

JAXA-RPR-MX16311

RELEASE DATE: May.15, 2017

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# **MARTIAN MOONS EXPLORATION (MMX) MISSION**

## **SUPPLEMENTAL DESIGN DOCUMENT**



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## 1. INTRODUCTION

### 1.1. Purpose and scope of this document

This document (MMX-SupDD) describes supplemental explanations for documents listed in Section 3. which are all related to Martian Moons Exploration (MMX) mission.

For any component that raises issues in satisfying the requirements, coordinate with the MMX system team.

### 1.2. Reference documents

See Section 3.

### 1.3. Notation

[TBD-Sys] [TBC-Sys]

The results of previous study for MMX or other projects are described as reference information for systems and the PI instrument. They will be established by system design in Phase A or beyond.

[TBD-Sys/PI] [TBC-Sys/PI]

The results of previous study for MMX or other projects are described as reference information for systems and the PI instrument. They will be established through coordination between the PI instrument and systems in Phase A or beyond.

[TBD-Doc] [TBC-Doc]

Information that can be described through coordination with design standards and other documents. (Phase A or beyond)

[TBD-Plan] [TBC-Plan]

Information determined after government approval of the project plan.

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## 2. SUPPLEMENTAL DESCRIPTION

### 2.1. Science Requirement Document for ALL Instruments (JAXA-RPR-MX16300)

N/A

### 2.2. Instrument Interface Requirement Document (JAXA-RPR-MX16301)

N/A

### 2.3. System Description (JAXA-RPR-MX16302)

#### (1) Quasi-satellite orbit (Section 2.4.5.3)

The numerical orbit data of the QSOs are shown in the Appendix 1 of this document.

File name:

JAXA-RPR-MX16311\_MMX\_SupDD\_Ap1\_Phobos\_Spacecraft\_Position\_wrt\_Mars(Inertial).xlsx

Coordinate system: J2000.0

Origin: Mars

Target body of QSO: Phobos

Time Zone: UTCG

QSO Size: High altitude (50x100km) and low altitude (24x34km) orbit

Note: This data is just a preliminary example to understand the size and shape of typical QSOs. Condition for actual observation including the direction of Sun, Earth and Mars is TBD.

#### (2) Attitude profile (Section 2.4.5.2)

During proximity operation there are several modes for attitude control system. In each mode the spacecraft turns to different targets. Typical modes are described below (TBD-Sys).

Co-ordinate system of the spacecraft is shown in Figure 2.3-1 in the MMX-SysDD.

The observation face is -Z direction and the sun panels are installed belong +/-Y axis.

#### 1) Observation mode

In this mode, the observation face(-Z) of the spacecraft is basically oriented toward the center of

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gravity of the Phobos. According to the mission requirements, the observation face points or scans the surface of the Phobos and other targets.

## 2) Downlink mode

When the spacecraft can have a link with the Earth, HGA on the spacecraft is oriented toward the ground station on the Earth. Therefore the observation face(-Z) deviates from the Phobos. The amount of deviation depends on orbit, season and the relationship between the spacecraft and the Earth.

## 3) Safehold mode

The spacecraft has function to change to the safehold mode. When a problem occurs, the spacecraft orients the sun panel toward the Sun and keep the spacecraft safe autonomously. As well as the Downlink mode, the observation face(-Z) also deviates from the Phobos in this mode.

The spacecraft's attitude is determined by the Kalman filter with the STT(Star Tracker) and IRU(Inertial Reference Unit). In Observation mode and Downlink mode the spacecraft attitude is controlled with this determined attitude in the inertial space.

The amount of time for the Observation mode isn't estimated correctly up to the present.

## (3) Quantity of propellant (Section 2)

The quantity of propellant in the propulsion and return module is shown in the following table.

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Estimated Propellant (for 2024 launch / Deimos Fly-by)

	Propulsion Module		Return Module	
	NTO	N2H4	NTO	N2H4
at Launch	709	652	568	523
before MOI-1	644	592	568	523
after MOI-1	313	288	568	523
after PM Separation			568	523
during QSO (maximum)			568	523
during QSO (minimum)			339	312
after Deimos Fly-by			166	152
after MOE			26	24

(kg)

2.4. Component Mechanical Design Criteria (JAXA-RPR-MX16303)

N/A

2.5. Component Thermal Design Criteria (JAXA-RPR-MX16304)

N/A

2.6. Component Electrical Design Criteria (JAXA-RPR-MX16305)

N/A

2.7. Component Telemetry and Command Design Criteria  
(JAXA-RPR-MX16306)

N/A

2.8. Environmental Design Criteria and Test Conditions  
(JAXA-RPR-MX16307)

N/A



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2.9. Science Management Plan for All Instruments (JAXA-RPR-MX16308)  
N/A

2.10. SpaceWire Onboard Subnetwork Design Standards  
(JAXA-RPR-MX16309)  
N/A

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### 3. DOCUMENTS

#### 3.1. Applicable documents

N/A

#### 3.2. Reference documents

- (1) JAXA-RPR-MX16300  
MMX Science Requirements Document for all instruments (MMX-SciRD-ALL)
- (2) JAXA-RPR-MX16301  
MMX Instrument Interface Requirement Document (MMX-I-IRD)
- (3) JAXA-RPR-MX16302  
MMX System Description (MMX-SysDD)
- (4) JAXA-RPR-MX16303  
MMX Component Mechanical Design Criteria (MMX-C-MDC)
- (5) JAXA-RPR-MX16304  
MMX Component Thermal Design Criteria (MMX-C-TDC)
- (6) JAXA-RPR-MX16305  
MMX Component Electrical Design Criteria (MMX-C-EDC)
- (7) JAXA-RPR-MX16306  
MMX Component Telemetry and Command Design Criteria (MMX-C-TCDC)
- (8) JAXA-RPR-MX16307  
MMX Environmental Design Data & Test Conditions (MMX-EDDTC)
- (9) JAXA-RPR-MX16308  
MMX Science Management Plan for all instruments (MMX-SciMP-ALL)
- (10) JAXA-RPR-MX16309  
MMX SpaceWire Onboard Subnetwork Design Standards

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#### 4. ACRONYMS

MMX	Martian Moons Exploration
QSO	Quasi-satellite orbit

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## APPENDIX 1. NUMERICAL ORBIT DATA OF THE QSOS

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 4:07	-8128.72	-934.433	4278.562	-8084.71	-929.434	4255.366	-8107.6	-932.065	4267.414
2025/8/1 4:08	-8141.65	-1052.94	4226.163	-8097.71	-1048.58	4202.683	-8120.58	-1050.98	4214.836
2025/8/1 4:09	-8152.99	-1171.24	4172.936	-8109.09	-1167.51	4149.164	-8131.95	-1169.68	4161.428
2025/8/1 4:10	-8162.72	-1289.31	4118.891	-8118.86	-1286.22	4094.82	-8141.72	-1288.16	4107.201
2025/8/1 4:11	-8170.86	-1407.13	4064.039	-8127.01	-1404.66	4039.661	-8149.89	-1406.38	4052.165
2025/8/1 4:12	-8177.4	-1524.68	4008.391	-8133.55	-1522.83	3983.698	-8156.46	-1524.32	3996.332
2025/8/1 4:13	-8182.33	-1641.92	3951.958	-8138.47	-1640.7	3926.943	-8161.42	-1641.97	3939.712
2025/8/1 4:14	-8185.66	-1758.85	3894.75	-8141.77	-1758.23	3869.407	-8164.77	-1759.29	3882.317
2025/8/1 4:15	-8187.39	-1875.43	3836.779	-8143.45	-1875.42	3811.101	-8166.52	-1876.26	3824.158
2025/8/1 4:16	-8187.52	-1991.64	3778.057	-8143.52	-1992.24	3752.037	-8166.65	-1992.86	3765.246
2025/8/1 4:17	-8186.04	-2107.46	3718.594	-8141.96	-2108.65	3692.228	-8165.18	-2109.07	3705.594
2025/8/1 4:18	-8182.95	-2222.87	3658.403	-8138.78	-2224.65	3631.684	-8162.11	-2224.86	3645.213
2025/8/1 4:19	-8178.27	-2337.85	3597.496	-8133.99	-2340.21	3570.418	-8157.42	-2340.21	3584.116
2025/8/1 4:20	-8171.98	-2452.36	3535.884	-8127.57	-2455.3	3508.443	-8151.13	-2455.1	3522.314
2025/8/1 4:21	-8164.09	-2566.4	3473.579	-8119.55	-2569.9	3445.77	-8143.24	-2569.51	3459.819
2025/8/1 4:22	-8154.61	-2679.93	3410.595	-8109.91	-2684	3382.413	-8133.75	-2683.41	3396.645
2025/8/1 4:23	-8143.53	-2792.94	3346.943	-8098.65	-2797.55	3318.384	-8122.65	-2796.78	3332.803
2025/8/1 4:24	-8130.85	-2905.41	3282.635	-8085.79	-2910.55	3253.696	-8109.96	-2909.6	3268.307
2025/8/1 4:25	-8116.59	-3017.3	3217.686	-8071.33	-3022.98	3188.362	-8095.67	-3021.84	3203.169
2025/8/1 4:26	-8100.73	-3128.6	3152.106	-8055.26	-3134.8	3122.394	-8079.79	-3133.49	3137.402
2025/8/1 4:27	-8083.29	-3239.3	3085.91	-8037.59	-3246	3055.808	-8062.33	-3244.52	3071.02
2025/8/1 4:28	-8064.27	-3349.36	3019.11	-8018.32	-3356.56	2988.614	-8043.28	-3354.91	3004.035
2025/8/1 4:29	-8043.67	-3458.76	2951.72	-7997.47	-3466.45	2920.828	-8022.65	-3464.64	2936.46
2025/8/1 4:30	-8021.5	-3567.49	2883.752	-7975.02	-3575.65	2852.463	-8000.44	-3573.69	2868.31
2025/8/1 4:31	-7997.76	-3675.52	2815.221	-7951	-3684.14	2783.532	-7976.66	-3682.03	2799.598
2025/8/1 4:32	-7972.46	-3782.83	2746.139	-7925.4	-3791.9	2714.05	-7951.32	-3789.65	2730.337
2025/8/1 4:33	-7945.6	-3889.4	2676.52	-7898.23	-3898.91	2644.029	-7924.41	-3896.52	2660.541
2025/8/1 4:34	-7917.19	-3995.21	2606.379	-7869.49	-4005.14	2573.486	-7895.95	-4002.63	2590.225
2025/8/1 4:35	-7887.23	-4100.25	2535.728	-7839.2	-4110.58	2502.432	-7865.94	-4107.94	2519.401
2025/8/1 4:36	-7855.73	-4204.48	2464.583	-7807.35	-4215.21	2430.883	-7834.39	-4212.45	2448.085
2025/8/1 4:37	-7822.7	-4307.89	2392.956	-7773.96	-4319	2358.853	-7801.31	-4316.14	2376.29
2025/8/1 4:38	-7788.14	-4410.46	2320.861	-7739.02	-4421.94	2286.357	-7766.69	-4418.97	2304.03
2025/8/1 4:39	-7752.06	-4512.17	2248.314	-7702.56	-4524	2213.409	-7730.55	-4520.94	2231.32
2025/8/1 4:40	-7714.47	-4613	2175.328	-7664.58	-4625.17	2140.023	-7692.9	-4622.02	2158.174
2025/8/1 4:41	-7675.37	-4712.93	2101.918	-7625.08	-4725.42	2066.214	-7653.75	-4722.19	2084.607
2025/8/1 4:42	-7634.78	-4811.94	2028.098	-7584.07	-4824.74	1991.997	-7613.09	-4821.44	2010.633
2025/8/1 4:43	-7592.7	-4910.02	1953.883	-7541.56	-4923.1	1917.388	-7570.95	-4919.74	1936.268
2025/8/1 4:44	-7549.14	-5007.13	1879.287	-7497.57	-5020.5	1842.4	-7527.33	-5017.07	1861.524
2025/8/1 4:45	-7504.11	-5103.27	1804.325	-7452.1	-5116.9	1767.048	-7482.23	-5113.43	1786.419
2025/8/1 4:46	-7457.62	-5198.42	1729.011	-7405.16	-5212.29	1691.348	-7435.68	-5208.78	1710.965
2025/8/1 4:47	-7409.67	-5292.56	1653.361	-7356.75	-5306.65	1615.315	-7387.67	-5303.11	1635.178
2025/8/1 4:48	-7360.29	-5385.66	1577.388	-7306.9	-5399.97	1538.964	-7338.22	-5396.4	1559.074
2025/8/1 4:49	-7309.47	-5477.72	1501.109	-7255.61	-5492.23	1462.31	-7287.34	-5488.64	1482.666
2025/8/1 4:50	-7257.23	-5568.72	1424.538	-7202.89	-5583.4	1385.369	-7235.03	-5579.81	1405.971
2025/8/1 4:51	-7203.58	-5658.63	1347.69	-7148.75	-5673.47	1308.155	-7181.32	-5669.89	1329.003
2025/8/1 4:52	-7148.53	-5747.44	1270.58	-7093.21	-5762.43	1230.684	-7126.21	-5758.86	1251.777
2025/8/1 4:53	-7092.09	-5835.13	1193.223	-7036.27	-5850.25	1152.971	-7069.71	-5846.71	1174.309
2025/8/1 4:54	-7034.27	-5921.69	1115.635	-6977.95	-5936.92	1075.032	-7011.83	-5933.41	1096.613
2025/8/1 4:55	-6975.09	-6007.1	1037.829	-6918.26	-6022.43	996.8821	-6952.6	-6018.96	1018.706
2025/8/1 4:56	-6914.56	-6091.35	959.8228	-6857.21	-6106.76	918.5369	-6892	-6103.34	940.6014
2025/8/1 4:57	-6852.68	-6174.41	881.6299	-6794.82	-6189.88	840.0116	-6830.07	-6186.53	862.3155
2025/8/1 4:58	-6789.47	-6256.28	803.266	-6731.1	-6271.8	761.322	-6766.82	-6268.51	783.8634
2025/8/1 4:59	-6724.95	-6336.94	724.7464	-6666.05	-6352.48	682.4834	-6702.25	-6349.28	705.2605
2025/8/1 5:00	-6659.13	-6416.36	646.0864	-6599.7	-6431.92	603.5114	-6636.38	-6428.81	626.522
2025/8/1 5:01	-6592.02	-6494.55	567.3012	-6532.06	-6510.1	524.4216	-6569.22	-6507.09	547.6634
2025/8/1 5:02	-6523.63	-6571.48	488.4062	-6463.15	-6587.01	445.2294	-6500.79	-6584.11	468.7
2025/8/1 5:03	-6453.97	-6647.13	409.4166	-6392.96	-6662.62	365.9504	-6431.11	-6659.85	389.6472
2025/8/1 5:04	-6383.08	-6721.5	330.3479	-6321.53	-6736.94	286.6001	-6360.17	-6734.3	310.5203
2025/8/1 5:05	-6310.94	-6794.58	251.2152	-6248.87	-6809.94	207.1942	-6288.01	-6807.45	231.3346
2025/8/1 5:06	-6237.59	-6866.33	172.034	-6174.99	-6881.62	127.748	-6214.63	-6879.27	152.1057
2025/8/1 5:07	-6163.03	-6936.77	92.81953	-6099.9	-6951.95	48.2772	-6140.06	-6949.77	72.84871
2025/8/1 5:08	-6087.28	-7005.86	13.58712	-6023.63	-7020.92	-31.2028	-6064.29	-7018.92	-6.42094
2025/8/1 5:09	-6010.36	-7073.6	-65.6479	-5946.18	-7088.53	-110.677	-5987.36	-7086.71	-85.6879

