

A wide panoramic photograph of a night sky over a body of water. A bright, curved arc of light, resembling a meteor or a satellite trail, dominates the upper half of the frame. Below it, several bright blue beams of light fan out from the horizon. The horizon line shows distant city lights and structures reflected in the water.

NGA products use the format finalized by the National Geodetic Survey. The SP3 format provide ephemeris data in either position (P) mode or velocity (V) modes. The SP3 format is precise to 1 mm and 1 picosecond. Velocity, when included, is precise to 10^{-4} mm/sec and 10^{-4} picoseconds/s.

The following is the format for the "enhanced" SP3:

[illegible]

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```

23      *  2012 10  1  0  0  0.00000000
24      P  1  -1677.901589  16285.584053 -20920.350325  275.849218
25      V  1 -25096.728698  8665.572021  8818.525202  0.015870
26      P  2  20801.130436 -14268.541598  7587.240521  404.556632
27      V  2  10280.136019  -147.845949 -29536.235333  0.011634
28      .      .      .      .
29      .      .      .      .
30      .      .      .      .
31      .      .      .      .
32      .      .      .      .
33      .      .      .      .
34      *  2012 10  1 23 55  0.00000000
35      P  1  -1545.870613  16240.292187 -20966.016107  275.985617
36      V  1 -25177.862925  8604.994335  8581.662169  0.015774
37      .      .      .      .
38      .      .      .      .
39      .      .      .      .
40      .      .      .      .
41      .      .      .      .
42      .      .      .      .
43      P 32  -143.412125  18718.631715 -18837.924362  -493.864143
44      V 32 -18157.215193 -16024.551820 -15137.882157  -0.039374
45      EOF

```

Line and Column Descriptions

Line 1: ('#aV',i4,i3,f12.8,6x,'96 DD+AD WGS84 FIT NGA')

Column	Description	Allowed or Sample value
1	Symbol	#
2	Version Identifier	a
3	Position/Velocity Mode Flag	P or V
4-7	Year Start	2012
8	Unused	
9-10	Month Start	10
11	Unused	
12-13	Day of Month Start	1
14	Unused	
15-16	Hour Start	0
17	Unused	
18-19	Minute Start	0
20	Unused	

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Column	Description	Allowed or Sample value
21-31	Second Start	0.00000000
32	Unused	
33-39	Number of Epochs	288
40	Unused	
41-45	Data Used	DD+AD
46	Unused	
47-51	Coordinate System	WGS84
52	Unused	
53-55	Orbit Type	FIT
56	Unused	
57-60	Agency	NGA

Line 2: ('##',i5,f16.8,f15.8,i6,f16.13)

Column	Description	Allowed or Sample value
1-2	Symbol	##
3	Unused	
4-7	GPS Week	1708
8	Unused	
9-23	Seconds of Week	0.00000000
24	Unused	
25-38	Epoch Interval	300.0000000
39	Unused	
40-44	Modified Julian Day Start	56201
45	Unused	
46-60	Fractional Day	0.00000000

Line 3: ('+',i5,3x,17i3)

Column	Description	Allowed or Sample value
1-2	Symbol	+
3-4	Unused	
5-6	Number of Satellites	31
7-9	Unused	
10-12	Satellite ID for the 1 st satellite	1
13-15	Satellite ID for the 2 nd satellite	2
*	*	*
*	*	*
*	*	*
58-60	Satellite ID for the 17 th satellite	18

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Lines 4 to 7: ('+',8x,17i3)

Column	Description	Allowed or Sample value
1-2	Symbol	+
3-9	Unused	
10-12	Satellite ID for the next satellite	19
*	*	*
*	*	*
*	*	*
58-60	Satellite ID for the last satellite	0

Line 8 to 12: ('++',7x,17i3)

Column	Description	Allowed or Sample value
1-2	Symbol	++
3-9	Unused	
10-12	Satellite Accuracy for the 1 st satellite	0
13-15	Satellite ID for the next satellite	0
*	*	*
*	*	*
*	*	*
58-60	Satellite ID for the last satellite	0

Lines 13 to 14: ('%c cc cc ccc ccc cccc cccc cccc cccc ccccc ccccc ccccc ccccc')

Column	Description	Allowed or Sample value
1-2	Symbol	%c
3	Unused	
4-5	Characters	cc
6	Unused	
7-8	Characters	cc
9	Unused	
10-12	Characters	ccc
13	Unused	
14-16	Characters	ccc
17	Unused	
18-21	Characters	cccc
22	Unused	
23-26	Characters	cccc
27	Unused	
28-31	Characters	cccc
32	Unused	

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Column	Description	Allowed or Sample value
33-36	Characters	cccc
37	Unused	
38-42	Characters	cccccc
43	Unused	
44-48	Characters	cccccc
49	Unused	
50-54	Characters	cccccc
55	Unused	
56-60	Characters	cccccc

Lines 15 and 16: ('%f 0.0000000 0.000000000 0.00000000000 0.0000000000000000')

Column	Description	Allowed or Sample value
1-2	Symbol	%f
3	Unused	
4-13	Common Float	0.0000000
14	Unused	
15-26	Common Float	0.000000000
27	Unused	
28-41	Common Float	0.00000000000
42	Unused	
43-60	Common Float	0.000000000000000

Lines 17 and 18: ('%i 0 0 0 0 0 0 0 0 0 0')

Column	Description	Allowed or Sample value
1-2	Symbol	%i
3	Unused	
4-7	Integer	0
8	Unused	
9-12	Integer	0
13	Unused	
14-17	Integer	0
18	Unused	
19-22	Integer	0
23	Unused	
24-29	Integer	0
30	Unused	
31-36	Integer	0
37	Unused	

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Line 25 (The Velocity Record): ('V',i3,4f14.6)

Column	Description	Allowed or Sample value
1	Velocity	V
2-4	Vehicle ID	1
5-18	x coordinate (dm/s)	-25096.728698
19-32	y coordinate (km)	8665.572021
33-46	z coordinate (km)	8818.525202
47-60	Clock correction rate of change (µs/s)	0.015870

***Lines Twenty-four and Twenty-five repeat for each vehicle in the epoch. ***