table 6-II. Among the 78 additional</p>	<p>The PRN L2 CM-code and L2 CL-code are described in Sections 3.2.1.4 and 3.2.1.5, respectively, and 37 78 L2 CM-/L2 CL-code sequence pairs are assigned by SV-ID number in Table 3-IIa and 3-IIb. An additional set of 78 78 L2 CM-/L2 CL-code PRN sequence pairs are selected and assigned with PRN numbers in this section as shown in Table 6-II. Among the 78 78 additional sequences, PRN numbers</p>	<p>Language addressing the PRNs > 63 and their</p>																																																																																																																																																																																																																																																																																																																																																																																								

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																
		<p>sequences, PRN numbers 38 through 63 are reserved for future GPS SVs, and PRN numbers 159 through 210 are reserved for other GNSS applications. PRN allocations do not exist for numbers 64 through 158 for L2 CM-/L2 CL-code. Any assignment of a L2 CM-/L2 CL-code PRN number and its code sequence pair for any additional SV and/or other L2 signal applications will be selected from the sequences of Table 6-II and will be approved, controlled, and managed by the GPSW.</p>	<p>38 through 63 are reserved for future GPS SVs, and PRN numbers 159 through 210 are reserved for other GNSS applications. PRN allocations do not exist for numbers 64 through 158 for L2 CM-/L2 CL-code. Any assignment of a L2 CM-/L2 CL-code PRN number and its code sequence pair for any additional SV and/or other L2 signal applications will be selected from the sequences of Table 6-II and will be approved, controlled, and managed by the GPSW.</p>	<p>purpose.</p>																																																																																																																																																
6.3.6.3		<table border="1" data-bbox="578 653 1494 1776"> <thead> <tr> <th colspan="5" data-bbox="578 653 1494 681">Table 6-II. Additional L2 CM-/L2 CL-Code Phase Assignments (sheet 1 of 3)</th> </tr> <tr> <th data-bbox="578 687 686 792" rowspan="2">PRN Signal No. ***</th> <th colspan="2" data-bbox="696 687 1075 715">Initial Shift Register State (Octal)</th> <th colspan="2" data-bbox="1084 687 1494 715">End Shift Register State (Octal)</th> </tr> <tr> <th data-bbox="696 721 888 749">L2 CM</th> <th data-bbox="898 721 1075 749">L2 CL</th> <th data-bbox="1084 721 1268 749">L2 CM *</th> <th data-bbox="1277 721 1494 749">L2 CL **</th> </tr> </thead> <tbody> <tr><td>38</td><td>771353753</td><td>101232630</td><td>453413162</td><td>463624741</td></tr> <tr><td>39</td><td>226107701</td><td>132525726</td><td>637760505</td><td>673421367</td></tr> <tr><td>40</td><td>022025110</td><td>315216367</td><td>612775765</td><td>703006075</td></tr> <tr><td>41</td><td>402466344</td><td>377046065</td><td>136315217</td><td>746566507</td></tr> <tr><td>42</td><td>752566114</td><td>655351360</td><td>264252240</td><td>444022714</td></tr> <tr><td>43</td><td>702011164</td><td>435776513</td><td>113027466</td><td>136645570</td></tr> <tr><td>44</td><td>041216771</td><td>744242321</td><td>774524245</td><td>645752300</td></tr> <tr><td>45</td><td>047457275</td><td>024346717</td><td>161633757</td><td>656113341</td></tr> <tr><td>46</td><td>266333164</td><td>562646415</td><td>603442167</td><td>015705106</td></tr> <tr><td>47</td><td>713167356</td><td>731455342</td><td>213146546</td><td>002757466</td></tr> <tr><td>48</td><td>060546335</td><td>723352536</td><td>721323277</td><td>100273370</td></tr> <tr><td>49</td><td>355173035</td><td>000013134</td><td>207073253</td><td>304463615</td></tr> <tr><td>50</td><td>617201036</td><td>011566642</td><td>130632332</td><td>054341657</td></tr> <tr><td>51</td><td>157465571</td><td>475432222</td><td>606370621</td><td>333276704</td></tr> <tr><td>52</td><td>767360553</td><td>463506741</td><td>330610170</td><td>750231416</td></tr> <tr><td>53</td><td>023127030</td><td>617127534</td><td>744312067</td><td>541445326</td></tr> <tr><td>54</td><td>431343777</td><td>026050332</td><td>154235152</td><td>316216573</td></tr> <tr><td>55</td><td>747317317</td><td>733774235</td><td>525024652</td><td>007360406</td></tr> <tr><td>56</td><td>045706125</td><td>751477772</td><td>535207413</td><td>112114774</td></tr> <tr><td>57</td><td>002744276</td><td>417631550</td><td>655375733</td><td>042303316</td></tr> <tr><td>58</td><td>060036467</td><td>052247456</td><td>316666241</td><td>353150521</td></tr> <tr><td>59</td><td>217744147</td><td>560404163</td><td>525453337</td><td>044511154</td></tr> <tr><td>60</td><td>603340174</td><td>417751005</td><td>114323414</td><td>244410144</td></tr> <tr><td>61</td><td>326616775</td><td>004302173</td><td>755234667</td><td>562324657</td></tr> <tr><td>62</td><td>063240065</td><td>715005045</td><td>526032633</td><td>027501534</td></tr> <tr><td>63</td><td>111460621</td><td>001154457</td><td>602375063</td><td>521240373</td></tr> </tbody> </table> <p data-bbox="780 1675 1299 1759"> * Short cycled period = 10230 ** Short cycled period = 767250 *** PRN sequences 38 through 63 are reserved for GPS. </p>	Table 6-II. Additional L2 CM-/L2 CL-Code Phase Assignments (sheet 1 of 3)					PRN Signal No. ***	Initial Shift Register State (Octal)		End Shift Register State (Octal)		L2 CM	L2 CL	L2 CM *	L2 CL **	38	771353753	101232630	453413162	463624741	39	226107701	132525726	637760505	673421367	40	022025110	315216367	612775765	703006075	41	402466344	377046065	136315217	746566507	42	752566114	655351360	264252240	444022714	43	702011164	435776513	113027466	136645570	44	041216771	744242321	774524245	645752300	45	047457275	024346717	161633757	656113341	46	266333164	562646415	603442167	015705106	47	713167356	731455342	213146546	002757466	48	060546335	723352536	721323277	100273370	49	355173035	000013134	207073253	304463615	50	617201036	011566642	130632332	054341657	51	157465571	475432222	606370621	333276704	52	767360553	463506741	330610170	750231416	53	023127030	617127534	744312067	541445326	54	431343777	026050332	154235152	316216573	55	747317317	733774235	525024652	007360406	56	045706125	751477772	535207413	112114774	57	002744276	417631550	655375733	042303316	58	060036467	052247456	316666241	353150521	59	217744147	560404163	525453337	044511154	60	603340174	417751005	114323414	244410144	61	326616775	004302173	755234667	562324657	62	063240065	715005045	526032633	027501534	63	111460621	001154457	602375063	521240373	<p><DELETE></p>	<p>Delete this table from Section 6 and promote this table to Section 3.</p>
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170	362051132	270060042	007131446	704125517																																																																																																																																																																																																																																																																																																																																																												
171	617753265	737176640	142007172	406332330																																																																																																																																																																																																																																																																																																																																																												
172	216363634	133776704	655543571	506446631																																																																																																																																																																																																																																																																																																																																																												
173	755561123	005645427	031272346	743702511																																																																																																																																																																																																																																																																																																																																																												
174	365304033	704321074	203260313	022623276																																																																																																																																																																																																																																																																																																																																																												
175	625025543	137740372	226613112	704221045																																																																																																																																																																																																																																																																																																																																																												
176	054420334	056375464	736560607	372577721																																																																																																																																																																																																																																																																																																																																																												
177	415473671	704374004	011741374	105175230																																																																																																																																																																																																																																																																																																																																																												
178	662364360	216320123	765056120	760701311																																																																																																																																																																																																																																																																																																																																																												
179	373446602	011322115	262725266	737141001																																																																																																																																																																																																																																																																																																																																																												
180	417564100	761050112	013051476	227627616																																																																																																																																																																																																																																																																																																																																																												
181	000526452	725304036	144541215	245154134																																																																																																																																																																																																																																																																																																																																																												
182	226631300	721320336	534125243	040015760																																																																																																																																																																																																																																																																																																																																																												
183	113752074	443462103	250001521	002154472																																																																																																																																																																																																																																																																																																																																																												
184	706134401	510466244	276000566	301767766																																																																																																																																																																																																																																																																																																																																																												
185	041352546	745522652	447447071	226475246																																																																																																																																																																																																																																																																																																																																																												
186	664630154	373417061	000202044	733673015																																																																																																																																																																																																																																																																																																																																																												
187	276524255	225526762	751430577	602507667																																																																																																																																																																																																																																																																																																																																																												
188	714720530	047614504	136741270	753362551																																																																																																																																																																																																																																																																																																																																																												
189	714051771	034730440	257252440	746265601																																																																																																																																																																																																																																																																																																																																																												
190	044526647	453073141	757666513	036253206																																																																																																																																																																																																																																																																																																																																																												

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6.4.1	Lower PRN Numbers Versus Upper PRN Numbers																																																																																																																																																																																																																																							
6.4.1			Many existing user receivers are only compatible with prior versions of this IS where the PRN numbers and corresponding PRN code sequences were limited to the lower range of 1 - 32. To maintain backwards compatibility with these receivers (and promote backwards utility), the CS will	Language to clarify the prioritization																																																																																																																																																																																																																																				

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			<p>endeavor to operate as robust a constellation as practical using just the lower range of PRN numbers. The upper range of PRN numbers (33 - 63) is intended as an enhancement for modernized receivers which are compatible with both the lower PRN numbers and the upper PRN numbers. When feasible, the CS will endeavor to operate at least one satellite using an upper PRN number to serve as a source of almanac data for satellites using the upper range of PRN numbers.</p>	<p>of the lower PRNs numbers versus the higher PRN numbers. Backwards compatibility to PRNs 1-32 remains the top priority.</p>
6.4.2	PRN Number Consistency			
6.4.2			<p>For a given satellite, the same PRN number will be assigned to all operational signals (signals modulated by standard PRN code with data that indicates the signal health is OK).</p>	<p>Language inserted to align the signals with the proper native SV.</p>
6.4.3	PRNs 33 and 37			
6.4.3			<p>PRN 33 should not be used by satellites because of its prior use in specialized ground applications. PRN 37 should not be used by satellites until after PRN 37 is no longer needed for SATZAP purposes.</p>	<p>Language addressing the use of PRNs 33 and 37.</p>
6.4.4	PRNs 33 through 63			
6.4.4			<p>The CS must ensure that satellites broadcasting PRNs 33 through 63 are synchronized to GPS time to avoid conflict with specialized ground applications.</p>	<p>Language explicitly stating that SVs assigned</p>

