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Ephemeris / WWW\_USER Mon Jan 28 02:03:26 2019 Pasadena, USA / Horizons

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Target body name: International Space Station (spacecraft) (-12544) {source: iss}

Center body name: Earth (399) {source: DE431mx}

Center-site name: GEOCENTRIC

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Start time : A.D. 2018-Nov-15 00:00:00.0000 UT

Stop time : A.D. 2018-Nov-15 12:00:00.0000 UT

Step-size : 1 minutes

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Target pole/equ : No model available

Target radii : (unavailable)

Center geodetic : 0.00000000,0.00000000,0.00000000 {E-lon(deg),Lat(deg),Alt(km)}

Center cylindrical : 0.00000000,0.00000000,0.00000000 {E-lon(deg),Dxy(km),Dz(km)}

Center pole/equ : High-precision EOP model {East-longitude positive}

Center radii : 6378.1 x 6378.1 x 6356.8 km {Equator, meridian, pole}

Target primary : Earth

Vis. interferer : MOON (R\_eq= 1737.400) km {source: DE431mx}

Rel. light bend : Sun, EARTH {source: DE431mx}

Rel. lght bnd GM: 1.3271E+11, 3.9860E+05 km^3/s^2

Atmos refraction: NO (AIRLESS)

RA format : HMS

Time format : CAL

EOP file : eop.190124.p190417

EOP coverage : DATA-BASED 1962-JAN-20 TO 2019-JAN-24. PREDICTS-> 2019-APR-16

Units conversion: 1 au= 149597870.700 km, c= 299792.458 km/s, 1 day= 86400.0 s

Table cut-offs 1: Elevation (-90.0deg=NO),Airmass (>38.000=NO), Daylight (NO)

Table cut-offs 2: Solar elongation ( 0.0,180.0=NO),Local Hour Angle( 0.0=NO)

Table cut-offs 3: RA/DEC angular rate ( 0.0=NO)

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Date\_\_(UT)\_\_HR:MN R.A.\_(ICRF/J2000.0)\_DEC delta deldot S-O-T /r S-T-O

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\$\$SOE

2018-Nov-15 00:00	19 26 59.55 -46 02 07.0	0.00004538651504	-0.0040725	57.4949 /T	122.5035
2018-Nov-15 00:01	19 46 21.14 -44 11 54.1	0.00004538480837	-0.0044301	60.7474 /T	119.2509
2018-Nov-15 00:02	20 04 29.08 -42 10 09.6	0.00004538295718	-0.0047927	64.0423 /T	115.9559
2018-Nov-15 00:03	20 21 26.82 -39 58 21.5	0.00004538095940	-0.0051608	67.3721 /T	112.6260
2018-Nov-15 00:04	20 37 19.26 -37 37 50.5	0.00004537881281	-0.0055345	70.7303 /T	109.2677
2018-Nov-15 00:05	20 52 12.09 -35 09 48.5	0.00004537651530	-0.0059132	74.1114 /T	105.8864
2018-Nov-15 00:06	21 06 11.34 -32 35 19.2	0.00004537406513	-0.0062957	77.5107 /T	102.4870
2018-Nov-15 00:07	21 19 22.98 -29 55 18.7	0.00004537146106	-0.0066804	80.9238 /T	99.0738
2018-Nov-15 00:08	21 31 52.80 -27 10 35.9	0.00004536870269	-0.0070649	84.3468 /T	95.6507
2018-Nov-15 00:09	21 43 46.28 -24 21 53.6	0.00004536579066	-0.0074465	87.7761 /T	92.2214
2018-Nov-15 00:10	21 55 08.50 -21 29 49.3	0.00004536272681	-0.0078216	91.2081 /T	88.7892
2018-Nov-15 00:11	22 06 04.22 -18 34 56.3	0.00004535951448	-0.0081865	94.6395 /T	85.3577
2018-Nov-15 00:12	22 16 37.82 -15 37 44.1	0.00004535615859	-0.0085368	98.0668 /T	81.9304
2018-Nov-15 00:13	22 26 53.39 -12 38 39.2	0.00004535266588	-0.0088679	101.4863 /T	78.5108
2018-Nov-15 00:14	22 36 54.77 -09 38 05.8	0.00004534904503	-0.0091748	104.8942 /T	75.1029
2018-Nov-15 00:15	22 46 45.58 -06 36 26.2	0.00004534530670	-0.0094525	108.2862 /T	71.7109
2018-Nov-15 00:16	22 56 29.27 -03 34 01.5	0.00004534146368	-0.0096955	111.6577 /T	68.3394
2018-Nov-15 00:17	23 06 09.21 -00 31 11.9	0.00004533753085	-0.0098988	115.0031 /T	64.9940
2018-Nov-15 00:18	23 15 48.69 +02 31 43.0	0.00004533352516	-0.0100571	118.3162 /T	61.6808
2018-Nov-15 00:19	23 25 31.00 +05 34 23.4	0.00004532946565	-0.0101654	121.5897 /T	58.4074
2018-Nov-15 00:20	23 35 19.47 +08 36 29.4	0.00004532537328	-0.0102191	124.8147 /T	55.1825
2018-Nov-15 00:21	23 45 17.55 +11 37 40.1	0.00004532127084	-0.0102138	127.9804 /T	52.0168
2018-Nov-15 00:22	23 55 28.81 +14 37 33.5	0.00004531718271	-0.0101459	131.0738 /T	48.9235

2018-Nov-15 00:23	00 05 57.04 +17 35 45.8	0.00004531313474	-0.0100119	134.0788	/T	45.9185
2018-Nov-15 00:24	00 16 46.26 +20 31 50.9	0.00004530915393	-0.0098095	136.9755	/T	43.0219
2018-Nov-15 00:25	00 28 00.81 +23 25 20.0	0.00004530526820	-0.0095366	139.7392	/T	40.2583
2018-Nov-15 00:26	00 39 45.36 +26 15 40.7	0.00004530150603	-0.0091923	142.3394	/T	37.6582
2018-Nov-15 00:27	00 52 04.95 +29 02 16.3	0.00004529789621	-0.0087764	144.7388	/T	35.2590
2018-Nov-15 00:28	01 05 05.01 +31 44 25.2	0.00004529446740	-0.0082895	146.8928	/T	33.1051
2018-Nov-15 00:29	01 18 51.29 +34 21 19.6	0.00004529124787	-0.0077331	148.7496	/T	31.2485
2018-Nov-15 00:30	01 33 29.83 +36 52 04.9	0.00004528826508	-0.0071098	150.2529	/T	29.7454
2018-Nov-15 00:31	01 49 06.76 +39 15 38.7	0.00004528554531	-0.0064227	151.3463	/T	28.6521
2018-Nov-15 00:32	02 05 48.00 +41 30 50.5	0.00004528311337	-0.0056762	151.9814	/T	28.0172
2018-Nov-15 00:33	02 23 38.85 +43 36 20.7	0.00004528099218	-0.0048753	152.1267	/T	27.8721
2018-Nov-15 00:34	02 42 43.35 +45 30 41.8	0.00004527920249	-0.0040257	151.7744	/T	28.2245
2018-Nov-15 00:35	03 03 03.48 +47 12 19.5	0.00004527776259	-0.0031341	150.9428	/T	29.0563
2018-Nov-15 00:36	03 24 38.21 +48 39 35.7	0.00004527668798	-0.0022075	149.6715	/L	30.3276
2018-Nov-15 00:37	03 47 22.59 +49 50 53.3	0.00004527599122	-0.0012536	148.0133	/L	31.9859
2018-Nov-15 00:38	04 11 07.05 +50 44 42.6	0.00004527568164	-0.0002806	146.0253	/L	33.9739
2018-Nov-15 00:39	04 35 37.24 +51 19 48.4	0.00004527576525	0.0007031	143.7624	/L	36.2368
2018-Nov-15 00:40	05 00 34.64 +51 35 18.4	0.00004527624458	0.0016888	141.2734	/L	38.7257
2018-Nov-15 00:41	05 25 38.02 +51 30 48.4	0.00004527711867	0.0026676	138.5999	/L	41.3991
2018-Nov-15 00:42	05 50 25.56 +51 06 25.6	0.00004527838300	0.0036308	135.7763	/L	44.2226
2018-Nov-15 00:43	06 14 37.02 +50 22 47.8	0.00004528002954	0.0045698	132.8305	/L	47.1683
2018-Nov-15 00:44	06 37 55.65 +49 20 58.7	0.00004528204682	0.0054762	129.7851	/L	50.2136
2018-Nov-15 00:45	07 00 09.23 +48 02 21.0	0.00004528442009	0.0063419	126.6583	/L	53.3403
2018-Nov-15 00:46	07 21 10.36 +46 28 28.9	0.00004528713147	0.0071593	123.4648	/L	56.5337
2018-Nov-15 00:47	07 40 55.98 +44 41 00.6	0.00004529016011	0.0079216	120.2167	/L	59.7817
2018-Nov-15 00:48	07 59 26.53 +42 41 33.0	0.00004529348256	0.0086225	116.9238	/L	63.0744
2018-Nov-15 00:49	08 16 45.05 +40 31 37.7	0.00004529707294	0.0092562	113.5944	/L	66.4037
2018-Nov-15 00:50	08 32 56.23 +38 12 38.7	0.00004530090333	0.0098182	110.2353	/L	69.7627
2018-Nov-15 00:51	08 48 05.72 +35 45 51.2	0.00004530494410	0.0103046	106.8525	/L	73.1453
2018-Nov-15 00:52	09 02 19.58 +33 12 22.3	0.00004530916419	0.0107124	103.4511	/L	76.5466
2018-Nov-15 00:53	09 15 43.92 +30 33 10.6	0.00004531353163	0.0110395	100.0357	/L	79.9620
2018-Nov-15 00:54	09 28 24.66 +27 49 07.4	0.00004531801378	0.0112850	96.6102	/L	83.3874
2018-Nov-15 00:55	09 40 27.42 +25 00 57.5	0.00004532257783	0.0114486	93.1785	/L	86.8189
2018-Nov-15 00:56	09 51 57.45 +22 09 20.2	0.00004532719105	0.0115313	89.7442	/L	90.2532
2018-Nov-15 00:57	10 02 59.60 +19 14 49.9	0.00004533182130	0.0115346	86.3108	/L	93.6865
2018-Nov-15 00:58	10 13 38.40 +16 17 57.4	0.00004533643724	0.0114612	82.8818	/L	97.1155
2018-Nov-15 00:59	10 23 58.02 +13 19 10.1	0.00004534100873	0.0113144	79.4607	/L	100.5365
2018-Nov-15 01:00	10 34 02.38 +10 18 52.7	0.00004534550713	0.0110982	76.0514	/L	103.9457
2018-Nov-15 01:01	10 43 55.16 +07 17 28.1	0.00004534990555	0.0108172	72.6581	/L	107.3390
2018-Nov-15 01:02	10 53 39.85 +04 15 17.7	0.00004535417913	0.0104768	69.2852	/L	110.7119
2018-Nov-15 01:03	11 03 19.84 +01 12 41.7	0.00004535830516	0.0100826	65.9379	/L	114.0592
2018-Nov-15 01:04	11 12 58.42 -0150 00.1	0.00004536226328	0.0096405	62.6223	/L	117.3748
2018-Nov-15 01:05	11 22 38.88 -04 52 28.3	0.00004536603560	0.0091569	59.3452	/L	120.6519
2018-Nov-15 01:06	11 32 24.52 -07 54 23.1	0.00004536960677	0.0086382	56.1150	/L	123.8821
2018-Nov-15 01:07	11 42 18.72 -10 55 24.2	0.00004537296403	0.0080908	52.9418	/L	127.0554
2018-Nov-15 01:08	11 52 25.01 -13 55 10.2	0.00004537609713	0.0075209	49.8377	/L	130.1596
2018-Nov-15 01:09	12 02 47.07 -16 53 18.1	0.00004537899838	0.0069349	46.8176	/L	133.1797
2018-Nov-15 01:10	12 13 28.84 -19 49 22.9	0.00004538166245	0.0063386	43.9000	/L	136.0974
2018-Nov-15 01:11	12 24 34.52 -22 42 57.1	0.00004538408638	0.0057375	41.1077	/L	138.8898
2018-Nov-15 01:12	12 36 08.64 -25 33 29.8	0.00004538626928	0.0051369	38.4689	/L	141.5288
2018-Nov-15 01:13	12 48 16.08 -28 20 26.1	0.00004538821226	0.0045412	36.0181	/L	143.9796
2018-Nov-15 01:14	13 01 02.09 -31 03 06.6	0.00004538991813	0.0039548	33.7970	/L	146.2009
2018-Nov-15 01:15	13 14 32.27 -33 40 46.1	0.00004539139126	0.0033809	31.8543	/L	148.1438
2018-Nov-15 01:16	13 28 52.51 -36 12 32.9	0.00004539263726	0.0028226	30.2441	/L	149.7542
2018-Nov-15 01:17	13 44 08.84 -38 37 28.0	0.00004539366279	0.0022820	29.0221	/L	150.9763
2018-Nov-15 01:18	14 00 27.18 -40 54 24.3	0.00004539447527	0.0017608	28.2391	/L	151.7595
2018-Nov-15 01:19	14 17 52.97 -43 02 06.3	0.00004539508262	0.0012599	27.9320	/L	152.0667