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 5:10	-5932.28	-7139.98	-144.87	-5867.58	-7154.76	-190.128	-5909.27	-7153.14	-164.937
2025/8/1 5:11	-5853.05	-7204.98	-224.065	-5787.83	-7219.6	-269.543	-5830.05	-7218.18	-244.153
2025/8/1 5:12	-5772.7	-7268.59	-303.216	-5706.96	-7283.03	-348.905	-5749.7	-7281.83	-323.32
2025/8/1 5:13	-5691.24	-7330.8	-382.309	-5624.98	-7345.05	-428.199	-5668.24	-7344.08	-402.424
2025/8/1 5:14	-5608.68	-7391.61	-461.329	-5541.91	-7405.64	-507.41	-5585.7	-7404.91	-481.449
2025/8/1 5:15	-5525.04	-7450.99	-540.259	-5457.77	-7464.8	-586.522	-5502.08	-7464.32	-560.379
2025/8/1 5:16	-5440.34	-7508.93	-619.086	-5372.57	-7522.51	-665.521	-5417.4	-7522.29	-639.201
2025/8/1 5:17	-5354.59	-7565.44	-697.794	-5286.32	-7578.76	-744.39	-5331.69	-7578.81	-717.898
2025/8/1 5:18	-5267.81	-7620.49	-776.367	-5199.06	-7633.55	-823.115	-5244.95	-7633.88	-796.456
2025/8/1 5:19	-5180.03	-7674.08	-854.792	-5110.79	-7686.86	-901.681	-5157.21	-7687.48	-874.86
2025/8/1 5:20	-5091.25	-7726.19	-933.053	-5021.53	-7738.69	-980.072	-5068.48	-7739.6	-953.095
2025/8/1 5:21	-5001.49	-7776.82	-1011.13	-4931.31	-7789.02	-1058.27	-4978.78	-7790.24	-1031.15
2025/8/1 5:22	-4910.77	-7825.97	-1089.02	-4840.13	-7837.84	-1136.27	-4888.13	-7839.39	-1109
2025/8/1 5:23	-4819.11	-7873.61	-1166.7	-4748.02	-7885.16	-1214.05	-4796.55	-7887.04	-1186.64
2025/8/1 5:24	-4726.54	-7919.74	-1244.16	-4654.99	-7930.96	-1291.59	-4704.05	-7933.18	-1264.04
2025/8/1 5:25	-4633.05	-7964.36	-1321.38	-4561.07	-7975.23	-1368.89	-4610.65	-7977.8	-1341.21
2025/8/1 5:26	-4538.68	-8007.46	-1398.34	-4466.27	-8017.96	-1445.92	-4516.38	-8020.89	-1418.12
2025/8/1 5:27	-4443.44	-8049.02	-1475.04	-4370.62	-8059.15	-1522.67	-4421.24	-8062.46	-1494.76
2025/8/1 5:28	-4347.36	-8089.05	-1551.45	-4274.12	-8098.8	-1599.13	-4325.26	-8102.48	-1571.11
2025/8/1 5:29	-4250.44	-8127.54	-1627.57	-4176.8	-8136.89	-1675.29	-4228.46	-8140.97	-1647.16
2025/8/1 5:30	-4152.71	-8164.47	-1703.38	-4078.69	-8173.42	-1751.12	-4130.86	-8177.89	-1722.89
2025/8/1 5:31	-4054.19	-8199.84	-1778.87	-3979.79	-8208.39	-1826.62	-4032.47	-8213.27	-1798.3
2025/8/1 5:32	-3954.9	-8233.65	-1854.01	-3880.13	-8241.78	-1901.76	-3933.31	-8247.08	-1873.36
2025/8/1 5:33	-3854.85	-8265.9	-1928.8	-3779.73	-8273.6	-1976.54	-3833.41	-8279.32	-1948.06
2025/8/1 5:34	-3754.07	-8296.57	-2003.23	-3678.6	-8303.83	-2050.95	-3732.79	-8309.99	-2022.4
2025/8/1 5:35	-3652.58	-8325.66	-2077.27	-3576.78	-8332.48	-2124.96	-3631.45	-8339.08	-2096.34
2025/8/1 5:36	-3550.39	-8353.16	-2150.92	-3474.27	-8359.54	-2198.57	-3529.44	-8366.58	-2169.89
2025/8/1 5:37	-3447.52	-8379.08	-2224.16	-3371.1	-8385	-2271.76	-3426.75	-8392.51	-2243.03
2025/8/1 5:38	-3344	-8403.41	-2296.97	-3267.28	-8408.87	-2344.51	-3323.42	-8416.84	-2315.74
2025/8/1 5:39	-3239.85	-8426.14	-2369.36	-3162.85	-8431.14	-2416.82	-3219.46	-8439.58	-2388.01
2025/8/1 5:40	-3135.08	-8447.28	-2441.29	-3057.81	-8451.8	-2488.67	-3114.89	-8460.72	-2459.82
2025/8/1 5:41	-3029.72	-8466.81	-2512.75	-2952.2	-8470.85	-2560.04	-3009.74	-8480.26	-2531.17
2025/8/1 5:42	-2923.78	-8484.74	-2583.75	-2846.02	-8488.3	-2630.93	-2904.02	-8498.2	-2602.04
2025/8/1 5:43	-2817.29	-8501.06	-2654.25	-2739.3	-8504.13	-2701.32	-2797.75	-8514.54	-2672.42
2025/8/1 5:44	-2710.27	-8515.77	-2724.25	-2632.06	-8518.36	-2771.2	-2690.96	-8529.27	-2742.3
2025/8/1 5:45	-2602.73	-8528.87	-2793.73	-2524.33	-8530.97	-2840.55	-2583.66	-8542.39	-2811.65
2025/8/1 5:46	-2494.71	-8540.36	-2862.69	-2416.12	-8541.96	-2909.36	-2475.88	-8553.91	-2880.47
2025/8/1 5:47	-2386.21	-8550.23	-2931.11	-2307.45	-8551.34	-2977.62	-2367.64	-8563.81	-2948.75
2025/8/1 5:48	-2277.26	-8558.5	-2998.97	-2198.34	-8559.1	-3045.32	-2258.95	-8572.1	-3016.48
2025/8/1 5:49	-2167.88	-8565.14	-3066.27	-2088.82	-8565.25	-3112.45	-2149.84	-8578.78	-3083.63
2025/8/1 5:50	-2058.09	-8570.17	-3132.98	-1978.91	-8569.78	-3178.99	-2040.33	-8583.85	-3150.21
2025/8/1 5:51	-1947.91	-8573.59	-3199.11	-1868.62	-8572.7	-3244.93	-1930.44	-8587.31	-3216.19
2025/8/1 5:52	-1837.37	-8575.39	-3264.64	-1757.98	-8574	-3310.25	-1820.19	-8589.16	-3281.57
2025/8/1 5:53	-1726.48	-8575.57	-3329.55	-1647.02	-8573.69	-3374.96	-1709.6	-8589.4	-3346.33
2025/8/1 5:54	-1615.27	-8574.15	-3393.83	-1535.74	-8571.76	-3439.03	-1598.7	-8588.03	-3410.47
2025/8/1 5:55	-1503.75	-8571.11	-3457.48	-1424.17	-8568.23	-3502.45	-1487.49	-8585.05	-3473.96
2025/8/1 5:56	-1391.95	-8566.46	-3520.48	-1312.34	-8563.09	-3565.22	-1376.01	-8580.47	-3536.8
2025/8/1 5:57	-1279.89	-8560.2	-3582.81	-1200.26	-8556.34	-3627.31	-1264.28	-8574.28	-3598.98
2025/8/1 5:58	-1167.59	-8552.34	-3644.47	-1087.96	-8547.99	-3688.73	-1152.31	-8566.5	-3660.49
2025/8/1 5:59	-1055.07	-8542.87	-3705.45	-975.448	-8538.03	-3749.46	-1040.13	-8557.11	-3721.31
2025/8/1 6:00	-942.353	-8531.8	-3765.74	-862.758	-8526.48	-3809.48	-927.755	-8546.13	-3781.44
2025/8/1 6:01	-829.46	-8519.14	-3825.32	-749.908	-8513.34	-3868.8	-815.212	-8533.55	-3840.86
2025/8/1 6:02	-716.411	-8504.88	-3884.18	-636.918	-8498.61	-3927.39	-702.52	-8519.38	-3899.56
2025/8/1 6:03	-603.228	-8489.02	-3942.32	-523.809	-8482.29	-3985.24	-589.699	-8503.63	-3957.54
2025/8/1 6:04	-489.932	-8471.59	-3999.72	-410.603	-8464.39	-4042.36	-476.77	-8486.3	-4014.78
2025/8/1 6:05	-376.546	-8452.56	-4056.37	-297.321	-8444.92	-4098.72	-363.756	-8467.39	-4071.27
2025/8/1 6:06	-263.088	-8431.96	-4112.27	-183.983	-8423.87	-4154.32	-250.676	-8446.9	-4127
2025/8/1 6:07	-149.582	-8409.79	-4167.4	-70.612	-8401.25	-4209.14	-137.552	-8424.85	-4181.97
2025/8/1 6:08	-36.0481	-8386.05	-4221.75	42.77219	-8377.08	-4263.19	-24.4043	-8401.23	-4236.15
2025/8/1 6:09	77.49257	-8360.74	-4275.31	156.1481	-8351.35	-4316.44	88.74554	-8376.06	-4289.56
2025/8/1 6:10	191.0187	-8333.88	-4328.08	269.4949	-8324.07	-4368.89	201.8768	-8349.33	-4342.16
2025/8/1 6:11	304.5092	-8305.47	-4380.04	382.7913	-8295.24	-4420.53	314.9686	-8321.06	-4393.96
2025/8/1 6:12	417.943	-8275.51	-4431.19	496.0166	-8264.89	-4471.35	428.0001	-8291.25	-4444.95