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				PRNs 33-63 are sunchornized to GPS time to avoid conflict with specialized ground applications.
6.4.5	Health Code Setting of '11110'	N/A	For backward compatibility reasons, the SV signal component health code setting of '11110' is anticipated for potential use only with satellites broadcasting PRNs 33 through 63.	
20	APPENDIX II. GPS NAVIGATION DATA STRUCTURE FOR LNAV DATA, D(t), FOR PRN 1-32			
20.1		This appendix describes the specific GPS navigation (NAV) data structure denoted as D(t). When transmitted as part of the NAV data, D(t), the specific data structure of D(t) shall be denoted by data ID number 2, represented by the two-bit binary notation as 01.	This appendix describes the specific GPS legacy navigation (NAV LNAV) data structure denoted as by data ID number 2 for the lower set of PRN numbers (PRN 1-32). When This data ID number, when transmitted as part of the NAV LNAV data, D(t), shall be represented by the specific two-bit binary notation as 01. Data ID number 1 is no longer in use. The LNAV data structure for the lower set of D(t) PRN shall numbers be is denoted by as data LNAV-L. ID number The 2, LNAV represented data by structure for the two upper set of PRN numbers (LNAV-bitU) binary is notation described as in 01 Appendix IV.	Language inserted here to distinguish the nomenclature associated with PRNs (1-32) and PRNs (38-63). PRNs from 38-63 are denoted

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale																																																																																																																								
				as LNAV-U and referenced in the new Appendix IV.																																																																																																																								
20.3.3.5.1.2		N/A	N/A Users are cautioned against attempting to track a dummy SV since the results are unpredictable.	Language inserted here as a provision to the users to NOT actively seek out SVs that are not listed in the almanac.																																																																																																																								
20.3.3.5.1.2		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: center;">Table 20-VIII. 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40	APPENDIX IV GPS NAVIGATION DATA STRUCTURE FOR LNAV DATA, D(t), FOR PRN 33- 63																							
40.1	Scope																							
40.1			This appendix describes the specific legacy navigation (LNAV) data structure denoted by data ID number 2 for the upper set of PRN numbers (PRN 33-63). This data ID number, when transmitted as part of the LNAV data, shall be represented by the two-bit binary notation as 01. Data ID number 1 is no longer in use. The LNAV data structure for the upper set of PRN numbers is denoted as LNAV-U. The LNAV data structure for the lower set of PRN numbers (LNAV-L) is described in Appendix II.	Language inserted here to denote the difference between PRNs 1-32 (which use Data ID 01) and PRNs 33-63.																				
40.2	Applicable Documents																							
40.2			Applicable documents shall be as specified in Appendix II, Section 20.2.	Reference to Section 20 that apply to the message																				

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				structure that governs D(t) (similar to that which governs D(t) for PRNs 1-32).
40.3	Requirements			
40.3.1	Data Characteristics			
40.3.1			The data characteristics shall be as specified in Appendix II, Section 20.3.1.	Reference to Section 20 that apply to the message structure that governs D(t) (similar to that which governs D(t) for PRNs 1-32).
40.3.2	Message Structure			
40.3.2			The message structure shall be as specified in Appendix II, Section 20.3.2 except as indicated by Figure 40-1.	Reference to Section 20 that apply to the message structure that governs D(t) (similar to that which

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				governs D(t) for PRNs 1-32).
40.3.3	Message Content			
40.3.3			The format and contents of the TLM word and the HOW, as well as those of words three through ten of each subframe/page, are described in the following subparagraphs. The timing of the subframes and pages is covered in Section 40.3.4.	Format and contents of the TLM and HOW for PRNs 33-63 or those PRNs that fit the definition of LNAV-U.
40.3.3.1	Telemetry Word			
40.3.3.1			The TLM word shall be as specified in Appendix II, Section 20.3.3.1.	Format and contents of the TLM word for PRNs 33-63 or those PRNs that fit the definition of LNAV-U.
40.3.3.2	Handover Word (HOW)			
40.3.3.2			The HOW shall be as specified in Appendix II, Section 20.3.3.2.	Format and contents of the HOW for

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				PRNs 33-63 or those PRNs that fit the definition of LNAV-U.
40.3.3.3	Subframe 1			
40.3.3.3			Subframe 1 shall be as specified in Appendix II, Section 20.3.3.3.	Format and contents of Subframe 1 for PRNs 33-63 or those PRNs that fit the definition of LNAV-U.
40.3.3.4	Subframes 2 and 3			
40.3.3.4			Subframes 2 and 3 shall be as specified in Appendix II, Section 20.3.3.4.	Format and contents of Subframe 2 and 3 for PRNs 33-63 or those PRNs that fit the definition of LNAV-U.
40.3.3.4				Diagram outlining the data format for PRNs 33-

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			<p>Diagram illustrating PRN Expansion Redlines for two subframes (Subframe 1 and Subframe 1).</p> <p>Subframe 1 (Top):</p> <ul style="list-style-type: none"> Subframe NO: 1, PAGE NO: NA Fields: TLV (22BTS), C, F, HCN (22BTS), 1, F, WN (1C BTS), 23BTS**, F, 24BTS**, F. Annotations: CACRPNL2-2BTS, L2PDATAFLAG-1B1, UPINDEX-4BTS, SVHEALTH-6BTS, 2MSB, ICC-10BTS TOTAL. <p>Subframe 1 (Bottom):</p> <ul style="list-style-type: none"> Subframe NO: 1, PAGE NO: NA Fields: 24BTS**, F, 1C BTS**, TGD (8BTS), F, t_{α} (16BTS), F, ϵ_1 (16BTS), F, ϵ_2 (22BTS), 1, F. Annotation: 8LSB, ICC-10BTS TOTAL. <p>*** RESERVE P=6PARTYBTS t=2NONINFORMATIONBEARINGBTSUSEDFORPARITYCOMPUTATION(SEE PARAGRAPH 20.3.5) C=TLVBITS23AND24. BT23ISTHEINTEGRITYSTATUSFLAGANDBT24 ISRESERVE</p>	63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			Figure 40-1. Data Format (sheet 1 of 11)	
40.3.3.4			<p style="text-align: center;">P=6 PARITY BITS t=2 NON-INFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C=TLW BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVE.</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			Figure 40-1. Data Format (sheet 2 of 11)	
40.3.3.4			<p style="text-align: center;">P = 6 PARITY BITS t = 2 NONINFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C = TLM BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVED</p>	Diagram outlining the data format for PRNs 33-63.

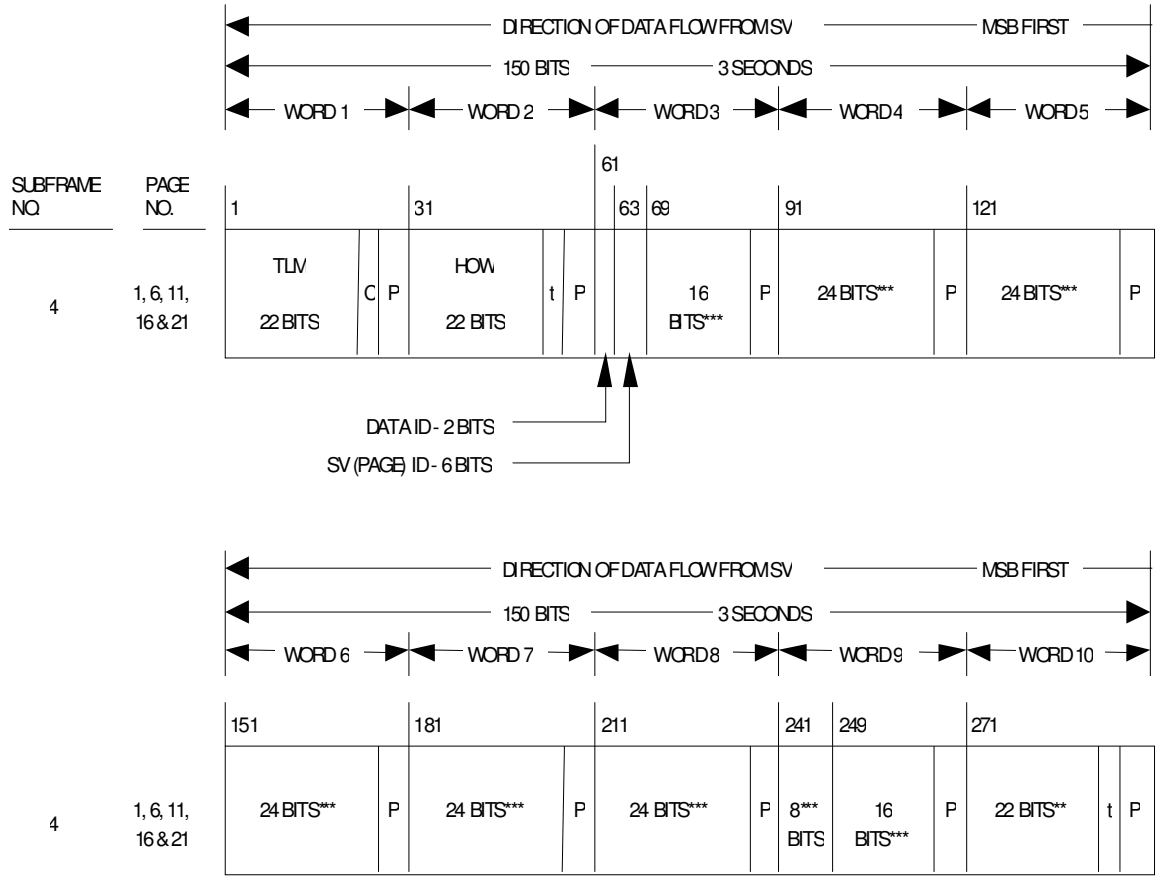
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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			Figure 40-1. Data Format (sheet 3 of 11)	
40.3.3.4			<p style="text-align: center;">SUBFRAME NO. PAGE NO.</p> <p style="text-align: center;">5 1 THRU 24</p> <p style="text-align: center;">151 181 211 241 271 279 290</p> <p style="text-align: center;">\sqrt{A} P Ω_0 P ω P M_0 P t P</p> <p style="text-align: center;">24 BITS 24 BITS 24 BITS 24 BITS</p> <p style="text-align: center;">8 MSBs 3 LSBs</p> <p style="text-align: center;">a_0 - 11 BITS TOTAL a_1 - 11 BITS TOTAL</p> <p>P = 6 PARITY BITS t = 2 NONINFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C = TLM BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVED NOTE: PAGES 2, 3, 4, 5, 7, 8, 9 & 10 OF SUBFRAME 4 HAVE THE SAME FORMAT AS PAGES 1 THROUGH 24 OF SUBFRAME 5</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			Figure 40-1. Data Format (sheet 4 of 11)	
40.3.3.4			<div style="text-align: center;"> </div> <p style="text-align: center;">Figure 40-1. Data Format (sheet 5 of 11)</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
40.3.3.4			 <p>The diagram illustrates the PRN expansion redlines for subframe 4. It shows two parts of the subframe structure. The top part covers bits 1 to 121, and the bottom part covers bits 151 to 271. Each part includes a timeline showing the direction of data flow from the SV, MSB first, and a 150-bit duration over 3 seconds. The bit positions are marked at 1, 31, 63, 68, 91, and 121 for the top part, and 151, 181, 211, 241, 249, and 271 for the bottom part. The top part includes fields for TLM (22 bits), C, P, HOW (22 bits), t, P, 16 bits, P, 24 bits, P, and 24 bits, P. The bottom part includes fields for 24 bits, P, 24 bits, P, 24 bits, P, 8 bits, 16 bits, P, 22 bits, t, and P. Arrows indicate the direction of data flow from the SV and MSB first. The diagram also shows the DATA ID (2 bits) and SV (PAGE) ID (6 bits) fields.</p> <p>SUBFRAME NO. 4, PAGE NO. 1, 6, 11, 16 & 21</p> <p>151 181 211 241 249 271</p> <p>24 BITS** P 24 BITS** P 24 BITS** P 8** BITS 16 BITS** P 22 BITS** t P</p> <p>** RESERVED FOR SYSTEM USE *** RESERVED P = 6 PARITY BITS t = 2 NONINFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C = TLM BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVED</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			Figure 40-1. Data Format (sheet 6 of 11)	
40.3.3.4			<p style="text-align: center;">Figure 40-1. Data Format (sheet 7 of 11)</p>	Diagram outlining the data format for PRNs 33-63.