2018-Nov-15 01:20	14 36 30.60 -44 59 10.3	0.00004539549304	0.0007797	28.1165	/L	151.8824
2018-Nov-15 01:21	14 56 22.71 -46 44 05.3	0.00004539571475	0.0003199	28.7830	/L	151.2160
2018-Nov-15 01:22	15 17 29.24 -48 15 15.8	0.00004539575579	-0.0001202	29.8990	/L	150.1001
2018-Nov-15 01:23	15 39 46.56 -49 31 05.5	0.00004539562377	-0.0005418	31.4163	/T	148.5829
2018-Nov-15 01:24	16 03 06.68 -50 30 03.2	0.00004539532578	-0.0009466	33.2796	/T	146.7196
2018-Nov-15 01:25	16 27 16.92 -51 10 50.1	0.00004539486816	-0.0013365	35.4338	/T	144.5654
2018-Nov-15 01:26	16 52 00.22 -51 32 26.8	0.00004539425639	-0.0017138	37.8287	/T	142.1704
2018-Nov-15 01:27	17 16 56.38 -51 34 20.0	0.00004539349507	-0.0020810	40.4209	/T	139.5781
2018-Nov-15 01:28	17 41 43.86 -51 16 26.8	0.00004539258779	-0.0024405	43.1742	/T	136.8248
2018-Nov-15 01:29	18 06 02.04 -50 39 14.4	0.00004539153714	-0.0027947	46.0588	/T	133.9400
2018-Nov-15 01:30	18 29 33.13 -49 43 37.5	0.00004539034471	-0.0031463	49.0508	/T	130.9480
2018-Nov-15 01:31	18 52 03.55 -48 30 51.6	0.00004538901119	-0.0034974	52.1307	/T	127.8679
2018-Nov-15 01:32	19 13 24.38 -47 02 26.1	0.00004538753640	-0.0038500	55.2829	/T	124.7156
2018-Nov-15 01:33	19 33 31.21 -45 19 56.6	0.00004538591942	-0.0042058	58.4945	/T	121.5039
2018-Nov-15 01:34	19 52 23.35 -43 24 59.1	0.00004538415874	-0.0045660	61.7551	/T	118.2432
2018-Nov-15 01:35	20 10 02.99 -41 19 05.7	0.00004538225241	-0.0049316	65.0560	/T	114.9421
2018-Nov-15 01:36	20 26 34.24 -39 03 41.6	0.00004538019825	-0.0053028	68.3901	/T	111.6080
2018-Nov-15 01:37	20 42 02.38 -36 40 04.1	0.00004537799409	-0.0056795	71.7510	/T	108.2469
2018-Nov-15 01:38	20 56 33.28 -34 09 21.8	0.00004537563790	-0.0060608	75.1335	/T	104.8643
2018-Nov-15 01:39	21 10 12.98 -31 32 35.3	0.00004537312811	-0.0064453	78.5329	/T	101.4647
2018-Nov-15 01:40	21 23 07.39 -28 50 37.8	0.00004537046378	-0.0068312	81.9451	/T	98.0525
2018-Nov-15 01:41	21 35 22.20 -26 04 15.5	0.00004536764488	-0.0072159	85.3662	/T	94.6313
2018-Nov-15 01:42	21 47 02.72 -23 14 09.2	0.00004536467252	-0.0075963	88.7925	/T	91.2049
2018-Nov-15 01:43	21 58 13.91 -20 20 54.6	0.00004536154905	-0.0079688	92.2206	/T	87.7768
2018-Nov-15 01:44	22 09 00.37 -17 25 03.3	0.00004535827850	-0.0083294	95.6470	/T	84.3503
2018-Nov-15 01:45	22 19 26.37 -14 27 03.6	0.00004535486642	-0.0086737	99.0681	/T	80.9291
2018-Nov-15 01:46	22 29 35.88 -11 27 21.0	0.00004535132038	-0.0089967	102.4804	/T	77.5168
2018-Nov-15 01:47	22 39 32.66 -08 26 19.0	0.00004534764977	-0.0092936	105.8797	/T	74.1175
2018-Nov-15 01:48	22 49 20.25 -05 24 19.2	0.00004534386614	-0.0095591	109.2616	/T	70.7355
2018-Nov-15 01:49	22 59 02.07 -02 21 42.5	0.00004533998310	-0.0097879	112.6213	/T	67.3758
2018-Nov-15 01:50	23 08 41.44 +00 41 11.4	0.00004533601638	-0.0099748	115.9530	/T	64.0441
2018-Nov-15 01:51	23 18 21.64 +03 44 02.8	0.00004533198375	-0.0101147	119.2502	/T	60.7469
2018-Nov-15 01:52	23 28 05.99 +06 46 31.9	0.00004532790506	-0.0102027	122.5050	/T	57.4922
2018-Nov-15 01:53	23 37 57.86 +09 48 18.5	0.00004532380199	-0.0102343	125.7079	/T	54.2892
2018-Nov-15 01:54	23 48 00.72 +12 49 01.2	0.00004531969804	-0.0102054	128.8477	/T	51.1495
2018-Nov-15 01:55	23 58 18.23 +15 48 17.3	0.00004531561821	-0.0101123	131.9104	/T	48.0869
2018-Nov-15 01:56	00 08 54.27 +18 45 42.4	0.00004531158885	-0.0099521	134.8788	/T	45.1185
2018-Nov-15 01:57	00 19 52.98 +21 40 49.3	0.00004530763738	-0.0097225	137.7317	/T	42.2657
2018-Nov-15 01:58	00 31 18.83 +24 33 07.8	0.00004530379200	-0.0094220	140.4428	/T	39.5547
2018-Nov-15 01:59	00 43 16.62 +27 22 03.9	0.00004530008136	-0.0090497	142.9798	/T	37.0179
2018-Nov-15 02:00	00 55 51.56 +30 06 59.2	0.00004529653428	-0.0086060	145.3033	/T	34.6945
2018-Nov-15 02:01	01 09 09.21 +32 47 09.5	0.00004529317934	-0.0080917	147.3668	/T	32.6311
2018-Nov-15 02:02	01 23 15.44 +35 21 44.7	0.00004529004454	-0.0075087	149.1173	/T	30.8808
2018-Nov-15 02:03	01 38 16.36 +37 49 47.0	0.00004528715694	-0.0068599	150.4983	/T	29.5000
2018-Nov-15 02:04	01 54 18.04 +40 10 11.1	0.00004528454233	-0.0061489	151.4557	/T	28.5428
2018-Nov-15 02:05	02 11 26.25 +42 21 42.5	0.00004528222481	-0.0053802	151.9455	/T	28.0532
2018-Nov-15 02:06	02 29 45.84 +44 22 58.8	0.00004528022653	-0.0045593	151.9432	/T	28.0557
2018-Nov-15 02:07	02 49 20.17 +46 12 29.3	0.00004527856731	-0.0036922	151.4488	/T	28.5502
2018-Nov-15 02:08	03 10 10.12 +47 48 37.8	0.00004527726440	-0.0027857	150.4872	/T	29.5119
2018-Nov-15 02:09	03 32 13.24 +49 09 46.0	0.00004527633219	-0.0018472	149.1022	/L	30.8969
2018-Nov-15 02:10	03 55 22.79 +50 14 18.8	0.00004527578200	-0.0008844	147.3482	/L	32.6509
2018-Nov-15 02:11	04 19 27.30 +51 00 51.4	0.00004527562190	0.0000942	145.2816	/L	34.7176
2018-Nov-15 02:12	04 44 10.63 +51 28 16.8	0.00004527585657	0.0010801	142.9553	/L	37.0439
2018-Nov-15 02:13	05 09 13.00 +51 35 53.1	0.00004527648718	0.0020645	140.4158	/L	39.5833
2018-Nov-15 02:14	05 34 12.66 +51 23 28.6	0.00004527751137	0.0030389	137.7024	/L	42.2967
2018-Nov-15 02:15	05 58 48.17 +50 51 22.7	0.00004527892337	0.0039944	134.8473	/L	45.1517
2018-Nov-15 02:16	06 22 40.47 +50 00 24.4	0.00004528071380	0.0049223	131.8767	/L	48.1221

