# INTERFACE REVISION NOTICE (IRN)

Note: This Summary Signature Page is to be used after all signatories have signed separate Signature Pages.

| Affected IS: | IRN Number | Date: |
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| IS-GPS-200-Rev H | IRN-IS-200H-006A | 27-OCT-2016 |
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**Document Title:** NAVSTAR GPS Space Segment/Navigation User Interfaces.

**Reason For Change (Driver):** Extraneous, ambiguous, redundant, or missing editorial and/or administrative information exists within the descriptive texts, phrases and/or references in the public documents (IS-GPS-200, IS-GPS-705, and IS-GPS-800).

**Description of Change**: As specified in the IRN.

**Prepared By:** Huey Nguyenhuu **Checked By:** Perry Chang

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**IS200-1286** :

**WAS** :

Table 3-Ib. Expanded Code Phase Assignments (III and subsequent blocks only)

| SV ID No. | GPS PRN Signal No. | Code Phase Selection | | | P-code Relative Advance (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 | 2337 |
| 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 | 1402 |
| 83 | 51 | 710 | 1716 | 14 | $P_{14}(t+24)$ | 0061 | 6423 |
| 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 | 7135 |
| 87 | 55 | 558 | 1666 | 18 | $P_{18}(t+24)$ | 0111 | 5674 |
| 88 | 56 | 220 | 0177 | 19 | $P_{19}(t+24)$ | 1600 | 0514 |
| 89 | 57 | 397 | 1353 | 20 | $P_{20}(t+24)$ | 0424 | 6064 |
| 90 | 58 | 55 | 0426 | 21 | $P_{21}(t+24)$ | 1351 | 1210 |
| 91 | 59 | 898 | 0227 | 22 | $P_{22}(t+24)$ | 1550 | 6726 |
| 92 | 60 | 759 | 0506 | 23 | $P_{23}(t+24)$ | 1271 | 1171 |
| 93 | 61 | 367 | 0336 | 24 | $P_{24}(t+24)$ | 1441 | 6656 |
| 94 | 62 | 299 | 1333 | 25 | $P_{25}(t+24)$ | 0444 | 1105 |
| 95 | 63 | 1018 | 1745 | 26 | $P_{26}(t+24)$ | 0032 | 6660 |

*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).

** $P_i(t+N)$: P-code sequence of PRN number i shifted by N hours. See Section 3.3.2.1.

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.

NOTE #2: PRNs 38-63 are required per this Table if a manufacturer chooses to include these PRNs in their receiver design.

**IS :**

Table 3-Ib. Expanded Code Phase Assignments (III and subsequent blocks only)

| SV ID No. | GPS PRN Signal No. | Code Phase Selection | | | P-code Relative Advance (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 | 2337 |
| 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 | 1402 |
| 83 | 51 | 710 | 1716 | 14 | $P_{14}(t+24)$ | 0061 | 6423 |
| 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 | 7135 |
| 87 | 55 | 558 | 1666 | 18 | $P_{18}(t+24)$ | 0111 | 5674 |
| 88 | 56 | 220 | 0177 | 19 | $P_{19}(t+24)$ | 1600 | 0514 |
| 89 | 57 | 397 | 1353 | 20 | $P_{20}(t+24)$ | 0424 | 6064 |
| 90 | 58 | 55 | 0426 | 21 | $P_{21}(t+24)$ | 1351 | 1210 |
| 91 | 59 | 898 | 0227 | 22 | $P_{22}(t+24)$ | 1550 | 6726 |
| 92 | 60 | 759 | 0506 | 23 | $P_{23}(t+24)$ | 1271 | 1171 |
| 93 | 61 | 367 | 0336 | 24 | $P_{24}(t+24)$ | 1441 | 6656 |
| 94 | 62 | 299 | 1333 | 25 | $P_{25}(t+24)$ | 0444 | 1105 |
| 95 | 63 | 1018 | 1745 | 26 | $P_{26}(t+24)$ | 0032 | 6660 |

*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).

** $P_i(t+N)$: P-code sequence of PRN number i shifted by N hours. See Section 3.3.2.1.

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.

NOTE #2: PRNs 38-63 are required per this Table if a manufacturer chooses to include these PRNs in their receiver design.