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40.3.3.4			<p style="text-align: center;">Figure 40-1. Data Format (sheet 8 of 11)</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
40.3.3.4			<p>The diagram illustrates the PRN expansion redlines for subframes 4 and 2. It shows the direction of data flow from the SV, a 150-bit duration of 3 seconds, and the structure of five words (WORD1 to WORD5) and six words (WORD6 to WORD10). Bit-level details are provided for subframe 4 (bits 1-16) and subframe 2 (bits 17-32). Subframe 4 includes fields for TLM (22 bits), C and P parity bits, HDM (22 bits), t and F parity bits, and three A-SPOOF & SV CONFIG blocks (bits 63-68, 69-74, 91-96). Subframe 2 includes three A-SPOOF & SV CONFIG blocks (bits 151-156, 181-186, 211-216), SV HEALTH-6 BITSSV blocks (bits 228-233, 241-246), and t and F parity bits. Annotations indicate reserved bits: 2 bits for SV(PAGE) ID, 4 bits for SV HEALTH, and 2 bits reserved for system use.</p> <p>** RESERVED FOR SYSTEM USE P=6 PARITY BITS t=2 NONINFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C= TLM BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVED</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			<p>Figure 40-1. Data Format (sheet 9 of 11)</p>	
40.3.3.4			<p style="font-size: small;"> P = 6 PARITY BITS t = 2 NONINFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C = TLM BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVED </p>	<p>Diagram outlining the data format for PRNs 33-63.</p>

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			Figure 40-1. Data Format (sheet 10 of 11)	
40.3.3.4			<p style="text-align: center;">** THE INDICATED PORTIONS OF WORDS 3 THROUGH 10 OF PAGES 14 AND 15 ARE RESERVED FOR SYSTEM USE, WHILE THOSE OF PAGE 17 ARE RESERVED FOR SPECIAL MESSAGES PER PARAGRAPH 20.3.3.5.1.10 P=6 PARITY BITS t=2 NONINFORMATION BEARING BITS USED FOR PARITY COMPUTATION (SEE PARAGRAPH 20.3.5) C= TLM BITS 23 AND 24. BIT 23 IS THE INTEGRITY STATUS FLAG AND BIT 24 IS RESERVED</p> <p style="text-align: center;">Figure 40-1. Data Format (sheet 11 of 11)</p>	Diagram outlining the data format for PRNs 33-63.

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
40.3.3.5	Subframes 4 and 5			
40.3.3.5			<p>Both subframe 4 and 5 are subcommutated 25 times each; the 25 versions of these subframes are referred to as pages 1 through 25 of each subframe. With the possible exception of "reserved for system use" pages and explicit repeats, each page contains different specific data in words three through ten. As shown in Figure 40-1, the pages of subframe 4 utilize seven different formats, while those of subframe 5 use two. The content of words three through ten of each page is described below, followed by algorithms and material pertinent to the use of the data.</p>	<p>Format and contents of Subframe 4 and 5 for PRNs 33-63 or those PRNs that fit the definition of LNAV-U.</p>
40.3.3.5.1	Content of Subframes 4 and 5			
40.3.3.5.1			<p>Words three through ten of each page contain six parity bits as their LSBs; in addition, two non-information bearing bits are provided as bits 23 and 24 of word ten in each page for parity computation purposes. The data contained in the remaining bits of words three through ten of the various pages in subframes 4 and 5 are described in the following subparagraphs.</p> <p>A brief summary of the various data contained in each page of subframes 4 and 5 is as follows:</p> <p>a. Subframe 4:</p> <ul style="list-style-type: none"> · Pages 1, 6, 11, 16 and 21: (reserved); · Pages 2, 3, 4, 5, 7, 8, and 9: almanac data for SV ID 89 through 95 (PRN 57 through 63) respectively; · Page 10: (reserved); · Pages 12, 19, 20, 22, 23 and 24: (reserved); · Page 13: NMCT; · Pages 14 and 15: reserved for system use; 	<p>Details for Subframe 4 and 5 for PRNs 33-63 or those PRNs that fit the definition of LNAV-U.</p>

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			<ul style="list-style-type: none"> · Page 17: special messages; · Page 18: ionospheric and UTC data; · Page 25: A-S flags/SV configurations for 31 SVs, plus SV health for SV ID 89 through 95 (PRN 57 through 63). b. Subframe 5: <ul style="list-style-type: none"> · Pages 1 through 24: almanac data for SV ID 65 through 88 (PRN 33 through 56); · Page 25: SV health data for SV ID 65 through 88 (PRN 33 through 56), the almanac reference time, the almanac reference week number. 	
40.3.3.5.1.1	Data ID and SV ID			
40.3.3.5.1.1			<p>The two MSBs of word three in each page shall contain the data ID. Data ID number two (denoted by binary code 01) denotes the LNAV data structure of D(t) which is described in this Appendix. Future data IDs will be defined as necessary.</p> <p>As shown in Table 40-V, the data ID is utilized to provide one of two indications: (a) for those pages which are assigned to contain the almanac data of one specific SV, the data ID defines the data structure utilized by that SV whose almanac data are contained in that page; and (b) for all other pages, the data ID denotes the data structure of the transmitting SV.</p> <p>The six LSBs of the SV ID are given by bits three through eight of word three in each page as shown in Table 40-V. Specific IDs are reserved for each page of subframes 4 and 5. The SV IDs are utilized in two different ways: (a) for those pages which contain the almanac data of a given SV, the SV ID is equal to 32 plus the number that is assigned to the PRN code phase of that SV (reference Tables 3-1a and 3-1b), and (b) for all other pages the SV ID assigned in accordance with Table 40-V serves as the "page ID". IDs 65 through 95 are assigned to those pages which contain the almanac data of specific SVs (pages 1-24 of subframe 5 and pages 2-5 and 7-9 of subframe 4). The "0" ID (binary all zeros) is assigned to indicate a dummy SV, while IDs 115 through 127 are utilized for pages containing other than almanac data of a specific SV. IDs 116 through 126 have the same data as LNAV-L IDs 52 through 62. ID 115 is the LNAV-U analog of ID 51 in LNAV-L, while ID 127 is the LNAV-U analog of ID 63 in LNAV-L.</p> <p>Pages which carry the same SV ID (e.g., in subframe 4, pages 1, 6, 11, 16 and 21 carry an ID of 121, while pages 12 and 24 are designated by an ID of 126) may not be considered to contain identical</p>	Language inserted to provide details on the Data ID and SV ID as they apply to PRNs defined by LNAV-U (PRNs 33-63).