2018-Nov-15 02:17	06 45 34.55 +48 51 45.6	0.00004528286985	0.0058143	128.8119	/L	51.1867
2018-Nov-15 02:18	07 07 20.08 +47 26 54.6	0.00004528537546	0.0066625	125.6701	/L	54.3285
2018-Nov-15 02:19	07 27 51.48 +45 47 27.9	0.00004528821157	0.0074596	122.4650	/L	57.5334
2018-Nov-15 02:20	07 47 07.17 +43 55 03.8	0.00004529135618	0.0081989	119.2081	/L	60.7902
2018-Nov-15 02:21	08 05 08.74 +41 51 17.4	0.00004529478487	0.0088743	115.9088	/L	64.0894
2018-Nov-15 02:22	08 21 59.99 +39 37 37.5	0.00004529847086	0.0094806	112.5749	/L	67.4232
2018-Nov-15 02:23	08 37 46.05 +37 15 24.7	0.00004530238544	0.0100134	109.2129	/L	70.7850
2018-Nov-15 02:24	08 52 32.80 +34 45 51.1	0.00004530649839	0.0104693	105.8287	/L	74.1691
2018-Nov-15 02:25	09 06 26.35 +32 10 00.1	0.00004531077821	0.0108455	102.4272	/L	77.5706
2018-Nov-15 02:26	09 19 32.75 +29 28 47.5	0.00004531519259	0.0111405	99.0127	/L	80.9849
2018-Nov-15 02:27	09 31 57.82 +26 43 01.7	0.00004531970873	0.0113536	95.5893	/L	84.4082
2018-Nov-15 02:28	09 43 47.03 +23 53 25.5	0.00004532429380	0.0114851	92.1607	/L	87.8367
2018-Nov-15 02:29	09 55 05.47 +21 00 36.0	0.00004532891522	0.0115361	88.7305	/L	91.2668
2018-Nov-15 02:30	10 05 57.87 +18 05 06.1	0.00004533354114	0.0115087	85.3023	/L	94.6950
2018-Nov-15 02:31	10 16 28.60 +15 07 25.2	0.00004533814062	0.0114057	81.8795	/L	98.1177
2018-Nov-15 02:32	10 26 41.74 +12 07 59.5	0.00004534268410	0.0112308	78.4659	/L	101.5313
2018-Nov-15 02:33	10 36 41.09 +09 07 13.1	0.00004534714358	0.0109882	75.0653	/L	104.9318
2018-Nov-15 02:34	10 46 30.27 +06 05 28.0	0.00004535149297	0.0106830	71.6820	/L	108.3151
2018-Nov-15 02:35	10 56 12.70 +03 03 05.3	0.00004535570821	0.0103206	68.3208	/L	111.6763
2018-Nov-15 02:36	11 05 51.75 +00 00 24.8	0.00004535976755	0.0099067	64.9871	/L	115.0100
2018-Nov-15 02:37	11 15 30.69 -03 02 13.8	0.00004536365163	0.0094475	61.6871	/L	118.3100
2018-Nov-15 02:38	11 25 12.80 -06 04 31.1	0.00004536734355	0.0089494	58.4283	/L	121.5688
2018-Nov-15 02:39	11 35 01.42 -09 06 07.0	0.00004537082905	0.0084188	55.2195	/L	124.7777
2018-Nov-15 02:40	11 44 59.99 -12 06 40.8	0.00004537409637	0.0078620	52.0712	/L	127.9260
2018-Nov-15 02:41	11 55 12.07 -15 05 50.7	0.00004537713635	0.0072855	48.9965	/L	131.0007
2018-Nov-15 02:42	12 05 41.45 -18 03 12.9	0.00004537994230	0.0066952	46.0113	/L	133.9860
2018-Nov-15 02:43	12 16 32.16 -20 58 21.5	0.00004538250987	0.0060971	43.1353	/L	136.8622
2018-Nov-15 02:44	12 27 48.54 -23 50 47.6	0.00004538483699	0.0054964	40.3926	/L	139.6049
2018-Nov-15 02:45	12 39 35.23 -26 39 58.9	0.00004538692366	0.0048982	37.8134	/L	142.1843
2018-Nov-15 02:46	12 51 57.29 -29 25 19.0	0.00004538877175	0.0043069	35.4339	/L	144.5639
2018-Nov-15 02:47	13 05 00.09 -32 06 06.0	0.00004539038476	0.0037263	33.2978	/L	146.7001
2018-Nov-15 02:48	13 18 49.36 -34 41 32.4	0.00004539176765	0.0031597	31.4552	/L	148.5428
2018-Nov-15 02:49	13 33 31.07 -37 10 43.6	0.00004539292655	0.0026097	29.9609	/L	150.0374
2018-Nov-15 02:50	13 49 11.23 -39 32 37.7	0.00004539386850	0.0020784	28.8691	/L	151.1293
2018-Nov-15 02:51	14 05 55.64 -41 46 04.1	0.00004539460121	0.0015670	28.2270	/L	151.7716
2018-Nov-15 02:52	14 23 49.40 -43 49 44.0	0.00004539513279	0.0010763	28.0654	/L	151.9334
2018-Nov-15 02:53	14 42 56.30 -45 42 10.7	0.00004539547154	0.0006063	28.3925	/L	151.6065
2018-Nov-15 02:54	15 03 18.02 -47 21 51.0	0.00004539562567	0.0001567	29.1916	/L	150.8074
2018-Nov-15 02:55	15 24 53.20 -48 47 08.6	0.00004539560313	-0.0002735	30.4254	/T	149.5737
2018-Nov-15 02:56	15 47 36.56 -49 56 28.3	0.00004539541139	-0.0006858	32.0434	/T	147.9558
2018-Nov-15 02:57	16 11 18.26 -50 48 23.0	0.00004539505727	-0.0010819	33.9901	/T	146.0091
2018-Nov-15 02:58	16 35 43.81 -51 21 40.7	0.00004539454683	-0.0014640	36.2121	/T	143.7870
2018-Nov-15 02:59	17 00 34.71 -51 35 31.6	0.00004539388521	-0.0018344	38.6614	/T	141.3377
2018-Nov-15 03:00	17 25 29.98 -51 29 34.2	0.00004539307663	-0.0021956	41.2969	/T	138.7022
2018-Nov-15 03:01	17 50 08.20 -51 03 57.7	0.00004539212428	-0.0025501	44.0844	/T	135.9146
2018-Nov-15 03:02	18 14 09.64 -50 19 20.7	0.00004539103037	-0.0029004	46.9960	/T	133.0028
2018-Nov-15 03:03	18 37 18.08 -49 16 46.9	0.00004538979608	-0.0032490	50.0093	/T	129.9894
2018-Nov-15 03:04	18 59 21.76 -47 57 38.4	0.00004538842171	-0.0035980	53.1059	/T	126.8927
2018-Nov-15 03:05	19 20 13.62 -46 23 27.6	0.00004538690675	-0.0039494	56.2711	/T	123.7274
2018-Nov-15 03:06	19 39 50.80 -44 35 51.1	0.00004538524997	-0.0043046	59.4928	/T	120.5056
2018-Nov-15 03:07	19 58 13.87 -42 36 23.7	0.00004538344960	-0.0046649	62.7610	/T	117.2373
2018-Nov-15 03:08	20 15 25.89 -40 26 35.0	0.00004538150353	-0.0050308	66.0675	/T	113.9306
2018-Nov-15 03:09	20 31 31.50 -38 07 47.3	0.00004537940947	-0.0054026	69.4053	/T	110.5926
2018-Nov-15 03:10	20 46 36.28 -35 41 14.2	0.00004537716518	-0.0057798	72.7686	/T	107.2292
2018-Nov-15 03:11	21 00 46.21 -33 08 01.3	0.00004537476868	-0.0061614	76.1522	/T	103.8455
2018-Nov-15 03:12	21 14 07.31 -30 29 06.1	0.00004537221852	-0.0065459	79.5516	/T	100.4461
2018-Nov-15 03:13	21 26 45.41 -27 45 18.9	0.00004536951402	-0.0069310	82.9626	/T	97.0350

2018-Nov-15 03:14	21 38 46.04 -24 57 23.7	0.00004536665540	-0.0073141	86.3814	/T	93.6161
2018-Nov-15 03:15	21 50 14.39 -22 05 59.2	0.00004536364412	-0.0076919	89.8045	/T	90.1929
2018-Nov-15 03:16	22 01 15.27 -19 11 39.3	0.00004536048308	-0.0080606	93.2283	/T	86.7690
2018-Nov-15 03:17	22 11 53.15 -16 14 54.3	0.00004535717671	-0.0084160	96.6494	/T	83.3478
2018-Nov-15 03:18	22 22 12.17 -13 16 11.3	0.00004535373124	-0.0087535	100.0641	/T	79.9330
2018-Nov-15 03:19	22 32 16.21 -10 15 54.9	0.00004535015476	-0.0090682	103.4687	/T	76.5284
2018-Nov-15 03:20	22 42 08.94 -07 14 27.8	0.00004534645740	-0.0093551	106.8590	/T	73.1381
2018-Nov-15 03:21	22 51 53.85 -04 12 11.3	0.00004534265136	-0.0096088	110.2304	/T	69.7667
2018-Nov-15 03:22	23 01 34.30 -01 09 25.7	0.00004533875096	-0.0098242	113.5778	/T	66.4193
2018-Nov-15 03:23	23 11 13.61 +01 53 29.2	0.00004533477258	-0.0099959	116.8951	/T	63.1020
2018-Nov-15 03:24	23 20 55.06 +04 56 13.8	0.00004533073472	-0.0101190	120.1755	/T	59.8216
2018-Nov-15 03:25	23 30 41.97 +07 58 28.2	0.00004532665782	-0.0101887	123.4107	/T	56.5865
2018-Nov-15 03:26	23 40 37.75 +10 59 51.8	0.00004532256419	-0.0102006	126.5905	/T	53.4066
2018-Nov-15 03:27	23 50 45.95 +14 00 02.7	0.00004531847781	-0.0101508	129.7031	/T	50.2942
2018-Nov-15 03:28	00 01 10.30 +16 58 37.7	0.00004531442413	-0.0100358	132.7334	/T	47.2639
2018-Nov-15 03:29	00 11 54.78 +19 55 11.2	0.00004531042986	-0.0098530	135.6632	/T	44.3341
2018-Nov-15 03:30	00 23 03.66 +22 49 14.9	0.00004530652269	-0.0096003	138.4700	/T	41.5275
2018-Nov-15 03:31	00 34 41.53 +25 40 17.4	0.00004530273093	-0.0092764	141.1256	/T	38.8720
2018-Nov-15 03:32	00 46 53.35 +28 27 42.9	0.00004529908331	-0.0088810	143.5960	/T	36.4017
2018-Nov-15 03:33	00 59 44.46 +31 10 50.9	0.00004529560850	-0.0084144	145.8398	/T	34.1580
2018-Nov-15 03:34	01 13 20.57 +33 48 54.8	0.00004529233489	-0.0078779	147.8088	/T	32.1892
2018-Nov-15 03:35	01 27 47.65 +36 21 01.8	0.00004528929011	-0.0072739	149.4489	/T	30.5493
2018-Nov-15 03:36	01 43 11.84 +38 46 11.1	0.00004528650074	-0.0066054	150.7041	/T	29.2942
2018-Nov-15 03:37	01 59 39.13 +41 03 13.8	0.00004528399197	-0.0058763	151.5232	/T	28.4754
2018-Nov-15 03:38	02 17 14.99 +43 10 52.3	0.00004528178717	-0.0050916	151.8675	/T	28.1312
2018-Nov-15 03:39	02 36 03.79 +45 07 40.8	0.00004527990764	-0.0042568	151.7197	/T	28.2792
2018-Nov-15 03:40	02 56 08.00 +46 52 06.0	0.00004527837228	-0.0033783	151.0873	/T	28.9117
2018-Nov-15 03:41	03 17 27.33 +48 22 30.5	0.00004527719730	-0.0024630	150.0011	/T	29.9980
2018-Nov-15 03:42	03 39 57.70 +49 37 16.5	0.00004527639599	-0.0015186	148.5084	/L	31.4907
2018-Nov-15 03:43	04 03 30.55 +50 34 51.9	0.00004527597848	-0.0005529	146.6643	/L	33.3349
2018-Nov-15 03:44	04 27 52.50 +51 13 58.2	0.00004527595164	0.0004256	144.5240	/L	35.4752
2018-Nov-15 03:45	04 52 45.83 +51 33 37.5	0.00004527631887	0.0014082	142.1384	/L	37.8607
2018-Nov-15 03:46	05 17 49.71 +51 33 19.4	0.00004527708011	0.0023863	139.5518	/L	40.4473
2018-Nov-15 03:47	05 42 42.27 +51 13 04.5	0.00004527823175	0.0033510	136.8010	/L	43.1980
2018-Nov-15 03:48	06 07 02.76 +50 33 24.4	0.00004527976666	0.0042938	133.9165	/L	46.0824
2018-Nov-15 03:49	06 30 33.59 +49 35 17.8	0.00004528167428	0.0052061	130.9228	/L	49.0759
2018-Nov-15 03:50	06 53 01.55 +48 20 04.2	0.00004528394071	0.0060799	127.8400	/L	52.1587
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2018-Nov-15 03:52	07 34 19.72 +45 04 30.8	0.00004528947905	0.0076822	121.4682	/L	58.5302
2018-Nov-15 03:53	07 53 05.82 +43 07 26.5	0.00004529270813	0.0083968	118.2031	/L	61.7951
2018-Nov-15 03:54	08 10 39.09 +40 59 35.8	0.00004529621098	0.0090458	114.8979	/L	65.1003
2018-Nov-15 03:55	08 27 03.94 +38 42 24.4	0.00004529996025	0.0096244	111.5598	/L	68.4382
2018-Nov-15 03:56	08 42 25.88 +36 17 09.6	0.00004530392680	0.0101285	108.1954	/L	71.8025
2018-Nov-15 03:57	08 56 50.90 +33 44 59.9	0.00004530807997	0.0105549	104.8100	/L	75.1878
2018-Nov-15 03:58	09 10 25.14 +31 06 55.7	0.00004531238812	0.0109013	101.4085	/L	78.5892
2018-Nov-15 03:59	09 23 14.56 +28 23 49.9	0.00004531681889	0.0111666	97.9953	/L	82.0023
2018-Nov-15 04:00	09 35 24.86 +25 36 28.4	0.00004532133956	0.0113504	94.5741	/L	85.4234
2018-Nov-15 04:01	09 47 01.35 +22 45 31.6	0.00004532591752	0.0114533	91.1489	/L	88.8485
2018-Nov-15 04:02	09 58 08.98 +19 51 35.1	0.00004533052057	0.0114768	87.7230	/L	92.2743
2018-Nov-15 04:03	10 08 52.34 +16 55 10.1	0.00004533511734	0.0114232	84.3002	/L	95.6971
2018-Nov-15 04:04	10 19 15.67 +13 56 44.8	0.00004533967752	0.0112957	80.8839	/L	99.1133
2018-Nov-15 04:05	10 29 22.95 +10 56 44.4	0.00004534417222	0.0110981	77.4779	/L	102.5193
2018-Nov-15 04:06	10 39 17.88 +07 55 32.1	0.00004534857430	0.0108351	74.0863	/L	105.9109
2018-Nov-15 04:07	10 49 04.01 +04 53 29.6	0.00004535285849	0.0105116	70.7134	/L	109.2837
2018-Nov-15 04:08	10 58 44.73 +01 50 57.4	0.00004535700173	0.0101333	67.3643	/L	112.6328
2018-Nov-15 04:09	11 08 23.36 -01 11 44.8	0.00004536098320	0.0097061	64.0446	/L	115.9525
2018-Nov-15 04:10	11 18 03.18 -04 14 17.5	0.00004536478458	0.0092362	60.7610	/L	119.2361