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 6:13	531.2989	-8244.01	-4481.51	609.1499	-8233	-4521.35	540.9506	-8259.9	-4495.11
2025/8/1 6:14	644.5561	-8210.99	-4531	722.1702	-8199.59	-4570.5	653.7993	-8227.03	-4544.44
2025/8/1 6:15	757.6935	-8176.43	-4579.65	835.0568	-8164.66	-4618.82	766.5255	-8192.63	-4592.93
2025/8/1 6:16	870.6902	-8140.36	-4627.45	947.789	-8128.23	-4666.28	879.1085	-8156.73	-4640.57
2025/8/1 6:17	983.5254	-8102.78	-4674.39	1060.346	-8090.3	-4712.88	991.5278	-8119.31	-4687.35
2025/8/1 6:18	1096.178	-8063.7	-4720.47	1172.707	-8050.88	-4758.61	1103.763	-8080.4	-4733.27
2025/8/1 6:19	1208.628	-8023.13	-4765.67	1284.853	-8009.97	-4803.47	1215.793	-8040	-4778.31
2025/8/1 6:20	1320.854	-7981.07	-4809.98	1396.761	-7967.6	-4847.44	1327.599	-7998.12	-4822.47
2025/8/1 6:21	1432.835	-7937.53	-4853.41	1508.412	-7923.75	-4890.52	1439.159	-7954.77	-4865.75
2025/8/1 6:22	1544.551	-7892.52	-4895.94	1619.786	-7878.45	-4932.7	1550.453	-7909.95	-4908.13
2025/8/1 6:23	1655.982	-7846.06	-4937.57	1730.863	-7831.71	-4973.98	1661.461	-7863.67	-4949.6
2025/8/1 6:24	1767.107	-7798.15	-4978.28	1841.621	-7783.53	-5014.34	1772.164	-7815.96	-4990.17
2025/8/1 6:25	1877.905	-7748.79	-5018.08	1952.042	-7733.92	-5053.78	1882.54	-7766.8	-5029.81
2025/8/1 6:26	1988.357	-7698.01	-5056.94	2062.105	-7682.9	-5092.3	1992.571	-7716.22	-5068.54
2025/8/1 6:27	2098.443	-7645.81	-5094.88	2171.79	-7630.47	-5129.89	2102.237	-7664.22	-5106.33
2025/8/1 6:28	2208.141	-7592.2	-5131.88	2281.078	-7576.65	-5166.54	2211.516	-7610.81	-5143.19
2025/8/1 6:29	2317.433	-7537.2	-5167.93	2389.949	-7521.44	-5202.24	2320.391	-7556.01	-5179.1
2025/8/1 6:30	2426.299	-7480.8	-5203.03	2498.383	-7464.86	-5237	2428.841	-7499.82	-5214.06
2025/8/1 6:31	2534.717	-7423.03	-5237.18	2606.361	-7406.91	-5270.8	2536.847	-7442.26	-5248.07
2025/8/1 6:32	2642.67	-7363.9	-5270.36	2713.864	-7347.62	-5303.64	2644.39	-7383.34	-5281.12
2025/8/1 6:33	2750.137	-7303.41	-5302.57	2820.872	-7286.99	-5335.51	2751.449	-7323.07	-5313.21
2025/8/1 6:34	2857.1	-7241.58	-5333.81	2927.366	-7225.03	-5366.41	2858.007	-7261.45	-5344.32
2025/8/1 6:35	2963.537	-7178.42	-5364.07	3033.327	-7161.76	-5396.33	2964.044	-7198.51	-5374.46
2025/8/1 6:36	3069.431	-7113.94	-5393.35	3138.737	-7097.19	-5425.28	3069.541	-7134.25	-5403.61
2025/8/1 6:37	3174.762	-7048.17	-5421.63	3243.576	-7031.33	-5453.24	3174.479	-7068.69	-5431.78
2025/8/1 6:38	3279.512	-6981.09	-5448.93	3347.826	-6964.19	-5480.2	3278.84	-7001.84	-5458.96
2025/8/1 6:39	3383.66	-6912.75	-5475.22	3451.469	-6895.79	-5506.18	3382.605	-6933.72	-5485.15
2025/8/1 6:40	3487.189	-6843.13	-5500.52	3554.486	-6826.14	-5531.15	3485.755	-6864.32	-5510.33
2025/8/1 6:41	3590.081	-6772.26	-5524.81	3656.858	-6755.25	-5555.13	3588.271	-6793.68	-5534.51
2025/8/1 6:42	3692.315	-6700.16	-5548.08	3758.569	-6683.14	-5578.1	3690.137	-6721.8	-5557.69
2025/8/1 6:43	3793.875	-6626.83	-5570.35	3859.599	-6609.82	-5600.06	3791.333	-6648.69	-5579.85
2025/8/1 6:44	3894.742	-6552.29	-5591.59	3959.931	-6535.31	-5621	3891.842	-6574.37	-5601
2025/8/1 6:45	3994.897	-6476.56	-5611.82	4059.548	-6459.62	-5640.94	3991.646	-6498.86	-5621.14
2025/8/1 6:46	4094.324	-6399.64	-5631.02	4158.431	-6382.76	-5659.85	4090.726	-6422.17	-5640.25
2025/8/1 6:47	4193.004	-6321.56	-5649.19	4256.564	-6304.75	-5677.74	4189.066	-6344.3	-5658.34
2025/8/1 6:48	4290.919	-6242.32	-5666.34	4353.929	-6225.6	-5694.61	4286.647	-6265.29	-5675.4
2025/8/1 6:49	4388.053	-6161.94	-5682.45	4450.509	-6145.33	-5710.45	4383.454	-6185.13	-5691.43
2025/8/1 6:50	4484.387	-6080.45	-5697.53	4546.288	-6063.96	-5725.27	4479.467	-6103.86	-5706.44
2025/8/1 6:51	4579.905	-5997.85	-5711.57	4641.248	-5981.5	-5739.05	4574.671	-6021.47	-5720.4
2025/8/1 6:52	4674.59	-5914.15	-5724.57	4735.373	-5897.96	-5751.8	4669.048	-5937.99	-5733.34
2025/8/1 6:53	4768.425	-5829.38	-5736.53	4828.647	-5813.36	-5763.52	4762.582	-5853.44	-5745.23
2025/8/1 6:54	4861.392	-5743.55	-5747.44	4921.053	-5727.71	-5774.2	4855.256	-5767.82	-5756.08
2025/8/1 6:55	4953.477	-5656.68	-5757.32	5012.576	-5641.04	-5783.85	4947.054	-5681.16	-5765.9
2025/8/1 6:56	5044.662	-5568.78	-5766.14	5103.198	-5553.36	-5792.46	5037.96	-5593.47	-5774.67
2025/8/1 6:57	5134.931	-5479.87	-5773.92	5192.906	-5464.68	-5800.03	5127.956	-5504.77	-5782.4
2025/8/1 6:58	5224.268	-5389.97	-5780.66	5281.682	-5375.02	-5806.56	5217.029	-5415.07	-5789.08
2025/8/1 6:59	5312.658	-5299.09	-5786.34	5369.512	-5284.4	-5812.05	5305.16	-5324.39	-5794.72
2025/8/1 7:00	5400.084	-5207.24	-5790.98	5456.38	-5192.83	-5816.5	5392.336	-5232.75	-5799.31
2025/8/1 7:01	5486.533	-5114.46	-5794.56	5542.272	-5100.34	-5819.91	5478.541	-5140.16	-5802.85
2025/8/1 7:02	5571.987	-5020.74	-5797.1	5627.172	-5006.93	-5822.28	5563.759	-5046.64	-5805.35
2025/8/1 7:03	5656.432	-4926.12	-5798.59	5711.067	-4912.63	-5823.6	5647.975	-4952.21	-5806.8
2025/8/1 7:04	5739.854	-4830.61	-5799.02	5793.94	-4817.45	-5823.89	5731.174	-4856.88	-5807.21
2025/8/1 7:05	5822.237	-4734.22	-5798.41	5875.779	-4721.42	-5823.14	5813.343	-4760.68	-5806.56
2025/8/1 7:06	5903.567	-4636.98	-5796.75	5956.569	-4624.54	-5821.35	5894.465	-4663.62	-5804.87
2025/8/1 7:07	5983.83	-4538.9	-5794.04	6036.296	-4526.83	-5818.52	5974.528	-4565.71	-5802.14
2025/8/1 7:08	6063.012	-4440	-5790.29	6114.947	-4428.32	-5814.65	6053.516	-4466.98	-5798.36
2025/8/1 7:09	6141.098	-4340.3	-5785.49	6192.507	-4329.02	-5809.75	6131.416	-4367.44	-5793.53
2025/8/1 7:10	6218.076	-4239.81	-5779.64	6268.964	-4228.95	-5803.81	6208.214	-4267.12	-5787.67
2025/8/1 7:11	6293.931	-4138.56	-5772.75	6344.304	-4128.12	-5796.84	6283.897	-4166.02	-5780.76
2025/8/1 7:12	6368.65	-4036.56	-5764.82	6418.515	-4026.57	-5788.83	6358.451	-4064.18	-5772.81
2025/8/1 7:13	6442.221	-3933.83	-5755.85	6491.584	-3924.29	-5779.8	6431.862	-3961.6	-5763.82
2025/8/1 7:14	6514.63	-3830.4	-5745.84	6563.498	-3821.32	-5769.74	6504.119	-3858.31	-5753.8
2025/8/1 7:15	6585.864	-3726.27	-5734.8	6634.245	-3717.67	-5758.65	6575.207	-3754.32	-5742.74