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40.3.3.5.1			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="5" style="text-align: center;">Table 40-V. Data IDs and SV IDs in Subframes 4 and 5</th> </tr> <tr> <th rowspan="2" style="text-align: center;">Page</th> <th colspan="2" style="text-align: center;">Subframe 4</th> <th colspan="2" style="text-align: center;">Subframe 5</th> </tr> <tr> <th style="text-align: center;">Data ID</th> <th style="text-align: center;">SV ID* (Note 4)</th> <th style="text-align: center;">Data ID</th> <th style="text-align: center;">SV ID* (Note 4)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td style="text-align: center;">Note(2)</td><td style="text-align: center;">121</td><td style="text-align: center;">Note(1)</td><td style="text-align: center;">65</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">Note(1)</td><td style="text-align: center;">89</td><td style="text-align: center;">Note(1)</td><td style="text-align: center;">66</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">Note(1)</td><td style="text-align: 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When using "0" to indicate dummy SV, use the data ID of the transmitting SV. Note 1: Data ID of that SV whose SV ID appears in that page. Note 2: Data ID of transmitting SV. Note 3: SV ID may vary (except for IIR/IIR-M/IIF / and GPS III SVs). Note 4: For almanac data pages, the SV ID relationship to PRN ID is defined in Table 3-Ia and Table 3-Ib</p>	Table 40-V. Data IDs and SV IDs in Subframes 4 and 5					Page	Subframe 4		Subframe 5		Data ID	SV ID* (Note 4)	Data ID	SV ID* (Note 4)	1	Note(2)	121	Note(1)	65	2	Note(1)	89	Note(1)	66	3	Note(1)	90	Note(1)	67	4	Note(1)	91	Note(1)	68	5	Note(1)	92	Note(1)	69	6	Note(2)	121	Note(1)	70	7	Note(1)	93	Note(1)	71	8	Note(1)	94	Note(1)	72	9	Note(1)	95	Note(1)	73	10	Note(2)	96	Note(1)	74	11	Note(2)	121	Note(1)	75	12	Note(2)	126	Note(1)	76	13	Note(2)	116	Note(1)	77	14	Note(2)	117	Note(1)	78	15	Note(2)	118	Note(1)	79	16	Note(2)	121	Note(1)	80	17	Note(2)	119	Note(1)	81	18	Note(2)	120	Note(1)	82	19	Note(2)	122 Note(3)	Note(1)	83	20	Note(2)	123 Note(3)	Note(1)	84	21	Note(2)	121	Note(1)	85	22	Note(2)	124 Note(3)	Note(1)	86	23	Note(2)	125 Note(3)	Note(1)	87	24	Note(2)	126	Note(1)	88	25	Note(2)	127	Note(2)	115	Table inserted to display the SV ID and Data IDs in subframes 4 and 5.
Table 40-V. Data IDs and SV IDs in Subframes 4 and 5																																																																																																																																															
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40.3.3.5.1.2	Almanac Data			
40.3.3.5.1.2			<p>Pages 1 through 24 of subframe 5, as well as pages 2 through 5 and 7 through 9 of subframe 4 contain the almanac data and a SV health word for up to 31 SVs (the health word is discussed in paragraph 40.3.3.5.1.3). The almanac data are a reduced-precision subset of the clock and ephemeris parameters. The data occupy all bits of words three through ten of each page except the eight MSBs of word three (data ID and SV ID), bits 17 through 24 of word five (SV health), and the 50 bits devoted to parity. The number of bits, the scale factor (LSB), the range, and the units of the almanac parameters are given in Table 20-VI. The algorithms and other material related to the use of the almanac data are given in paragraph 40.3.3.5.2.</p> <p>The almanac message for any dummy SVs shall contain alternating ones and zeros with valid parity.</p> <p>The almanac parameters shall be updated by the CS at least once every 6 days while the CS is able to upload the SVs. If the CS is unable to upload the SVs, the accuracy of the almanac parameters transmitted by the SVs will degrade over time.</p> <p>For Block IIA SVs, three sets of almanac shall be used to span at least 60 days. The first and second sets will be transmitted for up to six days each; the third set is intended to be transmitted for the remainder of the 60 days minimum, but the actual duration of transmission will depend on the individual SV's capability to retain data in memory. All three sets are based on six-day curve fits that correspond to the first six days of the transmission interval. For Block IIR/IIR-M, IIF and GPS III SVs, multiple sets of almanac parameters shall be uploaded to span at least 60 days.</p>	Language inserted to provide details on the Almanac Data as they apply to PRNs defined by LNAV-U (PRNS 33-63).
40.3.3.5.1.3	SV Health			
40.3.3.5.1.3			<p>Subframes 4 and 5 contain two types of SV health data: (a) each of the 31 pages which contain the clock/ephemeris related almanac data provide an eight-bit SV health status word regarding the SV whose almanac data they carry, and (b) the 25th page of subframe 4 and of subframe 5 jointly contain six-bit health status data for up to 31 SVs.</p> <p>The three MSBs of the eight-bit health words indicate health of the LNAV data in accordance with the code given in Table 20-VII. The six-bit words provide a one-bit summary of the LNAV data's health status in the MSB position in accordance with paragraph 40.3.3.3.1.4. The five LSBs of both the eight-bit and the six-bit words provide the health status of the SV's signal components in accordance with the code given in Table 20-VIII. A special meaning is assigned, however, to the "6 ones" combination of the six-bit health words in the 25th page of subframes 4 and 5: it indicates that "the SV which has</p>	Language inserted to provide details on the SV health as it applies to PRNs defined by LNAV-U (PRNS 33-

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			<p>that ID is not available and there may be no data regarding that SV in that page of subframes 4 and 5 that is assigned to normally contain the almanac data of that SV" (NOTE: this special meaning applies to the 25th page of subframes 4 and 5 only). The health indication shall be given relative to the "as designed" capabilities of each SV (as designated by the configuration code -- see paragraph 40.3.3.5.1.4). Accordingly, 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 it has been configured into a mode which is normal from a user standpoint and does not require that capability.</p> <p>Additional SV health data are given in subframe 1. The data given in subframes 1, 4, and 5 of the other SVs may differ from that shown in subframes 4 and/or 5 since the latter may be updated at a different time.</p> <p>The eight-bit health status words shall occupy bits 17 through 24 of word five in those 31 pages which contain almanac data for individual SVs. The six-bit health status words shall occupy the 24 MSBs of words four through nine in page 25 of subframe 5 plus bits 19 through 24 of word 8, the 24 MSBs of word 9, and the 12 MSBs of word 10 in page 25 of subframe 4.</p> <p>The predicted health data will be updated at the time of upload when a new almanac has been built by the CS. The transmitted health data may not correspond to the actual health of the transmitting SV or other SVs in the constellation.</p>	63).
40.3.3.5.1.4	Anti-Spoof (A-S) Flags and SV Configurations			
40.3.3.5.1.4			<p>Page 25 of subframe 4 shall contain a four-bit-long term for each of up to 31 SVs to indicate the A-S status and the configuration code of each SV transmitting with a PRN number in the range of 33 through 63. The MSB of each four-bit term shall be the A-S flag with a "1" indicating that A-S is ON. The three LSBs shall indicate the configuration of each SV using the following code:</p> <p>Code SV Configuration</p> <p>000 Reserved</p> <p>001 "Block IIA/IIR" SV (A-S capability, plus flags for A-S and "alert" in HOW; memory capacity as</p>	Language inserted to provide details on SV Health and SV configuration as they apply to PRNs defined by LNAV-U

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			<p>described in paragraph 20.3.2).</p> <p>010 "Block IIR-M" SV</p> <p>011 "Block IIF" SV</p> <p>100 "GPS III" SV</p> <p>Additional codes will be assigned in the future, should the need arise.</p> <p>These four-bit terms shall occupy bits 9 through 24 of word three, the 24 MSBs of words four through seven, and the 12 MSBs of word eight, all in page 25 of subframe 4.</p> <p>Since the anti-spoof information is updated by the CS at the time of upload, the anti-spoof data may not correspond to the actual anti-spoof status of the transmitting SV or other SVs in the constellation.</p>	(PRNs 33-63).
40.3.3.5.1.5	Almanac Reference Week			
40.3.3.5.1.5			The almanac reference week shall be as specified in Appendix II, paragraph 20.3.3.5.1.5.	Reference inserted to detail the almanac reference week for PRNs 33-63 as defined by LNAV-U.
40.3.3.5.1.6	Coordinated Universal Time (UTC) Parameters			
40.3.3.5.1.6			The UTC parameters shall be as specified in Appendix II, paragraph 20.3.3.5.1.6.	Reference inserted to detail the coordinated Universal

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				Time (UTC) for PRNs 33-63 as defined by LNAV-U.
40.3.3.5.1.7	Ionospheric Data.			
40.3.3.5.1.7			The ionospheric data shall be as specified in Appendix II, paragraph 20.3.3.5.1.7.	Reference inserted to detail the ionospheric data for PRNs 33-63 as defined by LNAV-U.
40.3.3.5.1.8	Special Messages			
40.3.3.5.1.8			The special messages shall be as specified in Appendix II, paragraph 20.3.3.5.1.8.	Reference inserted to detail the special messages for PRNs 33-63 as defined by LNAV-U.
40.3.3.5.1.9	NMCT			
40.3.3.5.1.9			<p>Page 13 of subframe 4 shall contain the NMCT data appropriate to the transmitting SV. Each NMCT contains a two-bit availability indicator (AI) followed by 30 slots which may contain up to 30 valid six-bit ERD values. The layout of these 31 data items is as shown in Figure 40-1.</p> <p>The two-bit AI in bits 9 and 10 of word three of page 13 of subframe 4 provide the user with the</p>	Language inserted to address the details for NMCT data

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			<p>following information.</p> <p>_A1 Navigation Message Correction Table Availability</p> <p>_00 The correction table is unencrypted and is available to both precise positioning service users and standard positioning service users.</p> <p>_01 The correction table is encrypted and is available only to precise positioning service users (normal mode).</p> <p>_10 No correction table available for either precise positioning service users or standard positioning service users.</p> <p>_11 Reserved.</p> <p>Each one of the 30 six-bit ERD slots in bits 11 through 24 of word three, bits 1 through 24 of words four through nine, and bits 1 through 22 of word ten of page 13 of subframe 4 will correspond to an ERD value for a particular SV ID. There are 31 possible SV IDs that these ERD slots may correspond to, ranging from SV ID 65 to SV ID 95. SV ID 96 is not a valid SV ID for any of the slots in an NMCT. The correspondence between the 30 ERD slots and the 31 possible SV IDs depends on the SV ID of the particular transmitting SV in accordance with the following two rules: 1) the CS shall ensure via upload that no SV shall transmit an NMCT containing an ERD value which applies to its own SV ID, and 2) the CS shall ensure via upload that all ERD values shall be transmitted in ascending numerical slot order of the corresponding SV ID. To illustrate: the SV operating as SV ID 65 will transmit (in order) ERD values which correspond to SV ID 66 through SV ID 95 in ERD slots 1 through 30 respectively, while the SV operating as SV ID 95 will transmit ERD values which correspond to SV ID 65 through SV ID 94 in ERD slots 1 through 30 respectively.</p> <p>Each ERD value contained in an NMCT ERD slot shall be represented as a six-bit two's complement field with the sign bit occupying the MSB and an LSB of 0.3 meters for an effective range of ±9.3 m. A binary value of "100000" shall indicate that no valid ERD for the corresponding SV ID is present in that slot.</p>	<p>as it applies to PRNs 33-63 as defined by LNAV-U.</p>
40.3.3.5.2	Algorithms Related to Subframe 4 and 5 Data			
40.3.3.5.2			<p>The algorithms related to subframe 4 and 5 data shall be as specified in Appendix II, Section</p>	Reference

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Section Number	PRN Expansion Proposed Heading	IS-GPS-200 Rev E Navstar GPS Space Segment/Navigation User Interfaces	PRN Expansion Redlines	Rationale
			20.3.3.5.2.	inserted to detail the algorithms related to subframe 5 and 5 data for PRNs 33-63 as defined by LNAV-U.
40.3.4	Timing Relationships			
40.3.4			The timing relationships shall be as specified in Appendix II, Section 20.3.4.	Reference inserted to detail the timing relationships for PRNs 33-63 as defined by LNAV-U.
40.3.5	Data Frame Parity			
40.3.5			The data frame parity shall be as specified in Appendix II, Section 20.3.5.	Reference inserted to detail the data frame parity for PRNs 33-63 as defined by LNAV-U.