**IS200-48** :

**WAS** :
During the initial period of Block IIR-M SVs operation, prior to Initial Operational Capability of L2 C signal, Block IIR-M may modulo-2 add the NAV data, D(t), to the L2 CM-code instead of CNAV data, DC(t). In such configuration, the data rate of D(t) may be 50 bps (i.e. without convolution encoding) or it may be 25 bps. The D(t) of 25 bps shall be convolutionally encoded resulting in 50 sps.

**IS** :
~~During the initial period of Block IIR-M SVs operation, prior to Initial Operational Capability of L2 C signal, Block IIR-M may modulo-2 add the NAV data, D(t), to the L2 CM-code instead of CNAV data, DC(t). In such configuration, the data rate of D(t) may be 50 bps (i.e. without convolution encoding) or it may be 25 bps. The D(t) of 25 bps shall be convolutionally encoded resulting in 50 sps.~~

**IS200-97** :

**WAS** :
For PRN codes 1 through 37, the $P_i(t)$ pattern (P-code) is generated by the modulo-2 summation of two PRN codes, X1(t) and X2(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-Ia) using the same basic code generator.

Expanded P-code PRN sequences, $P_i(t)$ where $38 \leq i \leq 63$, are described as follows:

$P_i(t) = P_{i-37}(t - T)$ where T will equal 24 hours)

therefore, the equation is

$P_i(t) = P_{i-37x}(t + i * 24 \text{ hours})$,

where i is an integer from 64 to 210, x is an integer portion of (i-1)/37.

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-Ib.

The linear $G_i(t)$ pattern (C/A-code) is the modulo-2 sum of two 1023-bit linear patterns, G1 and $G2_i$. The latter sequence is selectively delayed by an integer number of chips to produce many different G(t) patterns (defined in Tables 3-Ia and 3-Ib).

The $C_{M,i}(t)$ 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 $C_{M,i}(t)$ patterns (defined in Tables 3-IIa and 3-IIb).

The $C_{L,i}(t)$ 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 $C_{L,i}(t)$ patterns (defined in Tables 3-IIa and 3-IIb).

For a given SV ID, two different initial states are used to generate different $C_{L,i}(t)$ and $C_{M,i}(t)$ patterns.

Section 6.3.6 provides a selected subset of additional P-, L2 CM-, L2 CL-, and the C/A-code sequences with assigned PRN numbers.

**IS** :
For PRN codes 1 through 37, the Pi(t) pattern (P-code) is generated by the modulo-2 summation of two PRN codes, X1(t) and X2(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-Ia) using the same basic code generator.

Expanded P-code PRN sequences, Pi(t) where $38 \leq i \leq 63$, are described as follows:

Pi(t) = Pi-37(t -+ T) where T will equal 24 hours)

therefore, the equation is

Pi(t) = Pi-37x(t + i * 24 hours),

where i is an integer from 64 to 210, x is an integer portion of (i-1)/37.

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-Ib.

The linear Gi(t) pattern (C/A-code) is the modulo-2 sum of two 1023-bit linear patterns, G1 and G2i. The latter sequence is selectively delayed by an integer number of chips to produce many different G(t) patterns (defined in Tables 3-Ia and 3-Ib).

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-IIa and 3-IIb).

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-IIa and 3-IIb).

For a given SV ID, two different initial states are used to generate different CL,i(t) and CM,i(t) patterns.

Section 6.3.6 provides a selected subset of additional P-, L2 CM-, L2 CL-, and the C/A-code sequences with assigned PRN numbers.

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**IS200-106** :

**WAS** :
The state of each generator can be expressed as a code vector word which specifies the binary sequence constant of each register as follows: (a) the vector consists of the binary state of each stage of the register, (b) the stage 12 value appears at the left followed by the values of the remaining states in order of descending stage numbers, and (c) the shift direction is from lower to higher stage number with stage 12 providing the current output. This code vector convention represents the present output and 11 future outputs in sequence. Using this convention, at each X1 epoch, the X1A shift register is initialized to code vector 001001001000 and the X1B shift register is initialized to code vector 010101010100. The first chip of the X1A sequence and the first chip of the X1B sequence occur simultaneously in the first chip interval of any X1 period.