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 7:16	6655.912	-3621.47	-5722.72	6703.813	-3613.36	-5746.54	6645.116	-3649.65	-5730.65
2025/8/1 7:17	6724.761	-3516.02	-5709.61	6772.19	-3508.41	-5733.41	6713.831	-3544.33	-5717.53
2025/8/1 7:18	6792.399	-3409.94	-5695.47	6839.364	-3402.84	-5719.26	6781.342	-3438.36	-5703.38
2025/8/1 7:19	6858.814	-3303.24	-5680.31	6905.324	-3296.66	-5704.1	6847.636	-3331.78	-5688.21
2025/8/1 7:20	6923.995	-3195.95	-5664.13	6970.058	-3189.89	-5687.92	6912.701	-3224.6	-5672.02
2025/8/1 7:21	6987.93	-3088.08	-5646.92	7033.556	-3082.57	-5670.73	6976.527	-3116.83	-5654.8
2025/8/1 7:22	7050.608	-2979.66	-5628.71	7095.807	-2974.69	-5652.54	7039.101	-3008.51	-5636.57
2025/8/1 7:23	7112.018	-2870.7	-5609.47	7156.799	-2866.29	-5633.35	7100.412	-2899.64	-5617.33
2025/8/1 7:24	7172.149	-2761.23	-5589.23	7216.523	-2757.38	-5613.16	7160.451	-2790.25	-5597.08
2025/8/1 7:25	7230.992	-2651.26	-5567.99	7274.969	-2647.99	-5591.98	7219.205	-2680.36	-5575.83
2025/8/1 7:26	7288.535	-2540.81	-5545.75	7332.125	-2538.12	-5569.8	7276.665	-2569.98	-5553.57
2025/8/1 7:27	7344.769	-2429.91	-5522.51	7387.984	-2427.81	-5546.64	7332.821	-2459.14	-5530.32
2025/8/1 7:28	7399.684	-2318.57	-5498.27	7442.535	-2317.06	-5522.5	7387.663	-2347.86	-5506.07
2025/8/1 7:29	7453.27	-2206.82	-5473.05	7495.768	-2205.91	-5497.38	7441.18	-2236.15	-5480.84
2025/8/1 7:30	7505.518	-2094.67	-5446.85	7547.675	-2094.36	-5471.29	7493.363	-2124.04	-5454.62
2025/8/1 7:31	7556.42	-1982.14	-5419.67	7598.247	-1982.45	-5444.23	7544.204	-2011.55	-5427.43
2025/8/1 7:32	7605.965	-1869.26	-5391.52	7647.476	-1870.19	-5416.2	7593.692	-1898.69	-5399.26
2025/8/1 7:33	7654.146	-1756.04	-5362.4	7695.352	-1757.59	-5387.22	7641.82	-1785.5	-5370.12
2025/8/1 7:34	7700.954	-1642.51	-5332.32	7741.868	-1644.69	-5357.29	7688.578	-1671.97	-5340.02
2025/8/1 7:35	7746.381	-1528.68	-5301.28	7787.015	-1531.49	-5326.41	7733.959	-1558.15	-5308.96
2025/8/1 7:36	7790.419	-1414.58	-5269.29	7830.787	-1418.02	-5294.59	7777.954	-1444.05	-5276.95
2025/8/1 7:37	7833.061	-1300.22	-5236.36	7873.175	-1304.31	-5261.83	7820.555	-1329.68	-5243.99
2025/8/1 7:38	7874.299	-1185.63	-5202.49	7914.173	-1190.36	-5228.15	7861.755	-1215.08	-5210.09
2025/8/1 7:39	7914.125	-1070.83	-5167.68	7953.773	-1076.2	-5193.54	7901.546	-1100.25	-5175.25
2025/8/1 7:40	7952.534	-955.841	-5131.95	7991.968	-961.856	-5158.01	7939.922	-985.23	-5139.49
2025/8/1 7:41	7989.517	-840.678	-5095.31	8028.752	-847.339	-5121.58	7976.874	-870.027	-5102.81
2025/8/1 7:42	8025.07	-725.364	-5057.74	8064.119	-732.672	-5084.24	8012.398	-754.666	-5065.21
2025/8/1 7:43	8059.185	-609.919	-5019.28	8098.063	-617.876	-5046	8046.485	-639.167	-5026.7
2025/8/1 7:44	8091.857	-494.366	-4979.91	8130.577	-502.97	-5006.87	8079.131	-523.551	-4987.29
2025/8/1 7:45	8123.08	-378.724	-4939.65	8161.657	-387.976	-4966.86	8110.328	-407.84	-4946.98
2025/8/1 7:46	8152.848	-263.015	-4898.51	8191.296	-272.913	-4925.97	8140.073	-292.053	-4905.79
2025/8/1 7:47	8181.157	-147.258	-4856.49	8219.49	-157.802	-4884.21	8168.358	-176.212	-4863.71
2025/8/1 7:48	8208.001	-31.4752	-4813.6	8246.234	-42.6625	-4841.59	8195.179	-60.3368	-4820.77
2025/8/1 7:49	8233.375	84.31338	-4769.85	8271.523	72.48459	-4798.12	8220.531	55.55118	-4776.96
2025/8/1 7:50	8257.276	200.0869	-4725.24	8295.352	187.6192	-4753.8	8244.41	171.4314	-4732.29
2025/8/1 7:51	8279.699	315.8246	-4679.79	8317.719	302.7209	-4708.64	8266.811	287.283	-4686.77
2025/8/1 7:52	8300.641	431.5057	-4633.5	8338.618	417.7696	-4662.65	8287.729	403.0853	-4640.41
2025/8/1 7:53	8320.096	547.1096	-4586.39	8358.046	532.7449	-4615.83	8307.161	518.8175	-4593.21
2025/8/1 7:54	8338.063	662.6156	-4538.45	8376	647.6266	-4568.2	8325.104	634.4588	-4545.2
2025/8/1 7:55	8354.537	778.0029	-4489.7	8392.476	762.3944	-4519.77	8341.553	749.9885	-4496.36
2025/8/1 7:56	8369.517	893.2511	-4440.14	8407.472	877.028	-4470.54	8356.506	865.3858	-4446.72
2025/8/1 7:57	8382.998	1008.339	-4389.8	8420.984	991.5073	-4420.52	8369.961	980.6301	-4396.28
2025/8/1 7:58	8394.98	1123.247	-4338.66	8433.011	1105.812	-4369.72	8381.913	1095.701	-4345.05
2025/8/1 7:59	8405.459	1237.954	-4286.75	8443.55	1219.922	-4318.15	8392.361	1210.577	-4293.04
2025/8/1 8:00	8414.433	1352.439	-4234.07	8452.6	1333.818	-4265.82	8401.304	1325.238	-4240.25
2025/8/1 8:01	8421.902	1466.683	-4180.64	8460.158	1447.478	-4212.73	8408.738	1439.663	-4186.71
2025/8/1 8:02	8427.864	1580.663	-4126.45	8466.222	1560.883	-4158.9	8414.663	1553.832	-4132.41
2025/8/1 8:03	8432.318	1694.361	-4071.53	8470.793	1674.013	-4104.34	8419.077	1667.724	-4077.37
2025/8/1 8:04	8435.262	1807.756	-4015.88	8473.868	1786.849	-4049.05	8421.979	1781.319	-4021.59
2025/8/1 8:05	8436.696	1920.827	-3959.51	8475.448	1899.369	-3993.04	8423.368	1894.596	-3965.1
2025/8/1 8:06	8436.62	2033.554	-3902.43	8475.531	2011.554	-3936.33	8423.245	2007.535	-3907.88
2025/8/1 8:07	8435.034	2145.917	-3844.66	8474.117	2123.385	-3878.93	8421.608	2120.116	-3849.97
2025/8/1 8:08	8431.938	2257.896	-3786.19	8471.207	2234.841	-3820.84	8418.458	2232.318	-3791.36
2025/8/1 8:09	8427.332	2369.471	-3727.05	8466.801	2345.903	-3762.08	8413.794	2344.121	-3732.07
2025/8/1 8:10	8421.217	2480.621	-3667.24	8460.899	2456.55	-3702.65	8407.618	2455.504	-3672.11
2025/8/1 8:11	8413.594	2591.327	-3606.77	8453.501	2566.764	-3642.56	8399.931	2566.449	-3611.49
2025/8/1 8:12	8404.464	2701.569	-3545.65	8444.61	2676.525	-3581.84	8390.732	2676.934	-3550.21
2025/8/1 8:13	8393.829	2811.328	-3483.91	8434.225	2785.814	-3520.47	8380.025	2786.939	-3488.3
2025/8/1 8:14	8381.69	2920.582	-3421.53	8422.35	2894.61	-3458.49	8367.81	2896.446	-3425.76
2025/8/1 8:15	8368.049	3029.314	-3358.55	8408.985	3002.894	-3395.89	8354.089	3005.433	-3362.6
2025/8/1 8:16	8352.908	3137.502	-3294.96	8394.132	3110.648	-3332.7	8338.864	3113.882	-3298.83
2025/8/1 8:17	8336.271	3245.128	-3230.78	8377.794	3217.852	-3268.91	8322.138	3221.772	-3234.47
2025/8/1 8:18	8318.139	3352.173	-3166.02	8359.973	3324.487	-3204.54	8303.913	3329.085	-3169.52



Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 8:19	8298.516	3458.616	-3100.7	8340.672	3430.533	-3139.61	8284.193	3435.799	-3104.01
2025/8/1 8:20	8277.406	3564.44	-3034.82	8319.894	3535.973	-3074.12	8262.98	3541.898	-3037.93
2025/8/1 8:21	8254.81	3669.624	-2968.39	8297.642	3640.786	-3008.09	8240.279	3647.359	-2971.3
2025/8/1 8:22	8230.734	3774.15	-2901.43	8273.92	3744.955	-2941.52	8216.092	3752.166	-2904.14
2025/8/1 8:23	8205.181	3877.999	-2833.95	8248.731	3848.461	-2874.43	8190.424	3856.298	-2836.45
2025/8/1 8:24	8178.156	3981.152	-2765.97	8222.079	3951.284	-2806.83	8163.279	3959.737	-2768.25
2025/8/1 8:25	8149.662	4083.59	-2697.48	8193.969	4053.407	-2738.73	8134.661	4062.464	-2699.55
2025/8/1 8:26	8119.706	4185.295	-2628.51	8164.405	4154.811	-2670.15	8104.576	4164.46	-2630.37
2025/8/1 8:27	8088.292	4286.249	-2559.07	8133.391	4255.479	-2601.09	8073.028	4265.706	-2560.7
2025/8/1 8:28	8055.425	4386.433	-2489.17	8100.934	4355.39	-2531.57	8040.023	4366.184	-2490.58
2025/8/1 8:29	8021.11	4485.829	-2418.83	8067.037	4454.529	-2461.6	8005.567	4465.876	-2420
2025/8/1 8:30	7985.355	4584.418	-2348.05	8031.707	4552.876	-2391.19	7969.664	4564.762	-2348.98
2025/8/1 8:31	7948.164	4682.184	-2276.84	7994.949	4650.415	-2320.36	7932.322	4662.826	-2277.54
2025/8/1 8:32	7909.544	4779.108	-2205.23	7956.768	4747.126	-2249.12	7893.546	4760.049	-2205.69
2025/8/1 8:33	7869.501	4875.173	-2133.22	7917.172	4842.994	-2177.47	7853.343	4856.413	-2133.44
2025/8/1 8:34	7828.043	4970.36	-2060.82	7876.167	4938	-2105.44	7811.721	4951.9	-2060.8
2025/8/1 8:35	7785.176	5064.653	-1988.06	7833.759	5032.126	-2033.03	7768.686	5046.494	-1987.78
2025/8/1 8:36	7740.907	5158.035	-1914.94	7789.956	5125.357	-1960.26	7724.245	5140.175	-1914.41
2025/8/1 8:37	7695.245	5250.488	-1841.47	7744.764	5217.674	-1887.13	7678.407	5232.928	-1840.69
2025/8/1 8:38	7648.197	5341.995	-1767.67	7698.19	5309.062	-1813.68	7631.179	5324.735	-1766.64
2025/8/1 8:39	7599.771	5432.54	-1693.55	7650.244	5399.502	-1739.89	7582.569	5415.578	-1692.26
2025/8/1 8:40	7549.976	5522.105	-1619.13	7600.931	5488.979	-1665.8	7532.586	5505.442	-1617.58
2025/8/1 8:41	7498.819	5610.676	-1544.42	7550.261	5577.476	-1591.41	7481.238	5594.308	-1542.61
2025/8/1 8:42	7446.31	5698.234	-1469.42	7498.242	5664.977	-1516.74	7428.534	5682.162	-1467.35
2025/8/1 8:43	7392.457	5784.764	-1394.17	7444.883	5751.466	-1441.79	7374.484	5768.986	-1391.83
2025/8/1 8:44	7337.271	5870.251	-1318.66	7390.192	5836.926	-1366.59	7319.096	5854.764	-1316.06
2025/8/1 8:45	7280.759	5954.678	-1242.91	7334.178	5921.342	-1291.14	7262.381	5939.48	-1240.05
2025/8/1 8:46	7222.933	6038.029	-1166.93	7276.851	6004.698	-1215.46	7204.348	6023.119	-1163.81
2025/8/1 8:47	7163.802	6120.29	-1090.75	7218.22	6086.978	-1139.56	7145.008	6105.664	-1087.36
2025/8/1 8:48	7103.376	6201.444	-1014.37	7158.295	6168.168	-1063.46	7084.37	6187.101	-1010.71
2025/8/1 8:49	7041.665	6281.477	-937.806	7097.087	6248.252	-987.164	7022.445	6267.413	-933.884
2025/8/1 8:50	6978.681	6360.374	-861.072	7034.604	6327.215	-910.693	6959.244	6346.586	-856.885
2025/8/1 8:51	6914.435	6438.12	-784.182	6970.859	6405.042	-834.058	6894.779	6424.604	-779.731
2025/8/1 8:52	6848.936	6514.701	-707.15	6905.861	6481.719	-757.274	6829.06	6501.454	-702.435
2025/8/1 8:53	6782.197	6590.102	-629.99	6839.621	6557.231	-680.353	6762.098	6577.12	-625.012
2025/8/1 8:54	6714.23	6664.309	-552.716	6772.151	6631.563	-603.309	6693.907	6651.588	-547.476
2025/8/1 8:55	6645.045	6737.309	-475.342	6703.462	6704.703	-526.156	6624.496	6724.845	-469.841
2025/8/1 8:56	6574.656	6809.086	-397.881	6633.566	6776.635	-448.909	6553.88	6796.875	-392.121
2025/8/1 8:57	6503.074	6879.629	-320.349	6562.474	6847.346	-371.58	6482.07	6867.666	-314.331
2025/8/1 8:58	6430.312	6948.923	-242.758	6490.198	6916.822	-294.185	6409.078	6937.203	-236.484
2025/8/1 8:59	6356.382	7016.955	-165.123	6416.751	6985.051	-216.736	6334.918	7005.474	-158.594
2025/8/1 9:00	6281.298	7083.713	-87.4576	6342.146	7052.019	-139.247	6259.603	7072.465	-80.677
2025/8/1 9:01	6205.072	7149.184	-9.77655	6266.395	7117.713	-61.7333	6183.146	7138.164	-2.74601
2025/8/1 9:02	6127.718	7213.355	67.90634	6189.51	7182.12	15.79179	6105.561	7202.559	75.18441
2025/8/1 9:03	6049.249	7276.213	145.5769	6111.506	7245.228	93.31426	6026.86	7265.635	153.1
2025/8/1 9:04	5969.679	7337.748	223.2211	6032.395	7307.025	170.82	5947.059	7327.382	230.9864
2025/8/1 9:05	5889.023	7397.947	300.8246	5952.191	7367.498	248.2951	5866.171	7387.788	308.8293
2025/8/1 9:06	5807.294	7456.798	378.3735	5870.908	7426.636	325.7253	5784.21	7446.84	386.6145
2025/8/1 9:07	5724.506	7514.29	455.8534	5788.559	7484.427	403.0966	5701.192	7504.528	464.3276
2025/8/1 9:08	5640.674	7570.412	533.2502	5705.16	7540.859	480.395	5617.131	7560.84	541.9544
2025/8/1 9:09	5555.814	7625.154	610.5499	5620.724	7595.922	557.6063	5532.041	7615.765	619.4805
2025/8/1 9:10	5469.939	7678.503	687.7381	5535.266	7649.603	634.7164	5445.939	7669.292	696.8917
2025/8/1 9:11	5383.066	7730.45	764.8008	5448.801	7701.894	711.7113	5358.838	7721.412	774.1737
2025/8/1 9:12	5295.209	7780.985	841.7239	5361.343	7752.782	788.5767	5270.756	7772.113	851.3122
2025/8/1 9:13	5206.384	7830.098	918.4931	5272.909	7802.258	865.2987	5181.707	7821.386	928.293
2025/8/1 9:14	5116.607	7877.779	995.0944	5183.513	7850.312	941.8631	5091.708	7869.221	1005.102
2025/8/1 9:15	5025.893	7924.018	1071.514	5093.172	7896.933	1018.256	5000.775	7915.608	1081.725
2025/8/1 9:16	4934.259	7968.806	1147.737	5001.9	7942.113	1094.463	4908.923	7960.539	1158.147
2025/8/1 9:17	4841.722	8012.134	1223.75	4909.713	7985.842	1170.47	4816.17	8004.005	1234.355
2025/8/1 9:18	4748.297	8053.994	1299.538	4816.629	8028.11	1246.264	4722.532	8045.995	1310.334
2025/8/1 9:19	4654.001	8094.378	1375.089	4722.663	8068.91	1321.829	4628.026	8086.504	1386.071
2025/8/1 9:20	4558.851	8133.276	1450.387	4627.832	8108.231	1397.153	4532.669	8125.521	1461.551
2025/8/1 9:21	4462.864	8170.68	1525.419	4532.153	8146.067	1472.22	4436.478	8163.04	1536.759