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End of WAS/IS for IS-GPS-200E

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Start of WAS/IS for IS-GPS-705A Changes

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale
3.2.2		<p>The L5 CNAV data, $D_5(t)$, includes SV ephemerides, system time, SV clock behavior data, status messages and time information, etc. The 50 bps data is encoded in a rate 1/2 convolution encoder. The resulting 100 symbols per second (sps) symbol stream is modulo-2 added to the I5-code only; the resultant bit-train is used to modulate the L5 in-phase (I) carrier. The content and characteristics of the L5 CNAV data, $D_5(t)$, are given in Appendix II of this document. In general, the data content is very similar to that modulated on the L2 C channel of the SV.</p>	<p>The L5 CNAV data, $D_5(t)$, includes SV ephemerides, system time, SV clock behavior data, status messages and timeC/A to P (or Y) code handover information, etc. The 50 bps data is encoded in a rate 1/2 convolution encoder. The resulting 100 symbols per second (sps) symbol stream is modulo-2 added to the I5-code only; the resultant bit-train is used to modulate the L5 in-phase (I) carrier. The content and characteristics of the L5 CNAV data, $D_5(t)$, are given in Appendix II of this document. In general, the data content is very similar to that modulated on the L2 C channel of the SV.</p>	<p>Language inserted here to capture the addition of PRNs 33-63.</p>

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Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																										
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The rightmost bit is the first bit out. Since the initial state of the XA Code is all 1s, these first 13 chips are also the complement of the initial states of the I5 or Q5-codes.</p> <p>NOTE #1: The code phase assignments constitute inseparable pairs, each consisting of a specific I5 and a specific Q5-code phase, as shown above.</p> <p>NOTE #2: PRNs 38-63 are required per this Table if a manufacturer chooses to include these PRNs in their receiver design.</p>	Table 3-Ib. Additional Code Phase Assignments (sheet 1 of 1)					PRN Signal No.*	XB Code Advance – Chips**		Initial XB Code State***		I5	Q5	I5	Q5	38	5358	4226	0101100000110	1111110011101	39	3550	5604	1001001100101	0101010011111	40	3412	6375	1100111001010	1000110101010	41	819	3056	0111011011001	0010111100100	42	4608	1772	0011101101100	1011000100000	43	3698	3662	0011011111010	0011001011001	44	962	4401	1001011010001	1000100101000	45	3001	5218	1001010111111	0000001111110	46	4441	2838	0111000111101	0000000100111	47	4937	6913	0000001000100	0101110011110	48	3717	1685	1000101010001	0001001000111	49	4730	1194	0011010001001	0011110000100	50	7291	6963	1000111110001	0100101011100	51	2279	5001	1011100101001	0010100011111	52	7613	6694	0100101011010	1101110011001	53	5723	991	0000001000010	0011111101111	54	7030	7489	0110001101110	1100100110111	55	1475	2441	0000011001110	1001001100110	56	2593	639	1110111011110	0100010011001	57	2904	2097	0001000010011	0000000010111	58	2056	2498	0000010100001	0000001101111	59	2757	6470	0100001100001	0101101101111	60	3756	2399	0100101001001	0100100001101	61	6205	242	0011110011110	1101100101011	62	5053	3768	1011000110001	1010111000100	63	6437	1186	0101111001011	0010001101001	<p>The table has been renamed Table 3-Ib to accommodate the inclusion of (PRNs > 37). This table was previously located in Section 6 of IS-GPS-705.</p> <p>An additional caveat has been added to this table to denote that PRNs > 37 are NOT a requirement unless the receiver has been built to read PRNs > 37.</p>
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Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale
3.3.2.1		The $I5_i(t)$ pattern (I5-code) and the $Q5_i(t)$ pattern (Q5-code) are both generated by the modulo-2 summation of two PRN codes, $XA(t)$ and $XBI_i(n_{li}, t)$ or $XBQ_i(n_{Qi}, t)$, where n_{li} and n_{Qi} are initial states of XBI_i and XBQ_i for satellite i . There are over 4000 unique L5 codes generated using different initial states of which 74 are currently assigned and identified in Table 3-I using the same basic code generator. Section 6.3.4 provides a selected subset of additional L5-code sequences with assigned PRN numbers.	The $I5_i(t)$ pattern (I5-code) and the $Q5_i(t)$ pattern (Q5-code) are both generated by the modulo-2 summation of two PRN codes, $XA(t)$ and $XBI_i(n_{li}, t)$ or $XBQ_i(n_{Qi}, t)$, where n_{li} and n_{Qi} are initial states of XBI_i and XBQ_i for satellite i . There are over 4000 unique L5 codes generated using different initial states of which 74 <u>128</u> are currently assigned and identified in Table 3- Ia and Table 3-Ib using the same basic code generator. Section 6.3.4 provides a selected subset of additional L5-code sequences with assigned PRN numbers.	This change was made from 74 unique codes to 128 codes due to the $37 * 2 = 74$ unique codes. However, due to PRN expansion there are 54 additional unique codes to account for PRNs 38-63. This results in $74 + 54 = 128$ unique codes.
3.3.3		The content and format of the L5 CNAV data, $D_5(t)$, are given in Appendix II of this document.	The content and format of the L5 CNAV data, $D_5(t)$, are given in Appendix II of this document. <DELETE>	
6.3.4		Among all unique L5-code sequences that could be generated using different initial states as described in Section 3.2.1.1, 74 sequences (37 I5 and 37 Q5) are selected and assigned in Table 3-I. An additional 346 sequences (173 I5 and 173 Q5) are selected and assigned with PRN numbers in the below Table 6-II. Any assignment of an L5 PRN number and its code sequence for any additional SV and/or other L5 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, will be selected from the sequences of Table 6-II.	Among all unique L5-code sequences that could be generated using different initial states as described in Section 3.2.1.1, 74 <u>126</u> sequences (37 <u>63</u> I5 and 37 <u>63</u> Q5) are selected and assigned in Table 3- Ia and Table 3-Ib. An additional 346 <u>294</u> sequences (173 <u>147</u> I5 and 173 <u>147</u> Q5) are selected and assigned with PRN numbers in the below Table 6-II. Any assignment of an L5 PRN number and its code sequence for any additional SV and/or other L5 signal applications, such as Satellite Based Augmentation System (SBAS) satellite signals, will be selected from the sequences of Table 6-II.	The quantities in this text have been updated to reflect the shift of Table 6-II (Sheet 1 of 6) to Section 3 as Table 3-Ib

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Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale
				<p>(PRNs 38-63). The PRNs listed here now are PRNs 64-210 leaving 147 additional sequences. To account for both I5 and Q5 it is $147 * 2 = 294$ additional sequences.</p>