**IS** :
The state of each generator can be expressed as a code vector word which specifies the binary sequence constant of each register as follows: (a) the vector consists of the binary state of each stage of the register (Note that in the code vector convention, the output is on the left while in Figures 3-2 through 3-5 the output tap is on the right.), (b) the stage 12 value appears at the left followed by the values of the remaining states in order of descending stage numbers, and (c) the shift direction is from lower to higher stage number with stage 12 providing the current output. This code vector convention represents the present output and 11 future outputs in sequence. Using this convention, at each X1 epoch, the X1A shift register is initialized to code vector 001001001000 and the X1B shift register is initialized to code vector 010101010100. The first chip of the X1A sequence and the first chip of the X1B sequence occur simultaneously in the first chip interval of any X1 period.

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**IS200-117** :

**WAS** :
Figure 3-6 shows a functional P-code mechanization for the 37 unique $P_i(t)$ code phases, $1 \leq i \leq 37$. 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.

**IS** :
Figure 3-6 shows a functional P-code mechanization for the 37 unique Pi(t) code phases, $1 \leq i \leq 37$. ~~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.

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**IS200-118** :

**WAS** :

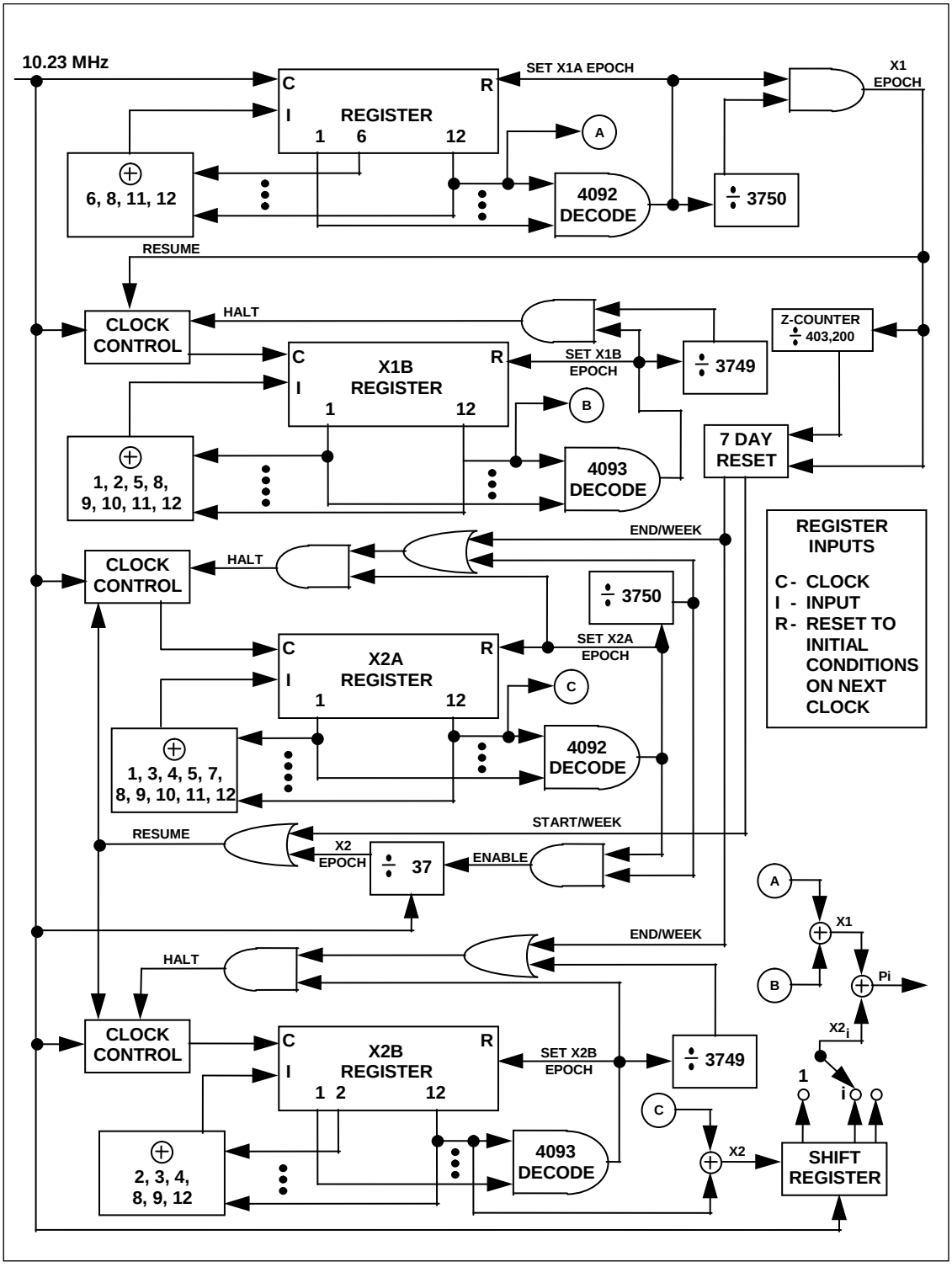


Figure 3-6. P-Code Generation

**IS :**

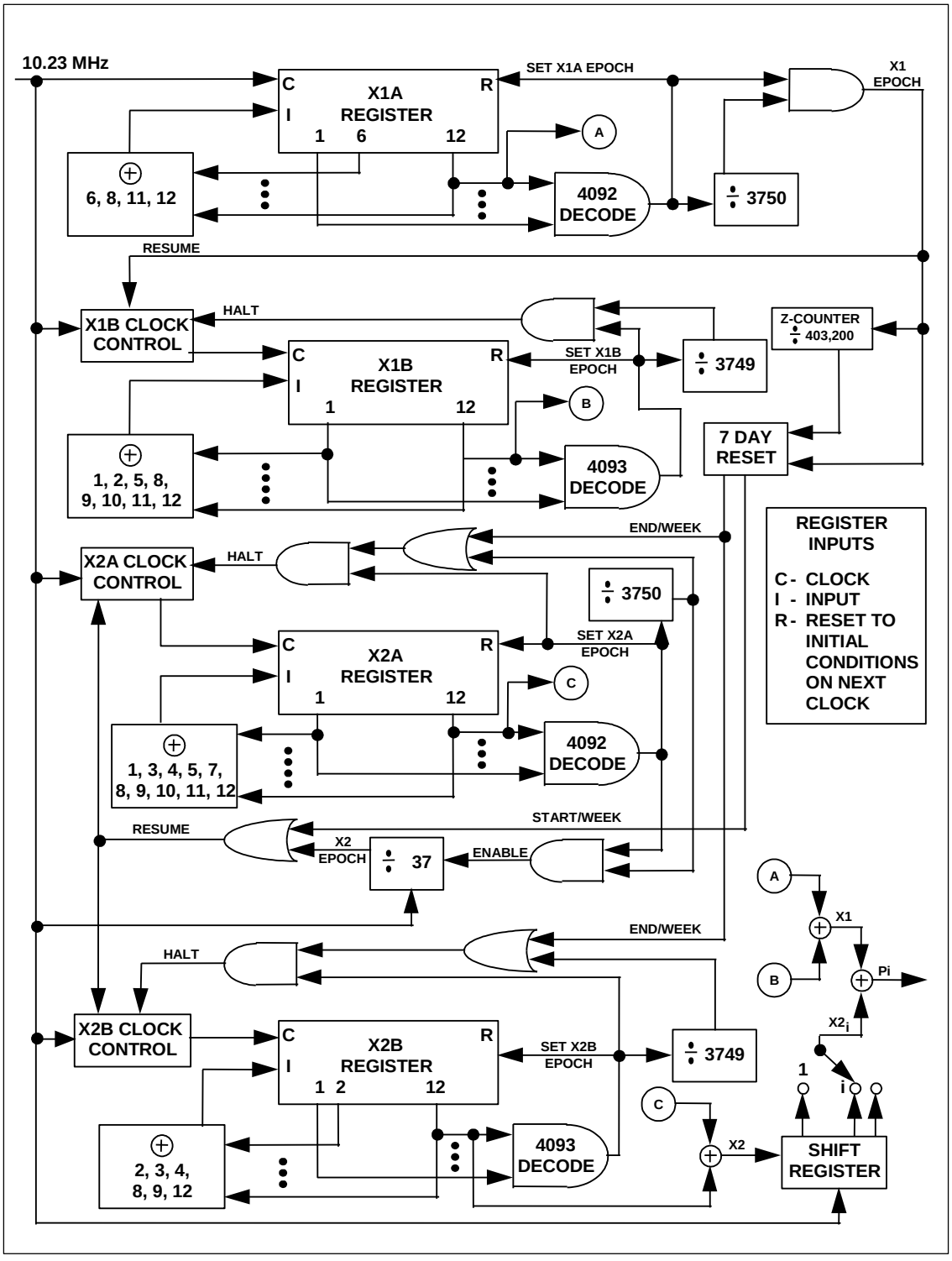


Figure 3-6. P-Code Generation

**IS200-1511** :

**WAS** :
Invalid refers to a value that is within a data field’s bit allocation and scale factor, but is outside the valid range and which GPS has no intention of functionally defining.

**IS** :
Invalid refers to a value that is within a data field’s bit allocation and scale factor, but is outside the valid range and which GPS has no intention of functionally defining. Invalid range data is to be used at the user's own risk.

**IS200-1282** :

**WAS** :

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 1 of 5)

| PRN Signal No. | C/A | | | P | | |
|---|---|---|---|---|---|---|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)* | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Advance (Hours) ** | First 12 Chips (Octal) |
| 64 | 729 | 0254 | 1523 | 27 | $P_{27}(t+24)$ | 5112 |
| 65 | 695 | 1602 | 0175 | 28 | $P_{28}(t+24)$ | 0667 |
| 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 |

* 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).

** $P_i(t+N)$: P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.

NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.

**IS :**

Table 6-I Additional C/A-/P-Code Phase Assignments (sheet 1 of 5)

| PRN Signal No. | C/A | | | P | | |