2018-Nov-15 04:11	11 27 47.49 -07 16 20.9	0.00004536839003	0.0087298	57.5212	/L 122.4760
2018-Nov-15 04:12	11 37 39.64 -10 17 35.0	0.00004537178628	0.0081935	54.3345	/L 125.6626
2018-Nov-15 04:13	11 47 43.13 -13 17 38.5	0.00004537496258	0.0076336	51.2124	/L 128.7848
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2018-Nov-15 04:16	12 19 39.27 -22 06 49.8	0.00004538310180	0.0058726	42.3875	/L 137.6100
2018-Nov-15 04:17	12 31 07.07 -24 58 03.1	0.00004538533992	0.0052772	39.6970	/L 140.3005
2018-Nov-15 04:18	12 43 07.14 -27 45 47.8	0.00004538734000	0.0046858	37.1803	/L 142.8173
2018-Nov-15 04:19	12 55 44.66 -30 29 25.3	0.00004538910449	0.0041026	34.8757	/L 145.1221
2018-Nov-15 04:20	13 09 05.14 -33 08 11.7	0.00004539063742	0.0035313	32.8285	/L 147.1694
2018-Nov-15 04:21	13 23 14.44 -35 41 16.8	0.00004539194410	0.0029748	31.0902	/L 148.9079
2018-Nov-15 04:22	13 38 18.55 -38 07 43.2	0.00004539303093	0.0024354	29.7154	/L 150.2829
2018-Nov-15 04:23	13 54 23.46 -40 26 25.5	0.00004539390510	0.0019149	28.7567	/L 151.2418
2018-Nov-15 04:24	14 11 34.75 -42 36 10.0	0.00004539457438	0.0014144	28.2564	/L 151.7422
2018-Nov-15 04:25	14 29 57.08 -44 35 34.6	0.00004539504685	0.0009343	28.2391	/L 151.7597
2018-Nov-15 04:26	14 49 33.51 -46 23 09.7	0.00004539533062	0.0004745	28.7056	/L 151.2934
2018-Nov-15 04:27	15 10 24.64 -47 57 20.5	0.00004539543368	0.0000343	29.6328	/L 150.3663
2018-Nov-15 04:28	15 32 27.65 -49 16 30.4	0.00004539536365	-0.0003875	30.9790	/T 149.0201
2018-Nov-15 04:29	15 55 35.52 -50 19 06.8	0.00004539512760	-0.0007923	32.6922	/T 147.3070
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2018-Nov-15 04:34	17 58 26.56 -50 48 30.2	0.00004539164965	-0.0026388	44.9991	/T 134.9998
2018-Nov-15 04:35	18 22 08.75 -49 56 38.8	0.00004539051998	-0.0029896	47.9362	/T 132.0626
2018-Nov-15 04:36	18 44 52.71 -48 47 21.2	0.00004538924950	-0.0033399	50.9694	/T 129.0292
2018-Nov-15 04:37	19 06 28.58 -47 22 04.6	0.00004538783809	-0.0036917	54.0818	/T 125.9168
2018-Nov-15 04:38	19 26 51.03 -45 42 23.8	0.00004538628480	-0.0040467	57.2592	/T 122.7392
2018-Nov-15 04:39	19 45 58.68 -43 49 55.3	0.00004538458807	-0.0044064	60.4903	/T 119.5080
2018-Nov-15 04:40	20 03 53.19 -41 46 12.0	0.00004538274588	-0.0047716	63.7656	/T 116.2326
2018-Nov-15 04:41	20 20 38.32 -39 32 41.0	0.00004538075593	-0.0051428	67.0772	/T 112.9208
2018-Nov-15 04:42	20 36 19.19 -37 10 41.0	0.00004537861586	-0.0055200	70.4186	/T 109.5793
2018-Nov-15 04:43	20 51 01.56 -34 41 22.7	0.00004537632343	-0.0059023	73.7840	/T 106.2138
2018-Nov-15 04:44	21 04 51.47 -32 05 48.1	0.00004537387685	-0.0062887	77.1684	/T 102.8293
2018-Nov-15 04:45	21 17 54.89 -29 24 52.0	0.00004537127485	-0.0066771	80.5674	/T 99.4302
2018-Nov-15 04:46	21 30 17.53 -26 39 21.9	0.00004536851709	-0.0070653	83.9770	/T 96.0206
2018-Nov-15 04:47	21 42 04.81 -23 49 59.8	0.00004536560423	-0.0074502	87.3933	/T 92.6041
2018-Nov-15 04:48	21 53 21.75 -20 57 22.2	0.00004536253831	-0.0078283	90.8130	/T 89.1844
2018-Nov-15 04:49	22 04 13.02 -18 02 01.7	0.00004535932276	-0.0081957	94.2323	/T 85.7650
2018-Nov-15 04:50	22 14 42.97 -15 04 27.1	0.00004535596279	-0.0085479	97.6478	/T 82.3494
2018-Nov-15 04:51	22 24 55.62 -12 05 04.5	0.00004535246535	-0.0088802	101.0558	/T 78.9414
2018-Nov-15 04:52	22 34 54.77 -09 04 17.7	0.00004534883940	-0.0091877	104.4524	/T 75.5448
2018-Nov-15 04:53	22 44 44.00 -06 02 28.7	0.00004534509595	-0.0094650	107.8332	/T 72.1639
2018-Nov-15 04:54	22 54 26.76 -02 59 58.5	0.00004534124802	-0.0097070	111.1936	/T 68.8034
2018-Nov-15 04:55	23 04 06.37 +00 02 53.0	0.00004533731089	-0.0099084	114.5282	/T 65.4689
2018-Nov-15 04:56	23 13 46.13 +03 05 46.0	0.00004533330184	-0.0100639	117.8306	/T 62.1665
2018-Nov-15 04:57	23 23 29.34 +06 08 21.0	0.00004532924024	-0.0101687	121.0934	/T 58.9037
2018-Nov-15 04:58	23 33 19.35 +09 10 17.7	0.00004532514737	-0.0102180	124.3080	/T 55.6892
2018-Nov-15 04:59	23 43 19.62 +12 11 15.1	0.00004532104630	-0.0102077	127.4637	/T 52.5335
2018-Nov-15 05:00	23 53 33.75 +15 10 50.9	0.00004531696174	-0.0101340	130.5476	/T 49.4497
2018-Nov-15 05:01	00 04 05.58 +18 08 40.9	0.00004531291974	-0.0099937	133.5439	/T 46.4535
2018-Nov-15 05:02	00 14 59.18 +21 04 18.6	0.00004530894754	-0.0097845	136.4331	/T 43.5643
2018-Nov-15 05:03	00 26 18.95 +23 57 14.6	0.00004530507322	-0.0095045	139.1911	/T 40.8064
2018-Nov-15 05:04	00 38 09.63 +26 46 55.7	0.00004530132538	-0.0091529	141.7883	/T 38.2093
2018-Nov-15 05:05	00 50 36.33 +29 32 44.4	0.00004529773287	-0.0087295	144.1886	/T 35.8092
2018-Nov-15 05:06	01 03 44.54 +32 13 57.9	0.00004529432438	-0.0082352	146.3487	/T 33.6492
2018-Nov-15 05:07	01 17 40.08 +34 49 47.4	0.00004529112812	-0.0076715	148.2188	/T 31.7793

2018-Nov-15 05:08	01 32 29.01 +37 19 16.9	0.00004528817145	-0.0070412	149.7443	/T	30.2540
2018-Nov-15 05:09	01 48 17.45 +39 41 22.4	0.00004528548052	-0.0063477	150.8703	/T	29.1281
2018-Nov-15 05:10	02 05 11.24 +41 54 51.7	0.00004528307990	-0.0055954	151.5490	/T	28.4496
2018-Nov-15 05:11	02 23 15.49 +43 58 23.9	0.00004528099227	-0.0047893	151.7479	/T	28.2509
2018-Nov-15 05:12	02 42 33.94 +45 50 29.8	0.00004527923805	-0.0039354	151.4568	/T	28.5422
2018-Nov-15 05:13	03 03 08.07 +47 29 34.4	0.00004527783518	-0.0030403	150.6903	/T	29.3087
2018-Nov-15 05:14	03 24 56.19 +48 53 59.3	0.00004527679878	-0.0021113	149.4847	/L	30.5145
2018-Nov-15 05:15	03 47 52.54 +50 02 08.2	0.00004527614095	-0.0011562	147.8895	/L	32.1097
2018-Nov-15 05:16	04 11 46.65 +50 52 33.6	0.00004527587058	-0.0001831	145.9601	/L	34.0390
2018-Nov-15 05:17	04 36 23.32 +51 24 04.0	0.00004527599321	0.0007995	143.7505	/L	36.2487
2018-Nov-15 05:18	05 01 23.40 +51 35 51.9	0.00004527651088	0.0017829	141.3093	/L	38.6898
2018-Nov-15 05:19	05 26 25.39 +51 27 38.8	0.00004527742214	0.0027582	138.6783	/L	41.3207
2018-Nov-15 05:20	05 51 07.59 +50 59 37.9	0.00004527872197	0.0037167	135.8925	/L	44.1065
2018-Nov-15 05:21	06 15 10.32 +50 12 32.1	0.00004528040188	0.0046498	132.9803	/L	47.0186
2018-Nov-15 05:22	06 38 17.59 +49 07 29.2	0.00004528244998	0.0055492	129.9649	/L	50.0338
2018-Nov-15 05:23	07 00 18.10 +47 45 54.7	0.00004528485105	0.0064069	126.8650	/L	53.1336
2018-Nov-15 05:24	07 21 05.29 +46 09 23.9	0.00004528758682	0.0072155	123.6958	/L	56.3026
2018-Nov-15 05:25	07 40 36.82 +44 19 35.2	0.00004529063613	0.0079682	120.4698	/L	59.5285
2018-Nov-15 05:26	07 58 53.70 +42 18 04.7	0.00004529397522	0.0086586	117.1972	/L	62.8010
2018-Nov-15 05:27	08 15 59.32 +40 06 22.7	0.00004529757798	0.0092815	113.8864	/L	66.1117
2018-Nov-15 05:28	08 31 58.61 +37 45 51.5	0.00004530141628	0.0098322	110.5447	/L	69.4533
2018-Nov-15 05:29	08 46 57.32 +35 17 45.1	0.00004530546035	0.0103071	107.1781	/L	72.8198
2018-Nov-15 05:30	09 01 01.55 +32 43 08.6	0.00004530967914	0.0107033	103.7919	/L	76.2059
2018-Nov-15 05:31	09 14 17.38 +30 02 59.4	0.00004531404059	0.0110189	100.3908	/L	79.6069
2018-Nov-15 05:32	09 26 50.68 +27 18 07.4	0.00004531851223	0.0112531	96.9790	/L	83.0186
2018-Nov-15 05:33	09 38 47.00 +24 29 16.4	0.00004532306129	0.0114059	93.5604	/L	86.4370
2018-Nov-15 05:34	09 50 11.52 +21 37 04.7	0.00004532765525	0.0114782	90.1388	/L	89.8586
2018-Nov-15 05:35	10 01 09.04 +18 42 06.0	0.00004533226224	0.0114719	86.7176	/L	93.2797
2018-Nov-15 05:36	10 11 44.00 +15 44 50.4	0.00004533685120	0.0113897	83.3004	/L	96.6968
2018-Nov-15 05:37	10 22 00.53 +12 45 44.6	0.00004534139236	0.0112349	79.8910	/L	100.1062
2018-Nov-15 05:38	10 32 02.50 +09 45 13.3	0.00004534585744	0.0110118	76.4931	/L	103.5041
2018-Nov-15 05:39	10 41 53.55 +06 43 38.7	0.00004535022003	0.0107250	73.1109	/L	106.8862
2018-Nov-15 05:40	10 51 37.15 +03 41 22.2	0.00004535445566	0.0103800	69.7490	/L	110.2481
2018-Nov-15 05:41	11 01 16.66 +00 38 43.8	0.00004535854213	0.0099823	66.4126	/L	113.5845
2018-Nov-15 05:42	11 10 55.38 -02 23 56.8	0.00004536245958	0.0095381	63.1077	/L	116.8894
2018-Nov-15 05:43	11 20 36.58 -05 26 20.2	0.00004536619060	0.0090536	59.8412	/L	120.1559
2018-Nov-15 05:44	11 30 23.59 -08 28 06.5	0.00004536972034	0.0085352	56.6213	/L	123.3758
2018-Nov-15 05:45	11 40 19.81 -11 28 55.1	0.00004537303653	0.0079892	53.4581	/L	126.5391
2018-Nov-15 05:46	11 50 28.78 -14 28 24.5	0.00004537612940	0.0074220	50.3634	/L	129.6338
2018-Nov-15 05:47	12 00 54.24 -17 26 11.3	0.00004537899167	0.0068396	47.3520	/L	132.6453
2018-Nov-15 05:48	12 11 40.16 -20 21 50.2	0.00004538161845	0.0062480	44.4420	/L	135.5554
2018-Nov-15 05:49	12 22 50.81 -23 14 52.8	0.00004538400712	0.0056524	41.6557	/L	138.3418
2018-Nov-15 05:50	12 34 30.78 -26 04 47.8	0.00004538615715	0.0050581	39.0204	/L	140.9772
2018-Nov-15 05:51	12 46 45.02 -28 50 59.5	0.00004538806990	0.0044694	36.5696	/L	143.4281
2018-Nov-15 05:52	12 59 38.84 -31 32 47.4	0.00004538974844	0.0038904	34.3437	/L	145.6542
2018-Nov-15 05:53	13 13 17.91 -34 09 25.1	0.00004539119730	0.0033244	32.3896	/L	147.6084
2018-Nov-15 05:54	13 27 48.15 -36 39 59.8	0.00004539242222	0.0027741	30.7597	/L	149.2385
2018-Nov-15 05:55	13 43 15.60 -39 03 30.8	0.00004539342992	0.0022417	29.5081	/L	150.4902
2018-Nov-15 05:56	13 59 46.12 -41 18 49.6	0.00004539422783	0.0017286	28.6847	/L	151.3138
2018-Nov-15 05:57	14 17 24.99 -43 24 39.2	0.00004539482381	0.0012356	28.3270	/L	151.6718
2018-Nov-15 05:58	14 36 16.36 -45 19 34.3	0.00004539522596	0.0007629	28.4524	/L	151.5465
2018-Nov-15 05:59	14 56 22.40 -47 02 02.8	0.00004539544236	0.0003103	29.0547	/L	150.9443
2018-Nov-15 06:00	15 17 42.48 -48 30 28.9	0.00004539548084	-0.0001231	30.1050	/L	149.8941
2018-Nov-15 06:01	15 40 12.20 -49 43 16.6	0.00004539534881	-0.0005388	31.5583	/T	148.4409
2018-Nov-15 06:02	16 03 42.71 -50 38 56.7	0.00004539505304	-0.0009383	33.3614	/T	146.6378
2018-Nov-15 06:03	16 28 00.45 -51 16 13.1	0.00004539459959	-0.0013238	35.4607	/T	144.5385
2018-Nov-15 06:04	16 52 47.68 -51 34 11.1	0.00004539399363	-0.0016975	37.8061	/T	142.1930