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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																										
6.3.4		<p align="center">Table 6-II. 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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																														
6.3.4		<p align="center">Table 6-II. Additional Code Phase Assignments (sheet 3 of 6)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="2">XB Code Advance – Chips*</th> <th colspan="2">Initial XB Code State**</th> </tr> <tr> <th>I5</th> <th>Q5</th> <th>I5</th> <th>Q5</th> </tr> </thead> <tbody> <tr><td>100</td><td>527</td><td>2485</td><td>0010100000110</td><td>1101101011100</td></tr> <tr><td>101</td><td>1399</td><td>3387</td><td>1101000010001</td><td>1000010110011</td></tr> <tr><td>102</td><td>5879</td><td>7319</td><td>0111011010011</td><td>0010001110001</td></tr> <tr><td>103</td><td>6868</td><td>1853</td><td>1101110101111</td><td>0010100100110</td></tr> <tr><td>104</td><td>217</td><td>5781</td><td>0111011011111</td><td>0100000111111</td></tr> <tr><td>105</td><td>7681</td><td>1874</td><td>1010101001100</td><td>1000001111101</td></tr> <tr><td>106</td><td>3788</td><td>7555</td><td>1011010000011</td><td>1010101111010</td></tr> <tr><td>107</td><td>1337</td><td>2132</td><td>0101100000000</td><td>1111010101010</td></tr> <tr><td>108</td><td>2424</td><td>6441</td><td>0000111101000</td><td>1101010111100</td></tr> <tr><td>109</td><td>4243</td><td>6722</td><td>0110000111011</td><td>1111100001010</td></tr> <tr><td>110</td><td>5686</td><td>1192</td><td>1101100100000</td><td>1111000010001</td></tr> <tr><td>111</td><td>1955</td><td>2588</td><td>0011011101111</td><td>1101111011101</td></tr> <tr><td>112</td><td>4791</td><td>2188</td><td>1001111101100</td><td>0010000100001</td></tr> <tr><td>113</td><td>492</td><td>297</td><td>0100011000110</td><td>1100100111100</td></tr> <tr><td>114</td><td>1518</td><td>1540</td><td>0111000101110</td><td>1100111100011</td></tr> <tr><td>115</td><td>6566</td><td>4138</td><td>0100010110000</td><td>1001100001111</td></tr> <tr><td>116</td><td>5349</td><td>5231</td><td>0110111100100</td><td>1110011001001</td></tr> <tr><td>117</td><td>506</td><td>4789</td><td>0001110010010</td><td>0111110110011</td></tr> <tr><td>118</td><td>113</td><td>659</td><td>1110110110101</td><td>1111011010110</td></tr> <tr><td>119</td><td>1953</td><td>871</td><td>1101110111100</td><td>1000111011110</td></tr> <tr><td>120</td><td>2797</td><td>6837</td><td>1101001100010</td><td>1101001011001</td></tr> <tr><td>121</td><td>934</td><td>1393</td><td>1100011001100</td><td>0010001111001</td></tr> <tr><td>122</td><td>3023</td><td>7383</td><td>1000011000101</td><td>1111110011111</td></tr> <tr><td>123</td><td>3632</td><td>611</td><td>1111011011011</td><td>1000110000001</td></tr> <tr><td>124</td><td>1330</td><td>4920</td><td>0000001100100</td><td>0000111100011</td></tr> <tr><td>125</td><td>4909</td><td>5416</td><td>1101110000101</td><td>0111011011100</td></tr> <tr><td>126</td><td>4867</td><td>1611</td><td>1100001000010</td><td>0101101010100</td></tr> <tr><td>127</td><td>1183</td><td>2474</td><td>0001101001101</td><td>0000101010111</td></tr> <tr><td>128</td><td>3990</td><td>118</td><td>1010100101011</td><td>1010111101101</td></tr> <tr><td>129</td><td>6217</td><td>1382</td><td>1111011110100</td><td>0100010000010</td></tr> </tbody> </table> <p>* XB Code Advance is the number of XB clock cycles beyond an initial state of all 1s. ** In the binary notation for the first 13 chips of the I5 and Q5 XB codes as shown in these columns. The rightmost bit is the first bit out. Since the initial state of the XA Code is all 1s, these first 13 chips are also the complement of the initial states of the I5 or Q5-codes.</p> <p>NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific I5 and a specific Q5-code phase, as shown above.</p>	PRN Signal No.	XB Code Advance – Chips*		Initial XB Code State**		I5	Q5	I5	Q5	100	527	2485	0010100000110	1101101011100	101	1399	3387	1101000010001	1000010110011	102	5879	7319	0111011010011	0010001110001	103	6868	1853	1101110101111	0010100100110	104	217	5781	0111011011111	0100000111111	105	7681	1874	1010101001100	1000001111101	106	3788	7555	1011010000011	1010101111010	107	1337	2132	0101100000000	1111010101010	108	2424	6441	0000111101000	1101010111100	109	4243	6722	0110000111011	1111100001010	110	5686	1192	1101100100000	1111000010001	111	1955	2588	0011011101111	1101111011101	112	4791	2188	1001111101100	0010000100001	113	492	297	0100011000110	1100100111100	114	1518	1540	0111000101110	1100111100011	115	6566	4138	0100010110000	1001100001111	116	5349	5231	0110111100100	1110011001001	117	506	4789	0001110010010	0111110110011	118	113	659	1110110110101	1111011010110	119	1953	871	1101110111100	1000111011110	120	2797	6837	1101001100010	1101001011001	121	934	1393	1100011001100	0010001111001	122	3023	7383	1000011000101	1111110011111	123	3632	611	1111011011011	1000110000001	124	1330	4920	0000001100100	0000111100011	125	4909	5416	1101110000101	0111011011100	126	4867	1611	1100001000010	0101101010100	127	1183	2474	0001101001101	0000101010111	128	3990	118	1010100101011	1010111101101	129	6217	1382	1111011110100	0100010000010	<p align="center">Table 6-II. Additional Code Phase Assignments (sheet 2 of 5)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="2">XB Code Advance – Chips**</th> <th colspan="2">Initial XB Code State***</th> </tr> <tr> <th>I5</th> <th>Q5</th> <th>I5</th> <th>Q5</th> </tr> </thead> <tbody> <tr><td>100</td><td>527</td><td>2485</td><td>0010100000110</td><td>1101101011100</td></tr> <tr><td>101</td><td>1399</td><td>3387</td><td>1101000010001</td><td>1000010110011</td></tr> <tr><td>102</td><td>5879</td><td>7319</td><td>0111011010011</td><td>0010001110001</td></tr> <tr><td>103</td><td>6868</td><td>1853</td><td>1101110101111</td><td>0010100100110</td></tr> <tr><td>104</td><td>217</td><td>5781</td><td>0111011011111</td><td>0100000111111</td></tr> <tr><td>105</td><td>7681</td><td>1874</td><td>1010101001100</td><td>1000001111101</td></tr> <tr><td>106</td><td>3788</td><td>7555</td><td>1011010000011</td><td>1010101111010</td></tr> <tr><td>107</td><td>1337</td><td>2132</td><td>0101100000000</td><td>1111010101010</td></tr> <tr><td>108</td><td>2424</td><td>6441</td><td>0000111101000</td><td>1101010111100</td></tr> <tr><td>109</td><td>4243</td><td>6722</td><td>0110000111011</td><td>1111100001010</td></tr> <tr><td>110</td><td>5686</td><td>1192</td><td>1101100100000</td><td>1111000010001</td></tr> <tr><td>111</td><td>1955</td><td>2588</td><td>0011011101111</td><td>1101111011101</td></tr> <tr><td>112</td><td>4791</td><td>2188</td><td>1001111101100</td><td>0010000100001</td></tr> <tr><td>113</td><td>492</td><td>297</td><td>0100011000110</td><td>1100100111100</td></tr> <tr><td>114</td><td>1518</td><td>1540</td><td>0111000101110</td><td>1100111100011</td></tr> <tr><td>115</td><td>6566</td><td>4138</td><td>0100010110000</td><td>1001100001111</td></tr> <tr><td>116</td><td>5349</td><td>5231</td><td>0110111100100</td><td>1110011001001</td></tr> <tr><td>117</td><td>506</td><td>4789</td><td>0001110010010</td><td>0111110110011</td></tr> <tr><td>118</td><td>113</td><td>659</td><td>1110110110101</td><td>1111011010110</td></tr> <tr><td>119</td><td>1953</td><td>871</td><td>1101110111100</td><td>1000111011110</td></tr> <tr><td>120</td><td>2797</td><td>6837</td><td>1101001100010</td><td>1101001011001</td></tr> <tr><td>121</td><td>934</td><td>1393</td><td>1100011001100</td><td>0010001111001</td></tr> <tr><td>122</td><td>3023</td><td>7383</td><td>1000011000101</td><td>1111110011111</td></tr> <tr><td>123</td><td>3632</td><td>611</td><td>1111011011011</td><td>1000110000001</td></tr> <tr><td>124</td><td>1330</td><td>4920</td><td>0000001100100</td><td>0000111100011</td></tr> <tr><td>125</td><td>4909</td><td>5416</td><td>1101110000101</td><td>0111011011100</td></tr> <tr><td>126</td><td>4867</td><td>1611</td><td>1100001000010</td><td>0101101010100</td></tr> <tr><td>127</td><td>1183</td><td>2474</td><td>0001101001101</td><td>0000101010111</td></tr> <tr><td>128</td><td>3990</td><td>118</td><td>1010100101011</td><td>1010111101101</td></tr> <tr><td>129</td><td>6217</td><td>1382</td><td>1111011110100</td><td>0100010000010</td></tr> </tbody> </table> <p>** XB Code Advance is the number of XB clock cycles beyond an initial state of all 1s. *** In the binary notation for the first 13 chips of the I5 and Q5 XB codes as shown in these columns. 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Since the initial state of the XA Code is all 1s, these first 13 chips are also the complement of the initial states of the I5 or Q5-codes.</p> <p>NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific I5 and a specific Q5-code phase, as shown above.</p>	PRN Signal No.	XB Code Advance – Chips**		Initial XB Code State***		I5	Q5	I5	Q5	100	527	2485	0010100000110	1101101011100	101	1399	3387	1101000010001	1000010110011	102	5879	7319	0111011010011	0010001110001	103	6868	1853	1101110101111	0010100100110	104	217	5781	0111011011111	0100000111111	105	7681	1874	1010101001100	1000001111101	106	3788	7555	1011010000011	1010101111010	107	1337	2132	0101100000000	1111010101010	108	2424	6441	0000111101000	1101010111100	109	4243	6722	0110000111011	1111100001010	110	5686	1192	1101100100000	1111000010001	111	1955	2588	0011011101111	1101111011101	112	4791	2188	1001111101100	0010000100001	113	492	297	0100011000110	1100100111100	114	1518	1540	0111000101110	1100111100011	115	6566	4138	0100010110000	1001100001111	116	5349	5231	0110111100100	1110011001001	117	506	4789	0001110010010	0111110110011	118	113	659	1110110110101	1111011010110	119	1953	871	1101110111100	1000111011110	120	2797	6837	1101001100010	1101001011001	121	934	1393	1100011001100	0010001111001	122	3023	7383	1000011000101	1111110011111	123	3632	611	1111011011011	1000110000001	124	1330	4920	0000001100100	0000111100011	125	4909	5416	1101110000101	0111011011100	126	4867	1611	1100001000010	0101101010100	127	1183	2474	0001101001101	0000101010111	128	3990	118	1010100101011	1010111101101	129	6217	1382	1111011110100	0100010000010	<p>Change made here to denote now Sheet 2 of 5 (to accommodate the promotion of Sheet 1 of 6 to Section 3).</p>
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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																														
6.3.4		<p align="center">Table 6-II. Additional Code Phase Assignments (sheet 4 of 6)</p> <table border="1"> <thead> <tr> <th rowspan="2">PRN Signal No.</th> <th colspan="2">XB Code Advance – Chips*</th> <th colspan="2">Initial XB Code State**</th> </tr> <tr> <th>I5</th> <th>Q5</th> <th>I5</th> <th>Q5</th> </tr> </thead> <tbody> <tr><td>130</td><td>1224</td><td>1092</td><td>111111101100</td><td>101011101111</td></tr> <tr><td>131</td><td>1733</td><td>7950</td><td>000001000011</td><td>0110001000010</td></tr> <tr><td>132</td><td>2319</td><td>7223</td><td>1111110000010</td><td>1011000011010</td></tr> <tr><td>133</td><td>3928</td><td>1769</td><td>0011100111011</td><td>1000100000111</td></tr> <tr><td>134</td><td>2380</td><td>4721</td><td>1101100010101</td><td>1001011110110</td></tr> <tr><td>135</td><td>841</td><td>1252</td><td>0101011111011</td><td>1000001011000</td></tr> <tr><td>136</td><td>5049</td><td>5147</td><td>0001100011011</td><td>0000110010111</td></tr> <tr><td>137</td><td>7027</td><td>2165</td><td>0001101110111</td><td>0010101101011</td></tr> <tr><td>138</td><td>1197</td><td>7897</td><td>1110011110000</td><td>0011100001100</td></tr> <tr><td>139</td><td>7208</td><td>4054</td><td>0111100011111</td><td>0100011001011</td></tr> <tr><td>140</td><td>8000</td><td>3498</td><td>0011101110000</td><td>1010101001111</td></tr> <tr><td>141</td><td>152</td><td>6571</td><td>111001001000</td><td>0100001000101</td></tr> <tr><td>142</td><td>6762</td><td>2858</td><td>0001101110010</td><td>0000001111100</td></tr> <tr><td>143</td><td>3745</td><td>8126</td><td>0101100111100</td><td>1101001110111</td></tr> <tr><td>144</td><td>4723</td><td>7017</td><td>0010010111101</td><td>1110111110001</td></tr> <tr><td>145</td><td>5502</td><td>1901</td><td>1101110110011</td><td>1110111010001</td></tr> <tr><td>146</td><td>4796</td><td>181</td><td>0011110011111</td><td>0001010110011</td></tr> <tr><td>147</td><td>123</td><td>1114</td><td>1001010101111</td><td>0111111000101</td></tr> <tr><td>148</td><td>8142</td><td>5195</td><td>0111111101111</td><td>0100010011100</td></tr> <tr><td>149</td><td>5091</td><td>7479</td><td>0000100100001</td><td>1110000010011</td></tr> <tr><td>150</td><td>7875</td><td>4186</td><td>1110001101011</td><td>0110010101000</td></tr> <tr><td>151</td><td>330</td><td>3904</td><td>1111010010001</td><td>0000100000100</td></tr> <tr><td>152</td><td>5272</td><td>7128</td><td>1011010111101</td><td>0100100101011</td></tr> <tr><td>153</td><td>4912</td><td>1396</td><td>0001101110000</td><td>1000010001111</td></tr> <tr><td>154</td><td>374</td><td>4513</td><td>0000010111100</td><td>1110101000010</td></tr> <tr><td>155</td><td>2045</td><td>5967</td><td>0100101111100</td><td>1110000111011</td></tr> <tr><td>156</td><td>6616</td><td>2580</td><td>1110110111010</td><td>1110110010010</td></tr> <tr><td>157</td><td>6321</td><td>2575</td><td>1101110101011</td><td>1001001001000</td></tr> <tr><td>158</td><td>7605</td><td>7961</td><td>1101000110001</td><td>0011100001101</td></tr> <tr><td>159</td><td>2570</td><td>2598</td><td>0100100010100</td><td>0000111101110</td></tr> </tbody> </table> <p>* XB Code Advance is the number of XB clock cycles beyond an initial state of all 1s. ** In the binary notation for the first 13 chips of the I5 and Q5 XB codes as shown in these columns. 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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale

UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

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187	2946	5419	1011010111010	0100111011011																																																																																																																																																																																																																																																																																																																														
188	7091	5626	0000001010011	0110111000101																																																																																																																																																																																																																																																																																																																														
189	923	1266	0010011111101	1101011100011																																																																																																																																																																																																																																																																																																																														

UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

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Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale
6.4.1	Lower PRN Numbers Versus Upper PRN Numbers			
6.4.1			See IS-GPS-200.	Language to clarify the prioritization of the lower PRNs numbers versus the higher PRN numbers. Backwards compatibility to PRNs 1-32 remains the top priority.
6.4.2	PRN Number Consistency			
6.4.2			For a given satellite, the same PRN number will be assigned to all operational signals (signals modulated by standard PRN code with data that indicates the signal health is OK).	Language inserted to align the signals with the proper native SV.
6.4.3	PRNs 33 and 37			
6.4.3			See IS-GPS-200.	Language addressing

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Section Number	PRN Expansion Proposed Heading	IS-GPS-705 Rev A L5 SS and Nav User Segment Interfaces	PRN Expansion Redlines	Rationale
				the use of PRNs 33 and 37.
6.4.4	PRNs 33 and 63			
6.4.4			See IS-GPS-200.	Language explicitly stating that SVs assigned PRNs 33-63 are sunchornized to GPS time to avoid conflict with specialized ground applications.