|---|---|---|---|---|---|---|
| | G2 Delay (Chips) | Initial G2 Setting (Octal)* | First 10 Chips (Octal)** | X2 Delay (Chips) | P-code Relative Advance (Hours) ** | First 12 Chips (Octal) |
| 64 | 729 | 0254 | 1523 | 27 | $P_{27}(t+24)$ | 5112 |
| 65 | 695 | 1602 | 0175 | 28 | $P_{28}(t+24)$ | 0667 |
| 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 |

* 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).

** $P_i(t+N)$: P-code sequence of PRN number i shifted by N hours. See Section 6.3.6.2.1.

NOTE: The code phase assignments constitute inseparable pairs, each consisting of a specific C/A and a specific P code phase, as shown above.

**IS200-397** :

**WAS** :

Table 20-VI. Almanac Parameters

| Parameter | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
|---|---|---|---|---|
| e | 16 | $2^{-21}$ | 0.0 to 0.03 | dimensionless |
| $t_{oa}$ | 8 | $2^{12}$ | 0 to 602,112 | seconds |
| $\delta_i$**** | 16* | $2^{-19}$ | | semi-circles |
| $\dot{\Omega}$ | 16* | $2^{-38}$ | -6.33E-07 to 0 | semi-circles/sec |
| $\sqrt{A}$ | 24 | $2^{-11}$ | 2530 to 8192 | $\sqrt{\text{meters}}$ |
| $\Omega_0$ | 24* | $2^{-23}$ | | semi-circles |
| $\omega$ | 24* | $2^{-23}$ | | semi-circles |
| $M_0$ | 24* | $2^{-23}$ | | semi-circles |
| $a_{f0}$ | 11* | $2^{-20}$ | | seconds |
| $a_{f1}$ | 11* | $2^{-38}$ | | sec/sec |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** See Figure 20-1 for complete bit allocation in subframe;