2018-Nov-15 06:05	17 17 43.79 -51 32 22.9	0.00004539323941	-0.0020618	40.3541	/T	139.6449
2018-Nov-15 06:06	17 42 27.26 -51 10 51.0	0.00004539234016	-0.0024194	43.0681	/T	136.9308
2018-Nov-15 06:07	18 06 37.85 -50 30 08.4	0.00004539129814	-0.0027727	45.9179	/T	134.0810
2018-Nov-15 06:08	18 29 58.48 -49 31 14.1	0.00004539011459	-0.0031240	48.8788	/T	131.1200
2018-Nov-15 06:09	18 52 16.43 -48 15 26.6	0.00004538878987	-0.0034757	51.9309	/T	128.0678
2018-Nov-15 06:10	19 13 23.67 -46 44 17.1	0.00004538732350	-0.0038296	55.0579	/T	124.9406
2018-Nov-15 06:11	19 33 16.52 -44 59 21.6	0.00004538571427	-0.0041874	58.2468	/T	121.7516
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2018-Nov-15 06:13	20 09 21.47 -40 54 30.5	0.00004538205976	-0.0049190	64.7686	/T	115.2296
2018-Nov-15 06:14	20 25 40.55 -38 37 29.6	0.00004538001001	-0.0052936	68.0850	/T	111.9131
2018-Nov-15 06:15	20 40 57.58 -36 12 28.6	0.00004537780877	-0.0056740	71.4295	/T	108.5684
2018-Nov-15 06:16	20 55 18.51 -33 40 34.8	0.00004537545403	-0.0060591	74.7966	/T	105.2012
2018-Nov-15 06:17	21 08 49.34 -31 02 47.2	0.00004537294411	-0.0064475	78.1815	/T	101.8162
2018-Nov-15 06:18	21 21 35.98 -28 19 57.6	0.00004537027813	-0.0068372	81.5799	/T	98.4177
2018-Nov-15 06:19	21 33 44.03 -25 32 51.3	0.00004536745613	-0.0072254	84.9878	/T	95.0097
2018-Nov-15 06:20	21 45 18.74 -22 42 08.0	0.00004536447932	-0.0076089	88.4015	/T	91.5959
2018-Nov-15 06:21	21 56 25.01 -19 48 22.6	0.00004536135025	-0.0079842	91.8174	/T	88.1799
2018-Nov-15 06:22	22 07 07.36 -16 52 05.9	0.00004535807307	-0.0083469	95.2320	/T	84.7653
2018-Nov-15 06:23	22 17 30.01 -13 53 45.9	0.00004535465368	-0.0086926	98.6416	/T	81.3556
2018-Nov-15 06:24	22 27 36.90 -10 53 47.4	0.00004535109983	-0.0090164	102.0426	/T	77.9546
2018-Nov-15 06:25	22 37 31.71 -07 52 33.6	0.00004534742128	-0.0093132	105.4308	/T	74.5664
2018-Nov-15 06:26	22 47 17.99 -04 50 26.1	0.00004534362989	-0.0095778	108.8018	/T	71.1953
2018-Nov-15 06:27	22 56 59.11 -01 47 45.2	0.00004533973962	-0.0098049	112.1507	/T	67.8464
2018-Nov-15 06:28	23 06 38.40 +01 15 09.1	0.00004533576652	-0.0099892	115.4718	/T	64.5253
2018-Nov-15 06:29	23 16 19.14 +04 17 57.3	0.00004533172875	-0.0101256	118.7585	/T	61.2386
2018-Nov-15 06:30	23 26 04.64 +07 20 19.4	0.00004532764646	-0.0102093	122.0030	/T	57.9941
2018-Nov-15 06:31	23 35 58.28 +10 21 55.1	0.00004532354170	-0.0102358	125.1960	/T	54.8011
2018-Nov-15 06:32	23 46 03.59 +13 22 22.9	0.00004531943825	-0.0102010	128.3263	/T	51.6709
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2018-Nov-15 06:34	00 07 04.19 +19 18 20.7	0.00004531133775	-0.0099342	134.3406	/T	45.6568
2018-Nov-15 06:35	00 18 07.59 +22 12 58.1	0.00004530739491	-0.0096971	137.1870	/T	42.8104
2018-Nov-15 06:36	00 29 39.00 +25 04 41.2	0.00004530356123	-0.0093888	139.8938	/T	40.1038
2018-Nov-15 06:37	00 41 43.29 +27 52 55.1	0.00004529986548	-0.0090086	142.4295	/T	37.5682
2018-Nov-15 06:38	00 54 25.72 +30 37 00.4	0.00004529633653	-0.0085567	144.7560	/T	35.2418
2018-Nov-15 06:39	01 07 51.92 +33 16 12.1	0.00004529300295	-0.0080344	146.8284	/T	33.1695
2018-Nov-15 06:40	01 22 07.82 +35 49 38.4	0.00004528989269	-0.0074437	148.5955	/T	31.4027
2018-Nov-15 06:41	01 37 19.54 +38 16 20.4	0.00004528703270	-0.0067875	150.0024	/T	29.9958
2018-Nov-15 06:42	01 53 33.13 +40 35 11.0	0.00004528444855	-0.0060696	150.9963	/T	29.0021
2018-Nov-15 06:43	02 10 54.21 +42 44 54.4	0.00004528216414	-0.0052948	151.5335	/T	28.4652
2018-Nov-15 06:44	02 29 27.44 +44 44 06.4	0.00004528020133	-0.0044684	151.5877	/T	28.4111
2018-Nov-15 06:45	02 49 15.76 +46 31 15.2	0.00004527857961	-0.0035967	151.1562	/T	28.8427
2018-Nov-15 06:46	03 10 19.53 +48 04 43.9	0.00004527731585	-0.0026866	150.2604	/T	29.7387
2018-Nov-15 06:47	03 32 35.54 +49 22 54.3	0.00004527642402	-0.0017455	148.9405	/L	31.0586
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2018-Nov-15 06:49	04 20 09.19 +51 07 16.9	0.00004527579637	0.0001973	145.2387	/L	34.7604
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2018-Nov-15 06:52	05 34 57.69 +51 18 52.4	0.00004527780718	0.0031350	137.7980	/L	42.2010
2018-Nov-15 06:53	05 59 26.45 +50 43 12.5	0.00004527925683	0.0040855	134.9793	/L	45.0196
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2018-Nov-15 06:57	07 27 40.32 +45 27 28.5	0.00004528866908	0.0075205	122.7079	/L	57.2905
2018-Nov-15 06:58	07 46 42.08 +43 32 51.3	0.00004529183629	0.0082503	119.4725	/L	60.5259
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2018-Nov-15 07:02	08 51 20.16 +34 17 21.5	0.00004530702777	0.0104785	106.1634	/L	73.8345
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2018-Nov-15 07:57	22 30 16.31 -09 42 18.1	0.00004534971643	-0.0091470	103.0250	/T	76.9722
2018-Nov-15 07:58	22 40 07.34 -06 40 40.6	0.00004534598774	-0.0094322	106.4044	/T	73.5927