End of WAS/IS for IS-GPS-705A

UNCLASSIFIED- Pseudorandom Noise (PRN) Expansion

Start of WAS/IS for IS-GPS-800A Changes

Section Number	PRN Expansion Proposed Heading	IS-GPS-800 Rev A Navstar GPS Space Segment/User Segment L1C Interface	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																																																												
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17	5068	193	75764610	62731643	5076	151	26163421	62162634																																																																																																																																																																																																																																																																																																																																																																																																																								
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UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-800 Rev A Navstar GPS Space Segment/User Segment L1C Interface	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																																																												
3.2.2.1.2		<p align="center">3.2-2 L1C Ranging Codes Parameter Assignments (sheet 2 of 3)</p> <table border="1"> <thead> <tr> <th rowspan="2">GPS PRN Signal No.</th> <th colspan="4">L1C_P</th> <th colspan="4">L1C_D</th> </tr> <tr> <th>Weil Index (w)</th> <th>Insertion Index (p)</th> <th>Initial 24 Chips (Octal)</th> <th>Final 24 Chips (Octal)</th> <th>Weil Index (w)</th> <th>Insertion Index (p)</th> <th>Initial 24 Chips (Octal)</th> <th>Final 24 Chips (Octal)</th> </tr> </thead> <tbody> <tr><td>22</td><td>5014</td><td>5955</td><td>27600270</td><td>37672235</td><td>5096</td><td>6142</td><td>16027175</td><td>73662313</td></tr> <tr><td>23</td><td>5004</td><td>9805</td><td>66101627</td><td>32201230</td><td>4983</td><td>190</td><td>26267340</td><td>55416712</td></tr> <tr><td>24</td><td>4980</td><td>670</td><td>17717055</td><td>37437553</td><td>4783</td><td>644</td><td>36272365</td><td>22550142</td></tr> <tr><td>25</td><td>4915</td><td>464</td><td>47500232</td><td>23310544</td><td>4991</td><td>467</td><td>67707677</td><td>31506062</td></tr> <tr><td>26</td><td>4909</td><td>29</td><td>52057615</td><td>07152415</td><td>4815</td><td>5384</td><td>07760374</td><td>44603344</td></tr> <tr><td>27</td><td>4893</td><td>429</td><td>76153566</td><td>02571041</td><td>4443</td><td>801</td><td>73633310</td><td>05252052</td></tr> <tr><td>28</td><td>4885</td><td>394</td><td>22444670</td><td>52270664</td><td>4769</td><td>594</td><td>30401257</td><td>70603616</td></tr> <tr><td>29</td><td>4832</td><td>616</td><td>62330044</td><td>61317104</td><td>4879</td><td>4450</td><td>72606251</td><td>51643216</td></tr> <tr><td>30</td><td>4824</td><td>9457</td><td>13674337</td><td>43137330</td><td>4894</td><td>9437</td><td>37370402</td><td>30417163</td></tr> <tr><td>31</td><td>4591</td><td>4429</td><td>60635146</td><td>20336467</td><td>4985</td><td>4307</td><td>74255661</td><td>20074570</td></tr> <tr><td>32</td><td>3706</td><td>4771</td><td>73527653</td><td>40745656</td><td>5056</td><td>5906</td><td>10171147</td><td>26204176</td></tr> <tr><td>33*</td><td>5092</td><td>365</td><td>63772350</td><td>50272475</td><td>4921</td><td>378</td><td>12242515</td><td>07105451</td></tr> <tr><td>34*</td><td>4986</td><td>9705</td><td>33564215</td><td>75604301</td><td>5036</td><td>9448</td><td>17426100</td><td>31062227</td></tr> <tr><td>35*</td><td>4965</td><td>9489</td><td>52236055</td><td>52550266</td><td>4812</td><td>9432</td><td>75647756</td><td>36516016</td></tr> <tr><td>36*</td><td>4920</td><td>4193</td><td>64506521</td><td>15334214</td><td>4838</td><td>5849</td><td>71265340</td><td>07641474</td></tr> <tr><td>37*</td><td>4917</td><td>9947</td><td>73561133</td><td>53445703</td><td>4855</td><td>5547</td><td>74355073</td><td>35065520</td></tr> <tr><td>38</td><td>4858</td><td>824</td><td>12647121</td><td>71136024</td><td>4904</td><td>9546</td><td>45253014</td><td>03155010</td></tr> <tr><td>39</td><td>4847</td><td>864</td><td>16640265</td><td>01607455</td><td>4753</td><td>9132</td><td>12452274</td><td>34041736</td></tr> <tr><td>40</td><td>4790</td><td>347</td><td>11161337</td><td>73467421</td><td>4483</td><td>403</td><td>07011213</td><td>20162561</td></tr> <tr><td>41</td><td>4770</td><td>677</td><td>22055260</td><td>54372454</td><td>4942</td><td>3766</td><td>35143750</td><td>01603755</td></tr> <tr><td>42</td><td>4318</td><td>6544</td><td>11546064</td><td>11526534</td><td>4813</td><td>3</td><td>26442600</td><td>40541055</td></tr> </tbody> </table> <p>NOTES: * PRN sequences 33-37 are reserved for other uses (e.g., ground transmitters)</p>	GPS PRN Signal No.	L1C _P				L1C _D				Weil Index (w)	Insertion Index (p)	Initial 24 Chips (Octal)	Final 24 Chips (Octal)	Weil Index (w)	Insertion Index (p)	Initial 24 Chips (Octal)	Final 24 Chips (Octal)	22	5014	5955	27600270	37672235	5096	6142	16027175	73662313	23	5004	9805	66101627	32201230	4983	190	26267340	55416712	24	4980	670	17717055	37437553	4783	644	36272365	22550142	25	4915	464	47500232	23310544	4991	467	67707677	31506062	26	4909	29	52057615	07152415	4815	5384	07760374	44603344	27	4893	429	76153566	02571041	4443	801	73633310	05252052	28	4885	394	22444670	52270664	4769	594	30401257	70603616	29	4832	616	62330044	61317104	4879	4450	72606251	51643216	30	4824	9457	13674337	43137330	4894	9437	37370402	30417163	31	4591	4429	60635146	20336467	4985	4307	74255661	20074570	32	3706	4771	73527653	40745656	5056	5906	10171147	26204176	33*	5092	365	63772350	50272475	4921	378	12242515	07105451	34*	4986	9705	33564215	75604301	5036	9448	17426100	31062227	35*	4965	9489	52236055	52550266	4812	9432	75647756	36516016	36*	4920	4193	64506521	15334214	4838	5849	71265340	07641474	37*	4917	9947	73561133	53445703	4855	5547	74355073	35065520	38	4858	824	12647121	71136024	4904	9546	45253014	03155010	39	4847	864	16640265	01607455	4753	9132	12452274	34041736	40	4790	347	11161337	73467421	4483	403	07011213	20162561	41	4770	677	22055260	54372454	4942	3766	35143750	01603755	42	4318	6544	11546064	11526534	4813	3	26442600	40541055	<p 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<tr><td>32</td><td>3706</td><td>4771</td><td>73527653</td><td>40745656</td><td>5056</td><td>5906</td><td>10171147</td><td>26204176</td></tr> <tr><td>33</td><td>5092</td><td>365</td><td>63772350</td><td>50272475</td><td>4921</td><td>378</td><td>12242515</td><td>07105451</td></tr> <tr><td>34</td><td>4986</td><td>9705</td><td>33564215</td><td>75604301</td><td>5036</td><td>9448</td><td>17426100</td><td>31062227</td></tr> <tr><td>35</td><td>4965</td><td>9489</td><td>52236055</td><td>52550266</td><td>4812</td><td>9432</td><td>75647756</td><td>36516016</td></tr> <tr><td>36</td><td>4920</td><td>4193</td><td>64506521</td><td>15334214</td><td>4838</td><td>5849</td><td>71265340</td><td>07641474</td></tr> <tr><td>37</td><td>4917</td><td>9947</td><td>73561133</td><td>53445703</td><td>4855</td><td>5547</td><td>74355073</td><td>35065520</td></tr> <tr><td>3</td><td>4858</td><td>824</td><td>12647121</td><td>71136024</td><td>4904</td><td>9546</td><td>45253014</td><td>03155010</td></tr> <tr><td>39</td><td>4847</td><td>864</td><td>16640265</td><td>01607455</td><td>4753</td><td>9132</td><td>12452274</td><td>34041736</td></tr> <tr><td>40</td><td>4790</td><td>347</td><td>11161337</td><td>73467421</td><td>4483</td><td>403</td><td>07011213</td><td>20162561</td></tr> <tr><td>41</td><td>4770</td><td>677</td><td>22055260</td><td>54372454</td><td>4942</td><td>3766</td><td>35143750</td><td>01603755</td></tr> <tr><td>42</td><td>4318</td><td>6544</td><td>11546064</td><td>11526534</td><td>4813</td><td>3</td><td>26442600</td><td>40541055</td></tr> </tbody> </table> <p>NOTES:</p>	GPS PRN Signal No.	L1C _P				L1C _D				Weil Index (w)	Insertion Index (p)	Initial 24 Chips (Octal)	Final 24 Chips (Octal)	Weil Index (w)	Insertion Index (p)	Initial 24 Chips (Octal)	Final 24 Chips 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is being inserted to make users aware the users if a PRN is NOT listed in the almanac they are not search the unlisted PRN.</p>
GPS PRN Signal No.	L1C _P				L1C _D																																																																																																																																																																																																																																																																																																																																																																																																																											
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32	3706	4771	73527653	40745656	5056	5906	10171147	26204176																																																																																																																																																																																																																																																																																																																																																																																																																								
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22	5014	5955	27600270	37672235	5096	6142	16027175	73662313																																																																																																																																																																																																																																																																																																																																																																																																																								
23	5004	9805	66101627	32201230	4983	190	26267340	55416712																																																																																																																																																																																																																																																																																																																																																																																																																								
24	4980	670	17717055	37437553	4783	644	36272365	22550142																																																																																																																																																																																																																																																																																																																																																																																																																								
25	4915	464	47500232	23310544	4991	467	67707677	31506062																																																																																																																																																																																																																																																																																																																																																																																																																								
26	4909	29	52057615	07152415	4815	5384	07760374	44603344																																																																																																																																																																																																																																																																																																																																																																																																																								
27	4893	429	76153566	02571041	4443	801	73633310	05252052																																																																																																																																																																																																																																																																																																																																																																																																																								
28	4885	394	22444670	52270664	4769	594	30401257	70603616																																																																																																																																																																																																																																																																																																																																																																																																																								
29	4832	616	62330044	61317104	4879	4450	72606251	51643216																																																																																																																																																																																																																																																																																																																																																																																																																								
30	4824	9457	13674337	43137330	4894	9437	37370402	30417163																																																																																																																																																																																																																																																																																																																																																																																																																								
31	4591	4429	60635146	20336467	4985	4307	74255661	20074570																																																																																																																																																																																																																																																																																																																																																																																																																								
32	3706	4771	73527653	40745656	5056	5906	10171147	26204176																																																																																																																																																																																																																																																																																																																																																																																																																								
33	5092	365	63772350	50272475	4921	378	12242515	07105451																																																																																																																																																																																																																																																																																																																																																																																																																								
34	4986	9705	33564215	75604301	5036	9448	17426100	31062227																																																																																																																																																																																																																																																																																																																																																																																																																								
35	4965	9489	52236055	52550266	4812	9432	75647756	36516016																																																																																																																																																																																																																																																																																																																																																																																																																								
36	4920	4193	64506521	15334214	4838	5849	71265340	07641474																																																																																																																																																																																																																																																																																																																																																																																																																								
37	4917	9947	73561133	53445703	4855	5547	74355073	35065520																																																																																																																																																																																																																																																																																																																																																																																																																								
3	4858	824	12647121	71136024	4904	9546	45253014	03155010																																																																																																																																																																																																																																																																																																																																																																																																																								
39	4847	864	16640265	01607455	4753	9132	12452274	34041736																																																																																																																																																																																																																																																																																																																																																																																																																								
40	4790	347	11161337	73467421	4483	403	07011213	20162561																																																																																																																																																																																																																																																																																																																																																																																																																								
41	4770	677	22055260	54372454	4942	3766	35143750	01603755																																																																																																																																																																																																																																																																																																																																																																																																																								
42	4318	6544	11546064	11526534	4813	3	26442600	40541055																																																																																																																																																																																																																																																																																																																																																																																																																								