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

**** Relative to $i_0$ = 0.30 semi-circles.

**IS** :

Table 20-VI. Almanac Parameters

| Parameter | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
|---|---|---|---|---|
| e | 16 | $2^{-21}$ | 0.0 to 0.03 | dimensionless |
| $t_{oa}$ | 8 | $2^{12}$ | 0 to 602,112 | seconds |
| $\delta_i$**** | 16* | $2^{-19}$ | | semi-circles |
| $\dot{\Omega}$ | 16* | $2^{-38}$ | -1.19E-07 to 0 | semi-circles/sec |
| $\sqrt{A}$ | 24 | $2^{-11}$ | 2530 to 8192 | $\sqrt{\text{meters}}$ |
| $\Omega_0$ | 24* | $2^{-23}$ | | semi-circles |
| $\omega$ | 24* | $2^{-23}$ | | semi-circles |
| $M_0$ | 24* | $2^{-23}$ | | semi-circles |
| $a_{f0}$ | 11* | $2^{-20}$ | | seconds |
| $a_{f1}$ | 11* | $2^{-38}$ | | sec/sec |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** See Figure 20-1 for complete bit allocation in subframe;

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

**** Relative to $i_0$ = 0.30 semi-circles.

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**IS200-1491** :

**WAS** :

A 6-bit value of “000000” in the $PRN_a$ field shall indicate that no further Status Words are contained in the remainder of the data block. In this event, all subsequent bits in the data block field shall be filler bits, i.e., alternating ones and zeros beginning with one.

**IS** :

A 6-bit value of “000000” in the PRNa field shall indicate that ~~no further Status~~there ~~Words~~is ~~are~~no ~~contained~~data in the ~~remainder of the~~ reduced ~~data~~almanac ~~block~~packet.~~-~~ In this event, all subsequent bits through the last bit of the last packet in the ~~data~~message ~~block~~(bit ~~field~~272 for MT 31, bit 276 for MT 12) shall be filler bits, i.e., alternating ones and zeros beginning with one.

**IS200-610** :

**WAS** :

Table 30-V. Midi Almanac Parameters

| Parameter | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
|---|---|---|---|---|
| $t_{oa}$ | 8 | $2^{12}$ | 0 to 602,112 | seconds |
| e | 11 | $2^{-16}$ | 0.0 to 0.03 | dimensionless |
| $\delta_i$**** | 11* | $2^{-14}$ | | semi-circles |
| $\dot{\Omega}$ | 11* | $2^{-33}$ | -6.33E-07 to 0 | semi-circles/sec |
| $\sqrt{A}$ | 17 | $2^{-4}$ | 2530 to 8192 | $\sqrt{\text{meters}}$ |
| $\Omega_0$ | 16* | $2^{-15}$ | | semi-circles |
| $\omega$ | 16* | $2^{-15}$ | | semi-circles |
| $M_0$ | 16* | $2^{-15}$ | | semi-circles |
| $a_{f0}$ | 11* | $2^{-20}$ | | seconds |
| $a_{f1}$ | 10* | $2^{-37}$ | | sec/sec |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** See Figure 30-10 for complete bit allocation in message type 37;

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

**** Relative to $i_0$ = 0.30 semi-circles.

**IS :**

Table 30-V. Midi Almanac Parameters

| Parameter | No. of Bits** | Scale Factor (LSB) | Valid Range*** | Units |
|---|---|---|---|---|
| $t_{oa}$ | 8 | $2^{12}$ | 0 to 602,112 | seconds |
| e | 11 | $2^{-16}$ | 0.0 to 0.03 | dimensionless |
| $\delta_i$**** | 11* | $2^{-14}$ | | semi-circles |
| $\dot{\Omega}$ | 11* | $2^{-33}$ | -1.19E-07 to 0 | semi-circles/sec |
| $\sqrt{A}$ | 17 | $2^{-4}$ | 2530 to 8192 | $\sqrt{\text{meters}}$ |
| $\Omega_0$ | 16* | $2^{-15}$ | | semi-circles |
| $\omega$ | 16* | $2^{-15}$ | | semi-circles |
| $M_0$ | 16* | $2^{-15}$ | | semi-circles |
| $a_{f0}$ | 11* | $2^{-20}$ | | seconds |
| $a_{f1}$ | 10* | $2^{-37}$ | | sec/sec |

* Parameters so indicated shall be two's complement with the sign bit (+ or -) occupying the MSB;

** See Figure 30-10 for complete bit allocation in message type 37;

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

**** Relative to $i_0$ = 0.30 semi-circles.