2018-Nov-15 07:59	22 49 51.19 -03 38 17.6	0.00004534215126	-0.0096831	109.7652	/T	70.2319
2018-Nov-15 08:00	22 59 31.20 -00 35 29.2	0.00004533822181	-0.0098944	113.1021	/T	66.8950
2018-Nov-15 08:01	23 09 10.68 +02 27 25.0	0.00004533421628	-0.0100607	116.4092	/T	63.5879
2018-Nov-15 08:02	23 18 52.91 +05 30 05.2	0.00004533015366	-0.0101773	119.6795	/T	60.3176
2018-Nov-15 08:03	23 28 41.22 +08 32 11.4	0.00004532605490	-0.0102392	122.9048	/T	57.0924
2018-Nov-15 08:04	23 38 39.06 +11 33 22.8	0.00004532194276	-0.0102422	126.0752	/T	53.9220
2018-Nov-15 08:05	23 48 49.99 +14 33 17.5	0.00004531784162	-0.0101824	129.1787	/T	50.8185
2018-Nov-15 08:06	23 59 17.79 +17 31 31.6	0.00004531377740	-0.0100565	132.2009	/T	47.7964
2018-Nov-15 08:07	00 10 06.49 +20 27 39.2	0.00004530977712	-0.0098620	135.1236	/T	44.8738
2018-Nov-15 08:08	00 21 20.41 +23 21 11.5	0.00004530586874	-0.0095970	137.9249	/T	42.0725
2018-Nov-15 08:09	00 33 04.21 +26 11 36.3	0.00004530208085	-0.0092603	140.5776	/T	39.4200
2018-Nov-15 08:10	00 45 22.93 +28 58 16.9	0.00004529844232	-0.0088516	143.0485	/T	36.9492
2018-Nov-15 08:11	00 58 21.98 +31 40 31.8	0.00004529498196	-0.0083717	145.2975	/T	34.7003
2018-Nov-15 08:12	01 12 07.11 +34 17 33.4	0.00004529172813	-0.0078219	147.2781	/T	32.7199
2018-Nov-15 08:13	01 26 44.34 +36 48 27.4	0.00004528870848	-0.0072047	148.9380	/T	31.0602
2018-Nov-15 08:14	01 42 19.81 +39 12 11.5	0.00004528594947	-0.0065234	150.2227	/T	29.7756
2018-Nov-15 08:15	01 58 59.45 +41 27 35.3	0.00004528347607	-0.0057821	151.0819	/T	28.9166
2018-Nov-15 08:16	02 16 48.57 +43 33 19.6	0.00004528131143	-0.0049859	151.4767	/T	28.5220
2018-Nov-15 08:17	02 35 51.25 +45 27 57.1	0.00004527947652	-0.0041405	151.3876	/T	28.6113
2018-Nov-15 08:18	02 56 09.52 +47 09 53.4	0.00004527798985	-0.0032524	150.8191	/T	29.1799
2018-Nov-15 08:19	03 17 42.44 +48 37 30.7	0.00004527686718	-0.0023287	149.7985	/T	30.2006
2018-Nov-15 08:20	03 40 25.18 +49 49 11.8	0.00004527612132	-0.0013770	148.3698	/L	31.6293
2018-Nov-15 08:21	04 04 08.26 +50 43 26.6	0.00004527576187	-0.0004056	146.5858	/L	33.4134
2018-Nov-15 08:22	04 28 37.45 +51 18 59.7	0.00004527579510	0.0005771	144.5006	/L	35.4986
2018-Nov-15 08:23	04 53 34.33 +51 34 58.0	0.00004527622382	0.0015625	142.1646	/L	37.8345
2018-Nov-15 08:24	05 18 37.71 +51 30 56.7	0.00004527704734	0.0025418	139.6222	/L	40.3768
2018-Nov-15 08:25	05 43 25.77 +51 07 02.2	0.00004527826142	0.0035062	136.9108	/L	43.0882
2018-Nov-15 08:26	06 07 38.21 +50 23 51.6	0.00004527985831	0.0044470	134.0612	/L	45.9377
2018-Nov-15 08:27	06 30 58.19 +49 22 28.0	0.00004528182679	0.0053558	131.0986	/L	48.9002
2018-Nov-15 08:28	06 53 13.38 +48 04 13.8	0.00004528415241	0.0062246	128.0436	/L	51.9551
2018-Nov-15 08:29	07 14 16.25 +46 30 42.8	0.00004528681747	0.0070458	124.9127	/L	55.0858
2018-Nov-15 08:30	07 34 03.66 +44 43 33.4	0.00004528980146	0.0078125	121.7196	/L	58.2788
2018-Nov-15 08:31	07 52 35.97 +42 44 22.5	0.00004529308109	0.0085182	118.4752	/L	61.5230
2018-Nov-15 08:32	08 09 56.17 +40 34 41.6	0.00004529663072	0.0091574	115.1890	/L	64.8092
2018-Nov-15 08:33	08 26 08.91 +38 15 55.1	0.00004530042265	0.0097253	111.8685	/L	68.1295
2018-Nov-15 08:34	08 41 19.83 +35 49 18.5	0.00004530442741	0.0102180	108.5205	/L	71.4774
2018-Nov-15 08:35	08 55 34.98 +33 15 58.9	0.00004530861414	0.0106325	105.1504	/L	74.8474
2018-Nov-15 08:36	09 09 00.47 +30 36 55.1	0.00004531295101	0.0109668	101.7634	/L	78.2343
2018-Nov-15 08:37	09 21 42.23 +27 52 58.7	0.00004531740552	0.0112197	98.3639	/L	81.6337
2018-Nov-15 08:38	09 33 45.88 +25 04 54.5	0.00004532194498	0.0113911	94.9558	/L	85.0417
2018-Nov-15 08:39	09 45 16.67 +22 13 22.0	0.00004532653678	0.0114818	91.5431	/L	88.4543
2018-Nov-15 08:40	09 56 19.48 +19 18 55.8	0.00004533114882	0.0114933	88.1294	/L	91.8679
2018-Nov-15 08:41	10 06 58.84 +16 22 06.6	0.00004533574984	0.0114281	84.7183	/L	95.2790
2018-Nov-15 08:42	10 17 18.92 +13 23 22.0	0.00004534030972	0.0112896	81.3134	/L	98.6838
2018-Nov-15 08:43	10 27 23.66 +10 23 06.7	0.00004534479991	0.0110818	77.9186	/L	102.0785
2018-Nov-15 08:44	10 37 16.72 +07 21 43.7	0.00004534919345	0.0108092	74.5380	/L	105.4592
2018-Nov-15 08:45	10 47 01.62 +04 19 34.3	0.00004535346549	0.0104771	71.1759	/L	108.8212
2018-Nov-15 08:46	10 56 41.73 +01 16 59.0	0.00004535759330	0.0100911	67.8374	/L	112.1597
2018-Nov-15 08:47	11 06 20.36 -01 45 42.7	0.00004536155647	0.0096571	64.5281	/L	115.4690
2018-Nov-15 08:48	11 16 00.79 -04 48 11.2	0.00004536533703	0.0091815	61.2546	/L	118.7425
2018-Nov-15 08:49	11 25 46.33 -07 50 06.8	0.00004536891958	0.0086704	58.0248	/L	121.9724
2018-Nov-15 08:50	11 35 40.35 -10 51 09.2	0.00004537229124	0.0081304	54.8477	/L	125.1494
2018-Nov-15 08:51	11 45 46.36 -13 50 56.9	0.00004537544167	0.0075678	51.7347	/L	128.2625
2018-Nov-15 08:52	11 56 08.07 -16 49 07.1	0.00004537836308	0.0069887	48.6992	/L	131.2981
2018-Nov-15 08:53	12 06 49.38 -19 45 14.8	0.00004538105004	0.0063989	45.7579	/L	134.2394
2018-Nov-15 08:54	12 17 54.50 -22 38 52.5	0.00004538349940	0.0058041	42.9313	/L	137.0661
2018-Nov-15 08:55	12 29 27.95 -25 29 29.4	0.00004538571016	0.0052093	40.2445	/L	139.7530

2018-Nov-15 08:56	12 41 34.60	-28 16 30.9	0.00004538768329	0.0046192	37.7283	/L 142.2694
2018-Nov-15 08:57	12 54 19.70	-30 59 17.4	0.00004538942146	0.0040378	35.4198	/L 144.5780
2018-Nov-15 08:58	13 07 48.83	-33 37 04.0	0.00004539092886	0.0034687	33.3629	/L 146.6351
2018-Nov-15 08:59	13 22 07.87	-36 08 59.2	0.00004539221094	0.0029147	31.6072	/L 148.3909
2018-Nov-15 09:00	13 37 22.85	-38 34 04.1	0.00004539327422	0.0023781	30.2059	/L 149.7924
2018-Nov-15 09:01	13 53 39.71	-40 51 11.8	0.00004539412593	0.0018603	29.2102	/L 150.7883
2018-Nov-15 09:02	14 11 03.89	-42 59 07.1	0.00004539477383	0.0013625	28.6626	/L 151.3360
2018-Nov-15 09:03	14 29 39.81	-44 56 26.4	0.00004539522596	0.0008849	28.5890	/L 151.4098
2018-Nov-15 09:04	14 49 30.16	-46 41 38.8	0.00004539549035	0.0004274	28.9929	/L 151.0060
2018-Nov-15 09:05	15 10 34.95	-48 13 09.0	0.00004539557488	-0.0000109	29.8547	/L 150.1443
2018-Nov-15 09:06	15 32 50.65	-49 29 20.7	0.00004539548700	-0.0004311	31.1362	/T 148.8629
2018-Nov-15 09:07	15 56 09.37	-50 28 42.6	0.00004539523360	-0.0008350	32.7878	/T 147.2113
2018-Nov-15 09:08	16 20 18.53	-51 09 55.3	0.00004539482087	-0.0012244	34.7563	/T 145.2429
2018-Nov-15 09:09	16 45 01.19	-51 31 58.9	0.00004539425412	-0.0016016	36.9905	/T 143.0086
2018-Nov-15 09:10	17 09 57.18	-51 34 19.8	0.00004539353777	-0.0019691	39.4448	/T 140.5543
2018-Nov-15 09:11	17 34 45.00	-51 16 54.0	0.00004539267524	-0.0023293	42.0798	/T 137.9192
2018-Nov-15 09:12	17 59 03.97	-50 40 08.3	0.00004539166894	-0.0026848	44.8631	/T 135.1358
2018-Nov-15 09:13	18 22 36.24	-49 44 56.6	0.00004539052032	-0.0030379	47.7678	/T 132.2310
2018-Nov-15 09:14	18 45 08.10	-48 32 34.1	0.00004538922987	-0.0033910	50.7722	/T 129.2265
2018-Nov-15 09:15	19 06 30.56	-47 04 30.0	0.00004538779726	-0.0037460	53.8585	/T 126.1400
2018-Nov-15 09:16	19 26 39.08	-45 22 19.6	0.00004538622142	-0.0041047	57.0125	/T 122.9859
2018-Nov-15 09:17	19 45 32.92	-43 27 39.2	0.00004538450064	-0.0044682	60.2223	/T 119.7760
2018-Nov-15 09:18	20 03 14.18	-41 22 00.8	0.00004538263282	-0.0048374	63.4781	/T 116.5201
2018-Nov-15 09:19	20 19 46.96	-39 06 49.9	0.00004538061564	-0.0052127	66.7718	/T 113.2263
2018-Nov-15 09:20	20 35 16.50	-36 43 23.8	0.00004537844674	-0.0055938	70.0965	/T 109.9015
2018-Nov-15 09:21	20 49 48.68	-34 12 51.5	0.00004537612395	-0.0059799	73.4463	/T 106.5515
2018-Nov-15 09:22	21 03 29.51	-31 36 13.7	0.00004537364556	-0.0063696	76.8161	/T 103.1816
2018-Nov-15 09:23	21 16 24.93	-28 54 23.6	0.00004537101047	-0.0067611	80.2013	/T 99.7963
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2018-Nov-15 09:25	21 40 21.91	-23 18 07.2	0.00004536527064	-0.0075383	87.0016	/T 92.9959
2018-Nov-15 09:26	21 51 33.75	-20 24 57.4	0.00004536216913	-0.0079174	90.4091	/T 89.5882
2018-Nov-15 09:27	22 02 20.77	-17 29 10.2	0.00004535891778	-0.0082849	93.8168	/T 86.1805
2018-Nov-15 09:28	22 12 47.22	-14 31 14.1	0.00004535552215	-0.0086363	97.2210	/T 82.7762
2018-Nov-15 09:29	22 22 57.11	-11 31 34.4	0.00004535198960	-0.0089667	100.6180	/T 79.3792
2018-Nov-15 09:30	22 32 54.17	-08 30 34.8	0.00004534832951	-0.0092712	104.0037	/T 75.9934
2018-Nov-15 09:31	22 42 41.96	-05 28 37.0	0.00004534455327	-0.0095445	107.3740	/T 72.6231
2018-Nov-15 09:32	22 52 23.90	-02 26 01.6	0.00004534067446	-0.0097813	110.7240	/T 69.2731
2018-Nov-15 09:33	23 02 03.31	+00 36 51.3	0.00004533670871	-0.0099764	114.0483	/T 65.9488
2018-Nov-15 09:34	23 11 43.49	+03 39 42.2	0.00004533267382	-0.0101245	117.3407	/T 62.6564
2018-Nov-15 09:35	23 21 27.73	+06 42 11.3	0.00004532858952	-0.0102208	120.5938	/T 59.4033
2018-Nov-15 09:36	23 31 19.40	+09 43 58.3	0.00004532447756	-0.0102607	123.7989	/T 56.1983
2018-Nov-15 09:37	23 41 21.98	+12 44 42.0	0.00004532036139	-0.0102400	126.9455	/T 53.0517
2018-Nov-15 09:38	23 51 39.13	+15 43 59.8	0.00004531626604	-0.0101551	130.0210	/T 49.9763
2018-Nov-15 09:39	00 02 14.71	+18 41 27.0	0.00004531221790	-0.0100029	133.0097	/T 46.9876
2018-Nov-15 09:40	00 13 12.85	+21 36 36.7	0.00004530824445	-0.0097812	135.8927	/T 44.1047
2018-Nov-15 09:41	00 24 38.02	+24 28 58.8	0.00004530437398	-0.0094883	138.6465	/T 41.3510
2018-Nov-15 09:42	00 36 35.02	+27 17 59.5	0.00004530063524	-0.0091235	141.2421	/T 38.7555
2018-Nov-15 09:43	00 49 09.02	+30 03 00.2	0.00004529705715	-0.0086868	143.6447	/T 36.3530
2018-Nov-15 09:44	01 02 25.59	+32 43 17.2	0.00004529366844	-0.0081792	145.8124	/T 34.1855
2018-Nov-15 09:45	01 16 30.61	+35 18 00.2	0.00004529049726	-0.0076025	147.6969	/T 32.3011
2018-Nov-15 09:46	01 31 30.15	+37 46 12.0	0.00004528757086	-0.0069595	149.2454	/T 30.7528
2018-Nov-15 09:47	01 47 30.31	+40 06 47.1	0.00004528491518	-0.0062539	150.4046	/T 29.5938
2018-Nov-15 09:48	02 04 36.85	+42 18 31.5	0.00004528255458	-0.0054900	151.1269	/T 28.8717
2018-Nov-15 09:49	02 22 54.67	+44 20 02.8	0.00004528051139	-0.0046733	151.3790	/T 28.6197
2018-Nov-15 09:50	02 42 27.14	+46 09 50.7	0.00004527880569	-0.0038098	151.1485	/T 28.8504
2018-Nov-15 09:51	03 03 15.25	+47 46 19.0	0.00004527745498	-0.0029063	150.4468	/T 29.5522
2018-Nov-15 09:52	03 25 16.60	+49 07 49.4	0.00004527647390	-0.0019701	149.3063	/L 30.6928