UNCLASSIFIED
Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-800 Rev A Navstar GPS Space Segment/User Segment L1C Interface	PRN Expansion Redlines	Rationale																																																																																																																																																																																																																																																																																																																																																																																																																												
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<tr><td>46</td><td>4911</td><td>9461</td><td>15317006</td><td>72655147</td><td>4969</td><td>6124</td><td>25121057</td><td>25236175</td></tr> <tr><td>47</td><td>4881</td><td>444</td><td>16151224</td><td>01212152</td><td>5031</td><td>10216</td><td>20362622</td><td>43732204</td></tr> <tr><td>48</td><td>4827</td><td>4839</td><td>67454561</td><td>10410122</td><td>5038</td><td>4251</td><td>33050463</td><td>02316015</td></tr> <tr><td>49</td><td>4795</td><td>4144</td><td>47542743</td><td>22473073</td><td>4740</td><td>9893</td><td>65334051</td><td>00212370</td></tr> <tr><td>50</td><td>4789</td><td>9875</td><td>65057230</td><td>63145220</td><td>4073</td><td>9884</td><td>65523456</td><td>35163655</td></tr> <tr><td>51</td><td>4725</td><td>197</td><td>77415771</td><td>65734110</td><td>4843</td><td>4627</td><td>53741004</td><td>33771603</td></tr> <tr><td>52</td><td>4675</td><td>1156</td><td>75364651</td><td>25167435</td><td>4979</td><td>4449</td><td>66360341</td><td>41161255</td></tr> <tr><td>53</td><td>4539</td><td>4674</td><td>75664330</td><td>17524136</td><td>4867</td><td>9798</td><td>34421651</td><td>76257261</td></tr> <tr><td>54</td><td>4535</td><td>10035</td><td>44600202</td><td>47064764</td><td>4964</td><td>985</td><td>04530741</td><td>33512503</td></tr> <tr><td>55</td><td>4458</td><td>4504</td><td>23211425</td><td>14016156</td><td>5025</td><td>4272</td><td>12621031</td><td>16237466</td></tr> <tr><td>56</td><td>4197</td><td>5</td><td>51504740</td><td>11723025</td><td>4579</td><td>126</td><td>62330452</td><td>24120336</td></tr> <tr><td>57</td><td>4096</td><td>9937</td><td>47712554</td><td>76760325</td><td>4390</td><td>10024</td><td>67510404</td><td>11103121</td></tr> <tr><td>58</td><td>3484</td><td>430</td><td>67325233</td><td>04724615</td><td>4763</td><td>434</td><td>00726605</td><td>36467526</td></tr> <tr><td>59</td><td>3481</td><td>5</td><td>61517015</td><td>72504743</td><td>4612</td><td>1029</td><td>00200154</td><td>66444010</td></tr> <tr><td>60</td><td>3393</td><td>355</td><td>43217554</td><td>51215201</td><td>4784</td><td>561</td><td>37533004</td><td>70455364</td></tr> <tr><td>61</td><td>3175</td><td>909</td><td>52520062</td><td>00630473</td><td>3716</td><td>289</td><td>73771510</td><td>26726105</td></tr> <tr><td>62</td><td>2360</td><td>1622</td><td>77073716</td><td>71217605</td><td>4703</td><td>638</td><td>44071707</td><td>63663333</td></tr> <tr><td>63</td><td>1852</td><td>6284</td><td>56350460</td><td>50200707</td><td>4851</td><td>4353</td><td>34665654</td><td>42142704</td></tr> </tbody> </table> <p>NOTES: * PRN sequences 33-37 are reserved for other uses (e.g., ground transmitters)</p>	GPS PRN Signal No.	L1C _P				L1C _D				Weil Index (w)	Insertion Index (p)	Initial 24 Chips (Octal)	Final 24 Chips (Octal)	Weil Index (w)	Insertion Index (p)	Initial 24 Chips (Octal)	Final 24 Chips (Octal)	43	4126	6312	24765004	16522173	4957	684	67214123	64750626	44	3961	9804	14042504	74053703	4618	9711	62274362	72550016	45	3790	278	53512265	52211303	4669	333	23371051	36130364	46	4911	9461	15317006	72655147	4969	6124	25121057	25236175	47	4881	444	16151224	01212152	5031	10216	20362622	43732204	48	4827	4839	67454561	10410122	5038	4251	33050463	02316015	49	4795	4144	47542743	22473073	4740	9893	65334051	00212370	50	4789	9875	65057230	63145220	4073	9884	65523456	35163655	51	4725	197	77415771	65734110	4843	4627	53741004	33771603	52	4675	1156	75364651	25167435	4979	4449	66360341	41161255	53	4539	4674	75664330	17524136	4867	9798	34421651	76257261	54	4535	10035	44600202	47064764	4964	985	04530741	33512503	55	4458	4504	23211425	14016156	5025	4272	12621031	16237466	56	4197	5	51504740	11723025	4579	126	62330452	24120336	57	4096	9937	47712554	76760325	4390	10024	67510404	11103121	58	3484	430	67325233	04724615	4763	434	00726605	36467526	59	3481	5	61517015	72504743	4612	1029	00200154	66444010	60	3393	355	43217554	51215201	4784	561	37533004	70455364	61	3175	909	52520062	00630473	3716	289	73771510	26726105	62	2360	1622	77073716	71217605	4703	638	44071707	63663333	63	1852	6284	56350460	50200707	4851	4353	34665654	42142704	<p 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44	3961	9804	14042504	74053703	4618	9711	62274362	72550016																																																																																																																																																																																																																																																																																																																																																																																																																								
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47	4881	444	16151224	01212152	5031	10216	20362622	43732204																																																																																																																																																																																																																																																																																																																																																																																																																								
48	4827	4839	67454561	10410122	5038	4251	33050463	02316015																																																																																																																																																																																																																																																																																																																																																																																																																								
49	4795	4144	47542743	22473073	4740	9893	65334051	00212370																																																																																																																																																																																																																																																																																																																																																																																																																								
50	4789	9875	65057230	63145220	4073	9884	65523456	35163655																																																																																																																																																																																																																																																																																																																																																																																																																								
51	4725	197	77415771	65734110	4843	4627	53741004	33771603																																																																																																																																																																																																																																																																																																																																																																																																																								
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49	4795	4144	47542743	22473073	4740	9893	65334051	00212370																																																																																																																																																																																																																																																																																																																																																																																																																								
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Change Topic: Pseudorandom Noise (PRN) Expansion

Section Number	PRN Expansion Proposed Heading	IS-GPS-800 Rev A Navstar GPS Space Segment/User Segment L1C Interface	PRN Expansion Redlines	Rationale
6.4	Operational Protocols			
6.4.1	Lower PRN Numbers Versus Upper PRN Numbers			
6.4.1			See IS-GPS-200.	Language to clarify the prioritization of the lower PRN numbers versus the higher PRN numbers. Backwards compatibility to PRNs 1-32 remains the top priority.
6.4.2	PRN Number Consistency			
6.4.2			For a given satellite, the same PRN number will be assigned to all operational signals (signals modulated by standard PRN code with data that indicates the signal health is OK).	Language inserted to align the signals with the proper native SV.
6.4.3	PRNs 33 and 37			
6.4.3			See IS-GPS-200.	Language addressing the

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Section Number	PRN Expansion Proposed Heading	IS-GPS-800 Rev A Navstar GPS Space Segment/User Segment L1C Interface	PRN Expansion Redlines	Rationale
				use of PRNs 33 and 37.
6.4.4	PRNs 33 through 63			
6.4.4			See IS-GPS-200.	Language explicitly stating that SVs assigned PRNs 33-63 are sunchornized to GPS time to avoid conflict with specialized ground applications.

End of WAS/IS for IS-GPS-800A