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 9:22	4366.057	8206.584	1600.171	4435.642	8182.408	1547.018	4339.471	8199.052	1611.684
2025/8/1 9:23	4268.448	8240.98	1674.629	4338.316	8217.248	1621.532	4241.664	8233.551	1686.309
2025/8/1 9:24	4170.054	8273.86	1748.778	4240.194	8250.578	1695.749	4143.077	8266.528	1760.621
2025/8/1 9:25	4070.893	8305.218	1822.607	4141.291	8282.391	1769.653	4043.725	8297.979	1834.607
2025/8/1 9:26	3970.982	8335.047	1896.099	4041.626	8312.681	1843.233	3943.629	8327.895	1908.253
2025/8/1 9:27	3870.339	8363.341	1969.243	3941.217	8341.439	1916.473	3842.805	8356.27	1981.544
2025/8/1 9:28	3768.983	8390.093	2042.023	3840.081	8368.661	1989.36	3741.271	8383.1	2054.468
2025/8/1 9:29	3666.933	8415.298	2114.427	3738.237	8394.339	2061.88	3639.048	8408.377	2127.01
2025/8/1 9:30	3564.205	8438.95	2186.441	3635.702	8418.467	2134.02	3536.152	8432.097	2199.157
2025/8/1 9:31	3460.819	8461.044	2258.052	3532.495	8441.041	2205.765	3432.604	8454.255	2270.895
2025/8/1 9:32	3356.794	8481.575	2329.245	3428.636	8462.053	2277.104	3328.42	8474.845	2342.211
2025/8/1 9:33	3252.148	8500.539	2400.007	3324.141	8481.5	2348.02	3223.622	8493.863	2413.091
2025/8/1 9:34	3146.901	8517.929	2470.326	3219.031	8499.377	2418.503	3118.227	8511.305	2483.523
2025/8/1 9:35	3041.072	8533.744	2540.188	3113.323	8515.678	2488.537	3012.256	8527.167	2553.492
2025/8/1 9:36	2934.679	8547.978	2609.579	3007.038	8530.4	2558.11	2905.727	8541.445	2622.986
2025/8/1 9:37	2827.742	8560.628	2678.487	2900.195	8543.538	2627.208	2798.66	8554.136	2691.991
2025/8/1 9:38	2720.281	8571.692	2746.898	2792.812	8555.088	2695.818	2691.075	8565.236	2760.494
2025/8/1 9:39	2612.315	8581.165	2814.8	2684.91	8565.048	2763.927	2582.991	8574.744	2828.483
2025/8/1 9:40	2503.865	8589.045	2882.179	2576.508	8573.414	2831.522	2474.428	8582.655	2895.945
2025/8/1 9:41	2394.949	8595.33	2949.023	2467.625	8580.183	2898.589	2365.407	8588.969	2962.866
2025/8/1 9:42	2285.588	8600.017	3015.319	2358.283	8585.353	2965.116	2255.947	8593.684	3029.234
2025/8/1 9:43	2175.802	8603.105	3081.054	2248.5	8588.921	3031.091	2146.068	8596.796	3095.037
2025/8/1 9:44	2065.612	8604.593	3146.216	2138.297	8590.885	3096.499	2035.792	8598.306	3160.262
2025/8/1 9:45	1955.036	8604.478	3210.792	2027.694	8591.244	3161.329	1925.138	8598.213	3224.896
2025/8/1 9:46	1844.096	8602.76	3274.771	1916.712	8589.995	3225.568	1814.126	8596.515	3288.927
2025/8/1 9:47	1732.813	8599.438	3338.138	1805.37	8587.139	3289.203	1702.777	8593.211	3352.343
2025/8/1 9:48	1621.206	8594.512	3400.883	1693.69	8582.674	3352.223	1591.113	8588.303	3415.131
2025/8/1 9:49	1509.297	8587.982	3462.993	1581.693	8576.6	3414.613	1479.153	8581.79	3477.281
2025/8/1 9:50	1397.105	8579.848	3524.457	1469.398	8568.917	3476.364	1366.918	8573.673	3538.779
2025/8/1 9:51	1284.653	8570.111	3585.261	1356.827	8559.624	3537.461	1254.43	8563.952	3599.614
2025/8/1 9:52	1171.96	8558.771	3645.396	1244	8548.722	3597.894	1141.709	8552.628	3659.775
2025/8/1 9:53	1059.048	8545.83	3704.848	1130.939	8536.211	3657.65	1028.776	8539.703	3719.249
2025/8/1 9:54	945.9374	8531.288	3763.607	1017.665	8522.094	3716.717	915.6518	8525.179	3778.025
2025/8/1 9:55	832.6497	8515.148	3821.661	904.1993	8506.37	3775.084	802.3583	8509.057	3836.093
2025/8/1 9:56	719.2059	8497.412	3878.998	790.5624	8489.042	3832.739	688.9163	8491.34	3893.44
2025/8/1 9:57	605.6271	8478.082	3935.607	676.776	8470.112	3889.671	575.3471	8472.03	3950.056
2025/8/1 9:58	491.9346	8457.161	3991.478	562.8615	8449.582	3945.869	461.6717	8451.13	4005.929
2025/8/1 9:59	378.1497	8434.651	4046.6	448.8402	8427.454	4001.32	347.9117	8428.644	4061.049
2025/8/1 10:00	264.2937	8410.556	4100.961	334.7337	8403.731	4056.015	234.0883	8404.575	4115.406
2025/8/1 10:01	150.3879	8384.88	4154.551	220.5635	8378.417	4109.941	120.2228	8378.926	4168.987
2025/8/1 10:02	36.4538	8357.625	4207.359	106.3512	8351.514	4163.089	6.336707	8351.702	4221.784
2025/8/1 10:03	-77.4872	8328.798	4259.375	-7.88155	8323.028	4215.447	-107.549	8322.908	4273.786
2025/8/1 10:04	-191.414	8298.401	4310.588	-122.113	8292.961	4267.005	-221.412	8292.547	4324.983
2025/8/1 10:05	-305.304	8266.439	4360.989	-236.322	8261.319	4317.753	-335.231	8260.625	4375.364
2025/8/1 10:06	-419.137	8232.919	4410.567	-350.486	8228.105	4367.679	-448.985	8227.147	4424.919
2025/8/1 10:07	-532.891	8197.844	4459.313	-464.584	8193.326	4416.775	-562.653	8192.119	4473.64
2025/8/1 10:08	-646.544	8161.221	4507.217	-578.593	8156.986	4465.029	-676.212	8155.547	4521.516
2025/8/1 10:09	-760.076	8123.056	4554.269	-692.493	8119.091	4512.433	-789.642	8117.436	4568.539
2025/8/1 10:10	-873.463	8083.355	4600.46	-806.261	8079.647	4558.976	-902.921	8077.794	4614.698
2025/8/1 10:11	-986.685	8042.124	4645.781	-919.875	8038.66	4604.648	-1016.03	8036.627	4659.985
2025/8/1 10:12	-1099.72	7999.371	4690.222	-1033.31	7996.137	4649.441	-1128.94	7993.942	4704.39
2025/8/1 10:13	-1212.55	7955.102	4733.774	-1146.56	7952.085	4693.345	-1241.64	7949.747	4747.905
2025/8/1 10:14	-1325.15	7909.325	4776.43	-1259.58	7906.512	4736.351	-1354.1	7904.049	4790.522
2025/8/1 10:15	-1437.49	7862.049	4818.179	-1372.36	7859.423	4778.45	-1466.3	7856.857	4832.231
2025/8/1 10:16	-1549.57	7813.28	4859.014	-1484.88	7810.829	4819.633	-1578.22	7808.178	4873.025
2025/8/1 10:17	-1661.35	7763.027	4898.926	-1597.11	7760.736	4859.892	-1689.84	7758.02	4912.895
2025/8/1 10:18	-1772.81	7711.299	4937.908	-1709.04	7709.153	4899.217	-1801.14	7706.394	4951.834
2025/8/1 10:19	-1883.94	7658.106	4975.951	-1820.64	7656.088	4937.602	-1912.09	7653.308	4989.833
2025/8/1 10:20	-1994.71	7603.455	5013.047	-1931.89	7601.552	4975.038	-2022.68	7598.772	5026.885
2025/8/1 10:21	-2105.09	7547.357	5049.189	-2042.77	7545.553	5011.517	-2132.89	7542.794	5062.982
2025/8/1 10:22	-2215.08	7489.822	5084.37	-2153.26	7488.101	5047.031	-2242.69	7485.386	5098.118
2025/8/1 10:23	-2324.65	7430.859	5118.582	-2263.33	7429.206	5081.572	-2352.06	7426.557	5132.285
2025/8/1 10:24	-2433.77	7370.48	5151.817	-2372.96	7368.878	5115.134	-2460.98	7366.318	5165.476