2018-Nov-15 09:53	03 48 24.59 +50 12 46.8	0.00004527587405	-0.0010090	147.7739 /L	32.2252
2018-Nov-15 09:54	04 12 27.86 +50 59 45.8	0.00004527566376	-0.0000314	145.9031 /L	34.0961
2018-Nov-15 09:55	04 37 10.39 +51 27 39.1	0.00004527584798	0.0009543	143.7467 /L	36.2525
2018-Nov-15 09:56	05 02 12.44 +51 35 44.2	0.00004527642819	0.0019392	141.3532 /L	38.6459
2018-Nov-15 09:57	05 27 12.33 +51 23 48.5	0.00004527740230	0.0029146	138.7648 /L	41.2342
2018-Nov-15 09:58	05 51 48.55 +50 52 10.7	0.00004527876471	0.0038716	136.0168 /L	43.9822
2018-Nov-15 09:59	06 15 42.01 +50 01 39.0	0.00004528050631	0.0048018	133.1382 /L	46.8607
2018-Nov-15 10:00	06 38 37.56 +48 53 25.1	0.00004528261462	0.0056969	130.1527 /L	49.8460
2018-Nov-15 10:01	07 00 24.79 +47 28 56.7	0.00004528507389	0.0065489	127.0797 /L	52.9190
2018-Nov-15 10:02	07 20 57.97 +45 49 50.3	0.00004528786531	0.0073506	123.9347 /L	56.0638
2018-Nov-15 10:03	07 40 15.46 +43 57 44.2	0.00004529096724	0.0080951	120.7307 /L	59.2677
2018-Nov-15 10:04	07 58 18.78 +41 54 13.6	0.00004529435547	0.0087764	117.4781 /L	62.5201
2018-Nov-15 10:05	08 15 11.68 +39 40 47.4	0.00004529800349	0.0093892	114.1858 /L	65.8123
2018-Nov-15 10:06	08 30 59.26 +37 18 46.4	0.00004530188284	0.0099291	110.8611 /L	69.1369
2018-Nov-15 10:07	08 45 47.40 +34 49 22.9	0.00004530596351	0.0103926	107.5104 /L	72.4875
2018-Nov-15 10:08	08 59 42.19 +32 13 40.6	0.00004531021420	0.0107769	104.1392 /L	75.8586
2018-Nov-15 10:09	09 12 49.69 +29 32 35.4	0.00004531460277	0.0110804	100.7522 /L	79.2455
2018-Nov-15 10:10	09 25 15.74 +26 46 55.9	0.00004531909658	0.0113023	97.3538 /L	82.6438
2018-Nov-15 10:11	09 37 05.79 +23 57 25.0	0.00004532366291	0.0114429	93.9480 /L	86.0495
2018-Nov-15 10:12	09 48 24.96 +21 04 39.9	0.00004532826932	0.0115032	90.5386 /L	89.4588
2018-Nov-15 10:13	09 59 17.98 +18 09 13.7	0.00004533288397	0.0114853	87.1293 /L	92.8680
2018-Nov-15 10:14	10 09 49.24 +15 11 35.8	0.00004533747597	0.0113918	83.7237 /L	96.2736
2018-Nov-15 10:15	10 20 02.81 +12 12 12.5	0.00004534201582	0.0112265	80.3254 /L	99.6718
2018-Nov-15 10:16	10 30 02.50 +09 11 27.8	0.00004534647553	0.0109935	76.9384 /L	103.0587
2018-Nov-15 10:17	10 39 51.93 +06 09 44.1	0.00004535082889	0.0106977	73.5670 /L	106.4301
2018-Nov-15 10:18	10 49 34.55 +03 07 22.1	0.00004535505188	0.0103444	70.2156 /L	109.7815
2018-Nov-15 10:19	10 59 13.69 +00 04 41.9	0.00004535912259	0.0099395	66.8896 /L	113.1075
2018-Nov-15 10:20	11 08 52.65 -02 57 56.8	0.00004536302156	0.0094891	63.5948 /L	116.4023
2018-Nov-15 10:21	11 18 34.71 -06 00 14.6	0.00004536673183	0.0089993	60.3382 /L	119.6590
2018-Nov-15 10:22	11 28 23.20 -09 01 51.5	0.00004537023892	0.0084766	57.1279 /L	122.8692
2018-Nov-15 10:23	11 38 21.55 -12 02 26.9	0.00004537353094	0.0079274	53.9738 /L	126.0233
2018-Nov-15 10:24	11 48 33.33 -15 01 38.8	0.00004537659854	0.0073578	50.8878 /L	129.1094
2018-Nov-15 10:25	11 59 02.31 -17 59 03.6	0.00004537943480	0.0067741	47.8842 /L	132.1131
2018-Nov-15 10:26	12 09 52.53 -20 54 15.3	0.00004538203519	0.0061819	44.9807 /L	135.0166
2018-Nov-15 10:27	12 21 08.31 -23 46 45.3	0.00004538439740	0.0055866	42.1992 /L	137.7983
2018-Nov-15 10:28	12 32 54.30 -26 36 01.3	0.00004538652120	0.0049931	39.5662 /L	140.4314
2018-Nov-15 10:29	12 45 15.52 -29 21 26.8	0.00004538840818	0.0044059	37.1142 /L	142.8835
2018-Nov-15 10:30	12 58 17.35 -32 02 20.3	0.00004539006164	0.0038288	34.8823 /L	145.1155
2018-Nov-15 10:31	13 12 05.52 -34 37 54.2	0.00004539148625	0.0032651	32.9158 /L	147.0822
2018-Nov-15 10:32	13 26 45.97 -37 07 14.4	0.00004539268788	0.0027173	31.2655 /L	148.7327
2018-Nov-15 10:33	13 42 24.74 -39 29 18.9	0.00004539367330	0.0021875	29.9839 /L	150.0144
2018-Nov-15 10:34	13 59 07.62 -41 42 57.4	0.00004539444997	0.0016770	29.1201 /L	150.8784
2018-Nov-15 10:35	14 16 59.73 -43 46 51.4	0.00004539502574	0.0011865	28.7120 /L	151.2867
2018-Nov-15 10:36	14 36 04.90 -45 39 34.2	0.00004539540865	0.0007161	28.7790 /L	151.2198
2018-Nov-15 10:37	14 56 24.86 -47 19 32.8	0.00004539560665	0.0002655	29.3177 /L	150.6813
2018-Nov-15 10:38	15 17 58.34 -48 45 10.9	0.00004539562745	-0.0001664	30.3028 /L	149.6963
2018-Nov-15 10:39	15 40 40.15 -49 54 53.5	0.00004539547828	-0.0005809	31.6923 /T	148.3069
2018-Nov-15 10:40	16 04 20.57 -50 47 12.9	0.00004539516572	-0.0009798	33.4354 /T	146.5637
2018-Nov-15 10:41	16 28 45.20 -51 20 56.9	0.00004539469561	-0.0013652	35.4796 /T	144.5195
2018-Nov-15 10:42	16 53 35.64 -51 35 15.0	0.00004539407291	-0.0017394	37.7754 /T	142.2237
2018-Nov-15 10:43	17 18 30.95 -51 29 45.2	0.00004539330160	-0.0021049	40.2792 /T	139.7199
2018-Nov-15 10:44	17 43 09.69 -51 04 35.8	0.00004539238471	-0.0024641	42.9539 /T	137.0451
2018-Nov-15 10:45	18 07 12.09 -50 20 24.9	0.00004539132423	-0.0028197	45.7686 /T	134.2302
2018-Nov-15 10:46	18 30 21.82 -49 18 15.6	0.00004539012123	-0.0031738	48.6984 /T	131.3004
2018-Nov-15 10:47	18 52 27.03 -47 59 29.6	0.00004538877584	-0.0035288	51.7226 /T	128.2760
2018-Nov-15 10:48	19 13 20.54 -46 25 39.3	0.00004538728742	-0.0038863	54.8246 /T	125.1739
2018-Nov-15 10:49	19 32 59.42 -44 38 21.0	0.00004538565462	-0.0042481	57.9909 /T	122.0075