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 10:25	-2542.43	7308.695	5184.07	-2482.14	7307.128	5147.709	-2569.43	7304.68	5197.684
2025/8/1 10:26	-2650.6	7245.514	5215.334	-2590.84	7243.967	5179.29	-2677.39	7241.654	5228.903
2025/8/1 10:27	-2758.27	7180.95	5245.601	-2699.04	7179.405	5209.87	-2784.83	7177.251	5259.126
2025/8/1 10:28	-2865.41	7115.014	5274.866	-2806.72	7113.455	5239.442	-2891.75	7111.484	5288.348
2025/8/1 10:29	-2972	7047.717	5303.123	-2913.85	7046.128	5268.001	-2998.11	7044.363	5316.562
2025/8/1 10:30	-3078.02	6979.072	5330.364	-3020.42	6977.437	5295.54	-3103.9	6975.901	5343.762
2025/8/1 10:31	-3183.46	6909.091	5356.585	-3126.41	6907.393	5322.052	-3209.1	6906.11	5369.943
2025/8/1 10:32	-3288.28	6837.786	5381.78	-3231.79	6836.009	5347.533	-3313.68	6835.004	5395.099
2025/8/1 10:33	-3392.48	6765.171	5405.944	-3336.54	6763.298	5371.976	-3417.63	6762.596	5419.226
2025/8/1 10:34	-3496.02	6691.259	5429.071	-3440.64	6689.274	5395.376	-3520.92	6688.897	5442.317
2025/8/1 10:35	-3598.89	6616.064	5451.157	-3544.08	6613.95	5417.728	-3623.53	6613.923	5464.369
2025/8/1 10:36	-3701.07	6539.598	5472.197	-3646.83	6537.34	5439.026	-3725.46	6537.687	5485.376
2025/8/1 10:37	-3802.54	6461.877	5492.185	-3748.87	6459.457	5459.266	-3826.67	6460.202	5505.334
2025/8/1 10:38	-3903.28	6382.914	5511.119	-3850.18	6380.316	5478.443	-3927.14	6381.484	5524.238
2025/8/1 10:39	-4003.27	6302.725	5528.993	-3950.74	6299.932	5496.553	-4026.86	6301.546	5542.086
2025/8/1 10:40	-4102.49	6221.323	5545.804	-4050.53	6218.32	5513.592	-4125.81	6220.404	5558.872
2025/8/1 10:41	-4200.93	6138.724	5561.548	-4149.53	6135.495	5529.555	-4223.97	6138.072	5574.593
2025/8/1 10:42	-4298.55	6054.943	5576.221	-4247.72	6051.471	5544.44	-4321.31	6054.565	5589.245
2025/8/1 10:43	-4395.34	5969.996	5589.82	-4345.08	5966.266	5558.241	-4417.83	5969.9	5602.826
2025/8/1 10:44	-4491.29	5883.898	5602.342	-4441.6	5879.895	5570.956	-4513.49	5884.092	5615.333
2025/8/1 10:45	-4586.37	5796.666	5613.783	-4537.24	5792.373	5582.583	-4608.29	5797.156	5626.761
2025/8/1 10:46	-4680.57	5708.316	5624.142	-4632	5703.718	5593.117	-4702.2	5709.11	5637.109
2025/8/1 10:47	-4773.86	5618.864	5633.416	-4725.85	5613.947	5602.556	-4795.21	5619.969	5646.375
2025/8/1 10:48	-4866.23	5528.327	5641.602	-4818.78	5523.075	5610.898	-4887.29	5529.749	5654.555
2025/8/1 10:49	-4957.67	5436.723	5648.698	-4910.76	5431.121	5618.141	-4978.43	5438.469	5661.649
2025/8/1 10:50	-5048.14	5344.068	5654.702	-5001.78	5338.102	5624.282	-5068.61	5346.145	5667.653
2025/8/1 10:51	-5137.64	5250.379	5659.614	-5091.82	5244.035	5629.32	-5157.82	5252.793	5672.567
2025/8/1 10:52	-5226.14	5155.675	5663.43	-5180.86	5148.939	5633.253	-5246.03	5158.433	5676.39
2025/8/1 10:53	-5313.64	5059.973	5666.151	-5268.88	5052.831	5636.08	-5333.23	5063.081	5679.119
2025/8/1 10:54	-5400.1	4963.292	5667.774	-5355.87	4955.731	5637.8	-5419.4	4966.754	5680.754
2025/8/1 10:55	-5485.52	4865.649	5668.3	-5441.8	4857.656	5638.412	-5504.52	4869.473	5681.294
2025/8/1 10:56	-5569.87	4767.064	5667.728	-5526.67	4758.626	5637.915	-5588.59	4771.253	5680.738
2025/8/1 10:57	-5653.15	4667.555	5666.057	-5610.45	4658.659	5636.308	-5671.57	4672.115	5679.087
2025/8/1 10:58	-5735.33	4567.14	5663.287	-5693.12	4557.774	5633.592	-5753.46	4572.077	5676.34
2025/8/1 10:59	-5816.4	4465.84	5659.419	-5774.67	4455.993	5629.767	-5834.23	4471.157	5672.498
2025/8/1 11:00	-5896.34	4363.672	5654.452	-5855.09	4353.332	5624.833	-5913.88	4369.374	5667.559
2025/8/1 11:01	-5975.13	4260.658	5648.387	-5934.35	4249.814	5618.79	-5992.38	4266.749	5661.526
2025/8/1 11:02	-6052.76	4156.816	5641.226	-6012.44	4145.458	5611.64	-6069.73	4163.299	5654.398
2025/8/1 11:03	-6129.22	4052.166	5632.968	-6089.35	4040.283	5603.382	-6145.9	4059.046	5646.177
2025/8/1 11:04	-6204.48	3946.729	5623.616	-6165.06	3934.312	5594.019	-6220.88	3954.008	5636.864
2025/8/1 11:05	-6278.54	3840.525	5613.17	-6239.54	3827.563	5583.551	-6294.66	3848.205	5626.461
2025/8/1 11:06	-6351.38	3733.573	5601.632	-6312.8	3720.058	5571.981	-6367.22	3741.657	5614.968
2025/8/1 11:07	-6422.98	3625.895	5589.004	-6384.81	3611.819	5559.31	-6438.55	3634.385	5602.388
2025/8/1 11:08	-6493.34	3517.511	5575.289	-6455.56	3502.865	5545.54	-6508.62	3526.41	5588.722
2025/8/1 11:09	-6562.42	3408.443	5560.488	-6525.03	3393.219	5530.674	-6577.44	3417.75	5573.974
2025/8/1 11:10	-6630.23	3298.711	5544.604	-6593.21	3282.902	5514.714	-6644.98	3308.428	5558.145
2025/8/1 11:11	-6696.75	3188.336	5527.64	-6660.09	3171.935	5497.664	-6711.24	3198.464	5541.239
2025/8/1 11:12	-6761.96	3077.339	5509.598	-6725.65	3060.341	5479.525	-6776.19	3087.879	5523.257
2025/8/1 11:13	-6825.86	2965.743	5490.483	-6789.87	2948.141	5460.302	-6839.83	2976.695	5504.204
2025/8/1 11:14	-6888.42	2853.569	5470.297	-6852.76	2835.357	5439.998	-6902.14	2864.932	5484.083
2025/8/1 11:15	-6949.64	2740.838	5449.043	-6914.28	2722.012	5418.616	-6963.12	2752.611	5462.897
2025/8/1 11:16	-7009.51	2627.572	5426.727	-6974.44	2608.127	5396.161	-7022.74	2639.755	5440.65
2025/8/1 11:17	-7068	2513.793	5403.352	-7033.21	2493.726	5372.637	-7081	2526.385	5417.347
2025/8/1 11:18	-7125.12	2399.524	5378.922	-7090.59	2378.831	5348.048	-7137.88	2412.523	5392.99
2025/8/1 11:19	-7180.85	2284.787	5353.442	-7146.57	2263.464	5322.398	-7193.38	2298.191	5367.586
2025/8/1 11:20	-7235.17	2169.603	5326.916	-7201.12	2147.648	5295.694	-7247.48	2183.41	5341.138
2025/8/1 11:21	-7288.08	2053.995	5299.35	-7254.25	2031.407	5267.938	-7300.17	2068.203	5313.651
2025/8/1 11:22	-7339.56	1937.986	5270.748	-7305.94	1914.763	5239.138	-7351.45	1952.592	5285.131
2025/8/1 11:23	-7389.62	1821.599	5241.116	-7356.18	1797.739	5209.299	-7401.29	1836.6	5255.582
2025/8/1 11:24	-7438.22	1704.855	5210.459	-7404.96	1680.359	5178.425	-7449.7	1720.248	5225.011
2025/8/1 11:25	-7485.38	1587.778	5178.784	-7452.27	1562.646	5146.524	-7496.66	1603.559	5193.423
2025/8/1 11:26	-7531.06	1470.39	5146.097	-7498.1	1444.622	5113.601	-7542.16	1486.557	5160.823
2025/8/1 11:27	-7575.28	1352.716	5112.402	-7542.44	1326.312	5079.663	-7586.2	1369.262	5127.219

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 11:28	-7618.01	1234.776	5077.708	-7585.28	1207.739	5044.716	-7628.75	1251.699	5092.616
2025/8/1 11:29	-7659.26	1116.595	5042.02	-7626.62	1088.927	5008.768	-7669.83	1133.89	5057.021
2025/8/1 11:30	-7699	998.1954	5005.346	-7666.44	969.8985	4971.825	-7709.41	1015.858	5020.44
2025/8/1 11:31	-7737.24	879.6005	4967.692	-7704.74	850.6778	4933.894	-7747.49	897.6249	4982.881
2025/8/1 11:32	-7773.96	760.8335	4929.065	-7741.51	731.2884	4894.984	-7784.06	779.215	4944.351
2025/8/1 11:33	-7809.17	641.9177	4889.474	-7776.74	611.7542	4855.101	-7819.12	660.6509	4904.856
2025/8/1 11:34	-7842.84	522.8762	4848.926	-7810.42	492.0988	4814.253	-7852.65	541.9556	4864.406
2025/8/1 11:35	-7874.98	403.7323	4807.428	-7842.56	372.346	4772.449	-7884.66	423.1522	4823.006
2025/8/1 11:36	-7905.57	284.5095	4764.988	-7873.13	252.5196	4729.697	-7915.13	304.2638	4780.665
2025/8/1 11:37	-7934.62	165.2309	4721.616	-7902.14	132.6435	4686.005	-7944.05	185.3136	4737.392
2025/8/1 11:38	-7962.11	45.92009	4677.318	-7929.58	12.74141	4641.382	-7971.43	66.32481	4693.194
2025/8/1 11:39	-7988.04	-73.3997	4632.105	-7955.44	-107.163	4595.837	-7997.26	-52.6794	4648.081
2025/8/1 11:40	-8012.41	-192.705	4585.984	-7979.73	-227.045	4549.379	-8021.52	-171.676	4602.059
2025/8/1 11:41	-8035.21	-311.973	4538.964	-8002.42	-346.882	4502.018	-8044.22	-290.641	4555.14
2025/8/1 11:42	-8056.43	-431.179	4491.056	-8023.53	-466.65	4453.762	-8065.36	-409.552	4507.331
2025/8/1 11:43	-8076.08	-550.301	4442.267	-8043.04	-586.324	4404.621	-8084.92	-528.386	4458.641
2025/8/1 11:44	-8094.14	-669.315	4392.608	-8060.96	-705.882	4354.605	-8102.9	-647.119	4409.081
2025/8/1 11:45	-8110.62	-788.198	4342.089	-8077.27	-825.299	4303.725	-8119.3	-765.728	4358.659
2025/8/1 11:46	-8125.51	-906.926	4290.719	-8091.98	-944.551	4251.99	-8134.12	-884.191	4307.386
2025/8/1 11:47	-8138.81	-1025.48	4238.508	-8105.08	-1063.62	4199.41	-8147.35	-1002.48	4255.271
2025/8/1 11:48	-8150.51	-1143.83	4185.466	-8116.57	-1182.47	4145.997	-8158.99	-1120.58	4202.324
2025/8/1 11:49	-8160.61	-1261.95	4131.605	-8126.45	-1301.09	4091.76	-8169.04	-1238.46	4148.556
2025/8/1 11:50	-8169.12	-1379.83	4076.934	-8134.72	-1419.45	4036.712	-8177.5	-1356.11	4093.977
2025/8/1 11:51	-8176.02	-1497.44	4021.464	-8141.37	-1537.52	3980.862	-8184.35	-1473.49	4038.598
2025/8/1 11:52	-8181.33	-1614.75	3965.206	-8146.41	-1655.29	3924.222	-8189.61	-1590.58	3982.429
2025/8/1 11:53	-8185.03	-1731.75	3908.172	-8149.83	-1772.74	3866.804	-8193.27	-1707.37	3925.482
2025/8/1 11:54	-8187.13	-1848.41	3850.372	-8151.63	-1889.83	3808.619	-8195.34	-1823.82	3867.767
2025/8/1 11:55	-8187.62	-1964.7	3791.817	-8151.82	-2006.54	3749.679	-8195.8	-1939.93	3809.295
2025/8/1 11:56	-8186.51	-2080.61	3732.52	-8150.39	-2122.86	3689.995	-8194.66	-2055.65	3750.079
2025/8/1 11:57	-8183.79	-2196.12	3672.492	-8147.34	-2238.75	3629.58	-8191.92	-2170.98	3690.128
2025/8/1 11:58	-8179.48	-2311.19	3611.745	-8142.68	-2354.2	3568.445	-8187.58	-2285.88	3629.456
2025/8/1 11:59	-8173.56	-2425.81	3550.29	-8136.4	-2469.19	3506.603	-8181.64	-2400.34	3568.075
2025/8/1 12:00	-8166.04	-2539.96	3488.141	-8128.51	-2583.68	3444.067	-8174.1	-2514.33	3505.995
2025/8/1 12:01	-8156.92	-2653.61	3425.308	-8119.02	-2697.67	3380.849	-8164.97	-2627.84	3443.229
2025/8/1 12:02	-8146.21	-2766.74	3361.805	-8107.91	-2811.11	3316.961	-8154.24	-2740.83	3379.789
2025/8/1 12:03	-8133.9	-2879.32	3297.644	-8095.2	-2924	3252.417	-8141.92	-2853.29	3315.688
2025/8/1 12:04	-8120	-2991.35	3232.838	-8080.89	-3036.32	3187.23	-8128	-2965.19	3250.938
2025/8/1 12:05	-8104.51	-3102.79	3167.399	-8064.98	-3148.03	3121.412	-8112.5	-3076.52	3185.553
2025/8/1 12:06	-8087.44	-3213.62	3101.341	-8047.47	-3259.12	3054.977	-8095.42	-3187.25	3119.543
2025/8/1 12:07	-8068.78	-3323.82	3034.675	-8028.37	-3369.56	2987.939	-8076.75	-3297.35	3052.924
2025/8/1 12:08	-8048.55	-3433.37	2967.417	-8007.69	-3479.34	2920.31	-8056.51	-3406.82	2985.707
2025/8/1 12:09	-8026.74	-3542.26	2899.578	-7985.42	-3588.43	2852.104	-8034.69	-3515.62	2917.905
2025/8/1 12:10	-8003.36	-3650.44	2831.172	-7961.58	-3696.81	2783.335	-8011.3	-3623.74	2849.533
2025/8/1 12:11	-7978.42	-3757.92	2762.213	-7936.16	-3804.46	2714.017	-7986.35	-3731.15	2780.603
2025/8/1 12:12	-7951.92	-3864.66	2692.714	-7909.18	-3911.35	2644.163	-7959.84	-3837.84	2711.129
2025/8/1 12:13	-7923.87	-3970.65	2622.69	-7880.64	-4017.48	2573.789	-7931.77	-3943.77	2641.124
2025/8/1 12:14	-7894.26	-4075.86	2552.152	-7850.55	-4122.82	2502.906	-7902.16	-4048.94	2570.603
2025/8/1 12:15	-7863.12	-4180.27	2481.117	-7818.9	-4227.34	2431.531	-7871	-4153.32	2499.578
2025/8/1 12:16	-7830.44	-4283.87	2409.597	-7785.72	-4331.03	2359.677	-7838.31	-4256.9	2428.065
2025/8/1 12:17	-7796.23	-4386.63	2337.607	-7751.01	-4433.86	2287.358	-7804.08	-4359.64	2356.076
2025/8/1 12:18	-7760.51	-4488.54	2265.161	-7714.77	-4535.83	2214.589	-7768.33	-4461.53	2283.626
2025/8/1 12:19	-7723.26	-4589.56	2192.272	-7677.01	-4636.9	2141.385	-7731.07	-4562.56	2210.729
2025/8/1 12:20	-7684.51	-4689.7	2118.957	-7637.74	-4737.05	2067.76	-7692.29	-4662.7	2137.4
2025/8/1 12:21	-7644.27	-4788.92	2045.228	-7596.97	-4836.28	1993.729	-7652.02	-4761.93	2063.653
2025/8/1 12:22	-7602.53	-4887.21	1971.1	-7554.71	-4934.56	1919.306	-7610.25	-4860.23	1989.502
2025/8/1 12:23	-7559.31	-4984.54	1896.589	-7510.96	-5031.86	1844.506	-7567	-4957.58	1914.961
2025/8/1 12:24	-7514.62	-5080.9	1821.708	-7465.74	-5128.18	1769.345	-7522.27	-5053.97	1840.046
2025/8/1 12:25	-7468.47	-5176.28	1746.472	-7419.06	-5223.5	1693.837	-7476.07	-5149.38	1764.771
2025/8/1 12:26	-7420.86	-5270.64	1670.896	-7370.92	-5317.78	1617.996	-7428.42	-5243.79	1689.15
2025/8/1 12:27	-7371.81	-5363.98	1594.995	-7321.34	-5411.03	1541.839	-7379.31	-5337.17	1613.2
2025/8/1 12:28	-7321.32	-5456.28	1518.784	-7270.32	-5503.22	1465.381	-7328.77	-5429.52	1536.933
2025/8/1 12:29	-7269.41	-5547.51	1442.278	-7217.89	-5594.33	1388.635	-7276.8	-5520.81	1460.366
2025/8/1 12:30	-7216.09	-5637.67	1365.491	-7164.03	-5684.34	1311.619	-7223.41	-5611.03	1383.513

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 12:31	-7161.36	-5726.73	1288.439	-7108.78	-5773.24	1234.345	-7168.62	-5700.15	1306.389
2025/8/1 12:32	-7105.24	-5814.68	1211.136	-7052.14	-5861.02	1156.831	-7112.43	-5788.17	1229.01
2025/8/1 12:33	-7047.75	-5901.5	1133.599	-6994.13	-5947.65	1079.092	-7054.85	-5875.07	1151.39
2025/8/1 12:34	-6988.88	-5987.17	1055.841	-6934.75	-6033.12	1001.141	-6995.9	-5960.82	1073.544
2025/8/1 12:35	-6928.66	-6071.68	977.8785	-6874.01	-6117.41	922.9962	-6935.59	-6045.41	995.4887
2025/8/1 12:36	-6867.09	-6155.02	899.7263	-6811.94	-6200.51	844.6712	-6873.92	-6128.83	917.2382
2025/8/1 12:37	-6804.2	-6237.16	821.3996	-6748.54	-6282.4	766.1818	-6810.93	-6211.06	838.8079
2025/8/1 12:38	-6739.98	-6318.09	742.9138	-6683.82	-6363.07	687.5435	-6746.6	-6292.09	760.2132
2025/8/1 12:39	-6674.46	-6397.8	664.2841	-6617.81	-6442.5	608.7716	-6680.96	-6371.89	681.4693
2025/8/1 12:40	-6607.65	-6476.26	585.5258	-6550.51	-6520.68	529.8815	-6614.03	-6450.46	602.5917
2025/8/1 12:41	-6539.56	-6553.48	506.6542	-6481.93	-6597.59	450.8887	-6545.81	-6527.77	523.5956
2025/8/1 12:42	-6470.2	-6629.43	427.6846	-6412.1	-6673.21	371.8085	-6476.32	-6603.82	444.4964
2025/8/1 12:43	-6399.59	-6704.09	348.6322	-6341.03	-6747.55	292.6563	-6405.57	-6678.59	365.3095
2025/8/1 12:44	-6327.74	-6777.46	269.5125	-6268.72	-6820.57	213.4475	-6333.57	-6752.07	286.0503
2025/8/1 12:45	-6254.67	-6849.52	190.3408	-6195.2	-6892.28	134.1976	-6260.35	-6824.24	206.7342
2025/8/1 12:46	-6180.4	-6920.25	111.1323	-6120.48	-6962.64	54.92185	-6185.91	-6895.08	127.3764
2025/8/1 12:47	-6104.93	-6989.65	31.9024	-6044.58	-7031.67	-24.3643	-6110.27	-6964.59	47.99258
2025/8/1 12:48	-6028.28	-7057.7	-47.3336	-5967.5	-7099.33	-103.646	-6033.45	-7032.76	-31.4021
2025/8/1 12:49	-5950.47	-7124.39	-126.561	-5889.28	-7165.62	-182.907	-5955.45	-7099.56	-110.792
2025/8/1 12:50	-5871.51	-7189.71	-205.763	-5809.91	-7230.52	-262.132	-5876.31	-7164.99	-190.162
2025/8/1 12:51	-5791.42	-7253.64	-284.926	-5729.43	-7294.03	-341.307	-5796.02	-7229.04	-269.497
2025/8/1 12:52	-5710.22	-7316.17	-364.034	-5647.84	-7356.13	-420.416	-5714.61	-7291.69	-348.781
2025/8/1 12:53	-5627.91	-7377.29	-443.071	-5565.17	-7416.82	-499.444	-5632.1	-7352.93	-428
2025/8/1 12:54	-5544.53	-7437	-522.024	-5481.42	-7476.08	-578.375	-5548.49	-7412.75	-507.137
2025/8/1 12:55	-5460.07	-7495.27	-600.876	-5396.62	-7533.89	-657.195	-5463.81	-7471.14	-586.177
2025/8/1 12:56	-5374.57	-7552.11	-679.613	-5310.78	-7590.26	-735.888	-5378.08	-7528.08	-665.106
2025/8/1 12:57	-5288.04	-7607.49	-758.219	-5223.92	-7645.18	-814.44	-5291.31	-7583.58	-743.908
2025/8/1 12:58	-5200.49	-7661.42	-836.679	-5136.05	-7698.62	-892.835	-5203.51	-7637.62	-822.568
2025/8/1 12:59	-5111.94	-7713.87	-914.979	-5047.21	-7750.59	-971.059	-5114.71	-7690.18	-901.071
2025/8/1 13:00	-5022.41	-7764.84	-993.103	-4957.39	-7801.07	-1049.1	-5024.92	-7741.26	-979.402
2025/8/1 13:01	-4931.92	-7814.33	-1071.04	-4866.63	-7850.06	-1126.93	-4934.17	-7790.85	-1057.55
2025/8/1 13:02	-4840.48	-7862.31	-1148.77	-4774.93	-7897.54	-1204.55	-4842.46	-7838.95	-1135.49
2025/8/1 13:03	-4748.12	-7908.79	-1226.27	-4682.33	-7943.51	-1281.94	-4749.82	-7885.53	-1213.21
2025/8/1 13:04	-4654.85	-7953.76	-1303.55	-4588.82	-7987.97	-1359.09	-4656.26	-7930.6	-1290.7
2025/8/1 13:05	-4560.69	-7997.21	-1380.57	-4494.44	-8030.9	-1435.97	-4561.81	-7974.15	-1367.95
2025/8/1 13:06	-4465.66	-8039.13	-1457.33	-4399.21	-8072.3	-1512.58	-4466.47	-8016.17	-1444.93
2025/8/1 13:07	-4369.77	-8079.51	-1533.82	-4303.13	-8112.16	-1588.91	-4370.28	-8056.64	-1521.64
2025/8/1 13:08	-4273.05	-8118.35	-1610	-4206.24	-8150.47	-1664.93	-4273.25	-8095.58	-1598.06
2025/8/1 13:09	-4175.51	-8155.64	-1685.89	-4108.54	-8187.23	-1740.63	-4175.4	-8132.95	-1674.17
2025/8/1 13:10	-4077.18	-8191.37	-1761.45	-4010.07	-8222.44	-1816	-4076.75	-8168.78	-1749.96
2025/8/1 13:11	-3978.07	-8225.54	-1836.67	-3910.83	-8256.08	-1891.03	-3977.31	-8203.03	-1825.42
2025/8/1 13:12	-3878.2	-8258.15	-1911.55	-3810.85	-8288.15	-1965.69	-3877.11	-8235.72	-1900.53
2025/8/1 13:13	-3777.59	-8289.18	-1986.06	-3710.15	-8318.66	-2039.99	-3776.17	-8266.83	-1975.28
2025/8/1 13:14	-3676.27	-8318.63	-2060.19	-3608.74	-8347.58	-2113.89	-3674.5	-8296.36	-2049.65
2025/8/1 13:15	-3574.24	-8346.51	-2133.93	-3506.65	-8374.92	-2187.4	-3572.13	-8324.31	-2123.63
2025/8/1 13:16	-3471.54	-8372.79	-2207.26	-3403.9	-8400.68	-2260.49	-3469.08	-8350.66	-2197.21
2025/8/1 13:17	-3368.18	-8397.49	-2280.18	-3300.5	-8424.85	-2333.15	-3365.36	-8375.43	-2270.36
2025/8/1 13:18	-3264.17	-8420.59	-2352.66	-3196.48	-8447.43	-2405.38	-3261	-8398.59	-2343.09
2025/8/1 13:19	-3159.55	-8442.09	-2424.7	-3091.86	-8468.41	-2477.15	-3156.02	-8420.15	-2415.36
2025/8/1 13:20	-3054.33	-8461.99	-2496.28	-2986.66	-8487.79	-2548.45	-3050.44	-8440.11	-2487.18
2025/8/1 13:21	-2948.53	-8480.29	-2567.38	-2880.89	-8505.58	-2619.27	-2944.27	-8458.46	-2558.53
2025/8/1 13:22	-2842.17	-8496.99	-2638	-2774.58	-8521.76	-2689.6	-2837.55	-8475.21	-2629.39
2025/8/1 13:23	-2735.28	-8512.07	-2708.11	-2667.74	-8536.34	-2759.42	-2730.28	-8490.34	-2699.75
2025/8/1 13:24	-2627.86	-8525.54	-2777.72	-2560.41	-8549.31	-2828.72	-2622.49	-8503.85	-2769.59
2025/8/1 13:25	-2519.95	-8537.41	-2846.8	-2452.59	-8560.67	-2897.49	-2514.21	-8515.75	-2838.91
2025/8/1 13:26	-2411.57	-8547.65	-2915.34	-2344.32	-8570.43	-2965.71	-2405.45	-8526.04	-2907.69
2025/8/1 13:27	-2302.72	-8556.29	-2983.34	-2235.6	-8578.58	-3033.38	-2296.23	-8534.7	-2975.92
2025/8/1 13:28	-2193.45	-8563.31	-3050.76	-2126.47	-8585.13	-3100.48	-2186.57	-8541.75	-3043.59
2025/8/1 13:29	-2083.76	-8568.71	-3117.62	-2016.93	-8590.06	-3167	-2076.51	-8547.18	-3110.68
2025/8/1 13:30	-1973.67	-8572.5	-3183.88	-1907.03	-8593.39	-3232.93	-1966.05	-8550.99	-3177.18
2025/8/1 13:31	-1863.22	-8574.68	-3249.55	-1796.76	-8595.11	-3298.25	-1855.21	-8553.18	-3243.07
2025/8/1 13:32	-1752.41	-8575.24	-3314.6	-1686.16	-8595.22	-3362.96	-1744.03	-8553.76	-3308.36
2025/8/1 13:33	-1641.28	-8574.19	-3379.04	-1575.24	-8593.73	-3427.03	-1632.52	-8552.72	-3373.02