2018-Nov-15 10:50	19 51 24.16	-42 39 09.8	0.00004538387558	-0.0046151	61.2101	/T	118.7882
2018-Nov-15 10:51	20 08 37.77	-40 29 35.3	0.00004538194806	-0.0049880	64.4731	/T	115.5251
2018-Nov-15 10:52	20 24 44.85	-38 10 59.9	0.00004537986971	-0.0053670	67.7720	/T	112.2260
2018-Nov-15 10:53	20 39 50.99	-35 44 37.6	0.00004537763825	-0.0057514	71.1004	/T	108.8976
2018-Nov-15 10:54	20 54 02.14	-33 11 34.0	0.00004537525164	-0.0061404	74.4523	/T	105.5455
2018-Nov-15 10:55	21 07 24.32	-30 32 46.9	0.00004537270838	-0.0065323	77.8230	/T	102.1747
2018-Nov-15 10:56	21 20 03.37	-27 49 06.7	0.00004537000779	-0.0069250	81.2079	/T	98.7897
2018-Nov-15 10:57	21 32 04.84	-25 01 17.5	0.00004536715009	-0.0073155	84.6030	/T	95.3945
2018-Nov-15 10:58	21 43 33.91	-22 09 58.1	0.00004536413675	-0.0077007	88.0044	/T	91.9930
2018-Nov-15 10:59	21 54 35.40	-19 15 42.7	0.00004536097069	-0.0080767	91.4085	/T	88.5888
2018-Nov-15 11:00	22 05 13.80	-16 19 01.4	0.00004535765638	-0.0084393	94.8117	/T	85.1856
2018-Nov-15 11:01	22 15 33.24	-13 20 21.5	0.00004535420010	-0.0087839	98.2102	/T	81.7870
2018-Nov-15 11:02	22 25 37.62	-10 20 07.6	0.00004535061002	-0.0091055	101.6003	/T	78.3968
2018-Nov-15 11:03	22 35 30.61	-07 18 42.5	0.00004534689633	-0.0093991	104.9780	/T	75.0191
2018-Nov-15 11:04	22 45 15.69	-04 16 27.6	0.00004534307135	-0.0096592	108.3387	/T	71.6584
2018-Nov-15 11:05	22 54 56.24	-01 13 43.0	0.00004533914948	-0.0098807	111.6774	/T	68.3197
2018-Nov-15 11:06	23 04 35.57	+01 49 11.4	0.00004533514724	-0.0100583	114.9886	/T	65.0085
2018-Nov-15 11:07	23 14 16.96	+04 51 55.9	0.00004533108325	-0.0101869	118.2656	/T	61.7316
2018-Nov-15 11:08	23 24 03.74	+07 54 10.8	0.00004532697811	-0.0102617	121.5006	/T	58.4965
2018-Nov-15 11:09	23 33 59.31	+10 55 35.2	0.00004532285424	-0.0102783	124.6845	/T	55.3126
2018-Nov-15 11:10	23 44 07.21	+13 55 47.6	0.00004531873583	-0.0102328	127.8062	/T	52.1910
2018-Nov-15 11:11	23 54 31.18	+16 54 24.6	0.00004531464851	-0.0101216	130.8521	/T	49.1452
2018-Nov-15 11:12	00 05 15.18	+19 51 00.8	0.00004531061915	-0.0099421	133.8058	/T	46.1916
2018-Nov-15 11:13	00 16 23.47	+22 45 07.9	0.00004530667565	-0.0096923	136.6469	/T	43.3505
2018-Nov-15 11:14	00 28 00.64	+25 36 14.6	0.00004530284652	-0.0093707	139.3505	/T	40.6470
2018-Nov-15 11:15	00 40 11.64	+28 23 45.1	0.00004529916068	-0.0089771	141.8862	/T	38.1115
2018-Nov-15 11:16	00 53 01.80	+31 06 59.1	0.00004529564705	-0.0085117	144.2169	/T	35.7809
2018-Nov-15 11:17	01 06 36.82	+33 45 10.3	0.00004529233421	-0.0079760	146.2993	/T	33.6987
2018-Nov-15 11:18	01 21 02.67	+36 17 25.8	0.00004528925001	-0.0073721	148.0837	/T	31.9144
2018-Nov-15 11:19	01 36 25.48	+38 42 45.2	0.00004528642129	-0.0067032	149.5170	/T	30.4812
2018-Nov-15 11:20	01 52 51.24	+40 59 59.6	0.00004528387343	-0.0059732	150.5475	/T	29.4510
2018-Nov-15 11:21	02 10 25.45	+43 07 51.8	0.00004528163004	-0.0051870	151.1314	/T	28.8672
2018-Nov-15 11:22	02 29 12.51	+45 04 56.1	0.00004527971264	-0.0043501	151.2414	/T	28.7574
2018-Nov-15 11:23	02 49 14.95	+46 49 39.3	0.00004527814034	-0.0034690	150.8720	/T	29.1270
2018-Nov-15 11:24	03 10 32.52	+48 20 24.1	0.00004527692957	-0.0025506	150.0410	/T	29.9580
2018-Nov-15 11:25	03 33 01.28	+49 35 32.7	0.00004527609381	-0.0016025	148.7856	/L	31.2135
2018-Nov-15 11:26	03 56 32.75	+50 33 32.9	0.00004527564340	-0.0006328	147.1549	/L	32.8443
2018-Nov-15 11:27	04 20 53.69	+51 13 05.5	0.00004527558539	0.0003502	145.2020	/L	34.7972
2018-Nov-15 11:28	04 45 46.44	+51 33 12.4	0.00004527592336	0.0013378	142.9786	/L	37.0205
2018-Nov-15 11:29	05 10 50.26	+51 33 22.2	0.00004527665739	0.0023212	140.5311	/L	39.4679
2018-Nov-15 11:30	05 35 43.25	+51 13 35.0	0.00004527778402	0.0032916	137.8995	/L	42.0995
2018-Nov-15 11:31	06 00 04.65	+50 34 21.5	0.00004527929626	0.0042403	135.1171	/L	44.8818
2018-Nov-15 11:32	06 23 36.75	+49 36 40.1	0.00004528118366	0.0051588	132.2112	/L	47.7876
2018-Nov-15 11:33	06 46 06.24	+48 21 49.6	0.00004528343244	0.0060390	129.2043	/L	50.7944
2018-Nov-15 11:34	07 07 24.61	+46 51 22.2	0.00004528602558	0.0068732	126.1143	/L	53.8843
2018-Nov-15 11:35	07 27 27.85	+45 06 55.8	0.00004528894314	0.0076543	122.9561	/L	57.0424
2018-Nov-15 11:36	07 46 15.68	+43 10 07.9	0.00004529216245	0.0083758	119.7419	/L	60.2565
2018-Nov-15 11:37	08 03 50.61	+41 02 31.5	0.00004529565829	0.0090318	116.4816	/L	63.5166
2018-Nov-15 11:38	08 20 17.01	+38 45 32.5	0.00004529940340	0.0096175	113.1837	/L	66.8144
2018-Nov-15 11:39	08 35 40.36	+36 20 28.4	0.00004530336859	0.0101287	109.8552	/L	70.1428
2018-Nov-15 11:40	08 50 06.67	+33 48 28.0	0.00004530752331	0.0105622	106.5022	/L	73.4956
2018-Nov-15 11:41	09 03 42.05	+31 10 31.7	0.00004531183586	0.0109158	103.1300	/L	76.8677
2018-Nov-15 11:42	09 16 32.48	+28 27 32.6	0.00004531627382	0.0111881	99.7433	/L	80.2543
2018-Nov-15 11:43	09 28 43.66	+25 40 16.9	0.00004532080448	0.0113787	96.3464	/L	83.6511
2018-Nov-15 11:44	09 40 20.92	+22 49 25.0	0.00004532539516	0.0114883	92.9432	/L	87.0543
2018-Nov-15 11:45	09 51 29.21	+19 55 32.5	0.00004533001358	0.0115182	89.5374	/L	90.4600
2018-Nov-15 11:46	10 02 13.12	+16 59 10.9	0.00004533462821	0.0114708	86.1327	/L	93.8646

2018-Nov-15 11:47	10 12 36.92 +14 00 48.3	0.00004533920868	0.0113492	82.7328	/L	97.2644
2018-Nov-15 11:48	10 22 44.56 +11 00 50.1	0.00004534372598	0.0111572	79.3415	/L	100.6557
2018-Nov-15 11:49	10 32 39.78 +07 59 39.6	0.00004534815280	0.0108993	75.9627	/L	104.0344
2018-Nov-15 11:50	10 42 26.12 +04 57 38.3	0.00004535246373	0.0105806	72.6009	/L	107.3962
2018-Nov-15 11:51	10 52 06.98 +01 55 06.8	0.00004535663551	0.0102067	69.2607	/L	110.7364
2018-Nov-15 11:52	11 01 45.66 -01 07 35.0	0.00004536064721	0.0097834	65.9477	/L	114.0494
2018-Nov-15 11:53	11 11 25.46 -04 10 07.7	0.00004536448028	0.0093169	62.6680	/L	117.3291
2018-Nov-15 11:54	11 21 09.67 -07 12 11.7	0.00004536811871	0.0088135	59.4290	/L	120.5681
2018-Nov-15 11:55	11 31 01.65 -10 13 26.7	0.00004537154902	0.0082797	56.2393	/L	123.7579
2018-Nov-15 11:56	11 41 04.88 -13 13 31.7	0.00004537476028	0.0077217	53.1093	/L	126.8879
2018-Nov-15 11:57	11 51 23.01 -16 12 04.1	0.00004537774410	0.0071458	50.0516	/L	129.9457
2018-Nov-15 11:58	12 01 59.91 -19 08 39.4	0.00004538049447	0.0065580	47.0815	/L	132.9158
2018-Nov-15 11:59	12 12 59.71 -22 02 50.6	0.00004538300775	0.0059637	44.2178	/L	135.7796
2018-Nov-15 12:00	12 24 26.87 -24 54 07.8	0.00004538528242	0.0053683	41.4836	/L	138.5139

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Column meaning:

TIME

Times PRIOR to 1962 are UT1, a mean-solar time closely related to the prior but now-deprecated GMT. Times AFTER 1962 are in UTC, the current civil or "wall-clock" time-scale. UTC is kept within 0.9 seconds of UT1 by introduction of integer leap-seconds for 1972 and later.

Conversion from the internal TDB timescale to the non-uniform UT time-scale requested for output has not been determined for UTC times after the next July or January 1st. Therefore, the last known leap-second is used as a constant over future intervals.

Time tags refer to the UT time on Earth, regardless of where the observer is located in the solar system. For example, if an observation from the surface of another body has an output time-tag of 12:31:00 UT, it refers to a time-scale conversion from TDB to UT valid at the center of the Earth, not the actual observer location elsewhere in the solar system, where clock rates may differ slightly due to the local spacetime metric and there is no precisely defined or adopted "UT" analog.

Any 'b' symbol in the 1st-column denotes a B.C. date. First-column blank (" ") denotes an A.D. date. Calendar dates prior to 1582-Oct-15 are in the Julian calendar system. Later calendar dates are in the Gregorian system.

NOTE: "n.a." in output means quantity "not available" at the print-time.

R.A.\_(ICRF/J2000.0)\_DEC =

Astrometric right ascension and declination of the TARGET CENTER with respect to the observing site in the coordinates of the ICRF/J2000 inertial reference frame. Compensated for down-leg light-time.

Units: RA in hours-minutes-seconds of time (HH MM SS.ff),

DEC in angular degrees-minutes-seconds (DD MM SS.f)

APmag S-brt =

Target's approximate apparent visual magnitude & surface brightness. For planets and satellites, values are available only for solar phase angles in the range generally visible from Earth. This is to avoid extrapolation of models beyond their valid (data-based) limits.

Units: MAGNITUDE & VISUAL MAGNITUDES PER SQUARE ARCSECOND

delta deldot =

Range ("delta") and range-rate ("delta-dot") of target center with respect to the observer at the instant light seen by the observer at print-time would have left the target center (print-time minus down-leg light-time); the distance traveled by a light ray emanating from the center of the target and recorded by the observer at print-time. "deldot" is a projection of the velocity vector along this ray, the light-time-corrected line-of-sight from the coordinate center, and indicates relative motion. A positive "deldot" means the target center is moving away from the observer (coordinate center). A negative "deldot" means the target center is moving toward the observer.

Units: AU and KM/S

S-O-T /r =

Sun-Observer-Target angle; target's apparent SOLAR ELONGATION seen from the observer location at print-time. Angular units: DEGREES

The '/r' column indicates the target's apparent position relative to the Sun in the observer's sky, as described below:

For an observing location on the surface of a rotating body (considering its rotational sense):

/T indicates target TRAILS Sun (evening sky; rises and sets AFTER Sun)  
/L indicates target LEADS Sun (morning sky; rises and sets BEFORE Sun)

For an observing point NOT on a rotating body (such as a spacecraft), the "leading" and "trailing" condition is defined by the observer's heliocentric orbital motion: if continuing in the observer's current direction of heliocentric motion would encounter the target's apparent longitude first, followed by the Sun's, the target LEADS the Sun as seen by the observer. If the Sun's apparent longitude would be encountered first, followed by the target's, the target TRAILS the Sun.

NOTE: The S-O-T solar elongation angle is numerically the minimum separation angle of the Sun and target in the sky in any direction. It does NOT indicate the amount of separation in the leading or trailing directions, which are defined in the equator of a spherical coordinate system.

S-T-O =

"S-T-O" is the Sun->Target->Observer angle; the interior vertex angle at target center formed by a vector to the apparent center of the Sun at reflection time on the target and the apparent vector to the observer at print-time. Slightly different from true PHASE ANGLE (requestable separately) at the few arcsecond level in that it includes stellar aberration on the down-leg from target to observer. Units: DEGREES

Computations by ...

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