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 13:34	-1529.84	-8571.52	-3442.83	-1464.04	-8590.64	-3490.47	-1520.7	-8550.06	-3437.04
2025/8/1 13:35	-1418.11	-8567.25	-3505.98	-1352.55	-8585.95	-3553.26	-1408.6	-8545.79	-3500.41
2025/8/1 13:36	-1306.11	-8561.37	-3568.47	-1240.82	-8579.65	-3615.39	-1296.23	-8539.9	-3563.12
2025/8/1 13:37	-1193.87	-8553.88	-3630.29	-1128.86	-8571.76	-3676.84	-1183.61	-8532.41	-3625.16
2025/8/1 13:38	-1081.4	-8544.78	-3691.43	-1016.68	-8562.28	-3737.61	-1070.78	-8523.31	-3686.51
2025/8/1 13:39	-968.731	-8534.09	-3751.88	-904.323	-8551.21	-3797.68	-957.743	-8512.6	-3747.17
2025/8/1 13:40	-855.881	-8521.79	-3811.62	-791.793	-8538.55	-3857.05	-844.529	-8500.29	-3807.12
2025/8/1 13:41	-742.87	-8507.9	-3870.66	-679.118	-8524.3	-3915.7	-731.158	-8486.38	-3866.36
2025/8/1 13:42	-629.721	-8492.42	-3928.96	-566.316	-8508.48	-3973.63	-617.651	-8470.88	-3924.87
2025/8/1 13:43	-516.454	-8475.35	-3986.54	-453.41	-8491.08	-4030.82	-504.03	-8453.79	-3982.64
2025/8/1 13:44	-403.09	-8456.7	-4043.36	-340.421	-8472.11	-4087.27	-390.316	-8435.11	-4039.66
2025/8/1 13:45	-289.651	-8436.46	-4099.44	-227.369	-8451.57	-4142.96	-276.53	-8414.84	-4095.93
2025/8/1 13:46	-176.158	-8414.66	-4154.75	-114.275	-8429.47	-4197.88	-162.695	-8393	-4151.42
2025/8/1 13:47	-62.6319	-8391.28	-4209.28	-1.16076	-8405.81	-4252.03	-68.8311	-8369.59	-4206.14
2025/8/1 13:48	50.90562	-8366.34	-4263.03	111.9535	-8380.61	-4305.4	65.03994	-8344.61	-4260.06
2025/8/1 13:49	164.4337	-8339.84	-4315.98	225.0469	-8353.86	-4357.97	178.8967	-8318.07	-4313.19
2025/8/1 13:50	277.9311	-8311.79	-4368.13	338.0984	-8325.57	-4409.74	292.718	-8289.98	-4365.51
2025/8/1 13:51	391.3769	-8282.19	-4419.47	451.0873	-8295.75	-4460.69	406.4824	-8260.33	-4417.02
2025/8/1 13:52	504.7498	-8251.05	-4469.99	563.9929	-8264.4	-4510.83	520.1687	-8229.15	-4467.7
2025/8/1 13:53	618.029	-8218.38	-4519.67	676.7945	-8231.54	-4560.14	633.7558	-8196.43	-4517.54
2025/8/1 13:54	731.1934	-8184.18	-4568.52	789.4714	-8197.16	-4608.6	747.2225	-8162.18	-4566.54
2025/8/1 13:55	844.2221	-8148.47	-4616.52	902.0031	-8161.28	-4656.23	860.5477	-8126.4	-4614.69
2025/8/1 13:56	957.0943	-8111.24	-4663.66	1014.369	-8123.9	-4703	973.7103	-8089.12	-4661.98
2025/8/1 13:57	1069.789	-8072.51	-4709.94	1126.549	-8085.04	-4748.91	1086.69	-8050.33	-4708.4
2025/8/1 13:58	1182.286	-8032.28	-4755.34	1238.522	-8044.69	-4793.94	1199.464	-8010.05	-4753.94
2025/8/1 13:59	1294.563	-7990.57	-4799.87	1350.268	-8002.88	-4838.11	1312.014	-7968.27	-4798.6
2025/8/1 14:00	1406.601	-7947.37	-4843.5	1461.767	-7959.6	-4881.38	1424.317	-7925.02	-4842.36
2025/8/1 14:01	1518.379	-7902.71	-4886.24	1572.998	-7914.86	-4923.77	1536.354	-7880.29	-4885.23
2025/8/1 14:02	1629.877	-7856.59	-4928.08	1683.942	-7868.69	-4965.25	1648.104	-7834.11	-4927.18
2025/8/1 14:03	1741.073	-7809.01	-4969.01	1794.579	-7821.07	-5005.83	1759.546	-7786.47	-4968.23
2025/8/1 14:04	1851.948	-7760	-5009.02	1904.887	-7772.04	-5045.5	1870.659	-7737.39	-5008.35
2025/8/1 14:05	1962.481	-7709.55	-5048.1	2014.849	-7721.58	-5084.25	1981.424	-7686.88	-5047.54
2025/8/1 14:06	2072.653	-7657.68	-5086.26	2124.443	-7669.72	-5122.07	2091.82	-7634.95	-5085.8
2025/8/1 14:07	2182.442	-7604.4	-5123.48	2233.65	-7616.47	-5158.96	2201.827	-7581.6	-5123.12
2025/8/1 14:08	2291.83	-7549.72	-5159.75	2342.451	-7561.83	-5194.91	2311.425	-7526.86	-5159.49
2025/8/1 14:09	2400.796	-7493.65	-5195.08	2450.826	-7505.82	-5229.92	2420.594	-7470.73	-5194.91
2025/8/1 14:10	2509.32	-7436.2	-5229.44	2558.756	-7448.44	-5263.98	2529.314	-7413.22	-5229.36
2025/8/1 14:11	2617.382	-7377.38	-5262.85	2666.221	-7389.72	-5297.08	2637.565	-7354.34	-5262.85
2025/8/1 14:12	2724.964	-7317.21	-5295.29	2773.202	-7329.65	-5329.23	2745.328	-7294.11	-5295.38
2025/8/1 14:13	2832.045	-7255.69	-5326.76	2879.68	-7268.26	-5360.41	2852.583	-7232.54	-5326.92
2025/8/1 14:14	2938.607	-7192.84	-5357.25	2985.636	-7205.55	-5390.61	2959.312	-7169.64	-5357.49
2025/8/1 14:15	3044.629	-7128.67	-5386.75	3091.052	-7141.54	-5419.84	3065.493	-7105.42	-5387.06
2025/8/1 14:16	3150.094	-7063.2	-5415.27	3195.908	-7076.23	-5448.1	3171.11	-7039.89	-5415.65
2025/8/1 14:17	3254.981	-6996.43	-5442.8	3300.187	-7009.65	-5475.36	3276.141	-6973.07	-5443.24
2025/8/1 14:18	3359.271	-6928.38	-5469.33	3403.868	-6941.8	-5501.64	3380.569	-6904.98	-5469.83
2025/8/1 14:19	3462.947	-6859.06	-5494.86	3506.935	-6872.7	-5526.92	3484.375	-6835.61	-5495.42
2025/8/1 14:20	3565.989	-6788.48	-5519.38	3609.369	-6802.36	-5551.21	3587.54	-6765	-5520
2025/8/1 14:21	3668.38	-6716.66	-5542.89	3711.152	-6730.79	-5574.5	3690.046	-6693.15	-5543.57
2025/8/1 14:22	3770.099	-6643.62	-5565.4	3812.266	-6658.01	-5596.78	3791.874	-6620.07	-5566.12
2025/8/1 14:23	3871.13	-6569.36	-5586.88	3912.692	-6584.03	-5618.05	3893.006	-6545.79	-5587.66
2025/8/1 14:24	3971.455	-6493.91	-5607.34	4012.414	-6508.87	-5638.31	3993.425	-6470.3	-5608.17
2025/8/1 14:25	4071.054	-6417.26	-5626.78	4111.414	-6432.54	-5657.56	4093.111	-6393.64	-5627.65
2025/8/1 14:26	4169.911	-6339.45	-5645.2	4209.674	-6355.05	-5675.79	4192.049	-6315.81	-5646.11
2025/8/1 14:27	4268.008	-6260.48	-5662.58	4307.178	-6276.41	-5693	4290.219	-6236.83	-5663.54
2025/8/1 14:28	4365.327	-6180.37	-5678.93	4403.907	-6196.66	-5709.19	4387.605	-6156.71	-5679.93
2025/8/1 14:29	4461.851	-6099.14	-5694.25	4499.846	-6115.78	-5724.35	4484.189	-6075.48	-5695.29
2025/8/1 14:30	4557.563	-6016.79	-5708.53	4594.977	-6033.82	-5738.49	4579.954	-5993.13	-5709.61
2025/8/1 14:31	4652.446	-5933.35	-5721.78	4689.284	-5950.77	-5751.6	4674.883	-5909.7	-5722.89
2025/8/1 14:32	4746.482	-5848.83	-5733.98	4782.75	-5866.65	-5763.67	4768.96	-5825.2	-5735.13
2025/8/1 14:33	4839.656	-5763.24	-5745.14	4875.359	-5781.48	-5774.71	4862.168	-5739.63	-5746.32
2025/8/1 14:34	4931.95	-5676.61	-5755.26	4967.095	-5695.28	-5784.72	4954.491	-5653.02	-5756.47
2025/8/1 14:35	5023.348	-5588.95	-5764.33	5057.942	-5608.06	-5793.7	5045.912	-5565.39	-5765.58
2025/8/1 14:36	5113.835	-5500.28	-5772.35	5147.883	-5519.84	-5801.64	5136.415	-5476.75	-5773.64

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 14:37	5203.393	-5410.6	-5779.33	5236.904	-5430.63	-5808.54	5225.984	-5387.12	-5780.65
2025/8/1 14:38	5292.008	-5319.94	-5785.26	5324.989	-5340.44	-5814.4	5314.604	-5296.52	-5786.61
2025/8/1 14:39	5379.663	-5228.32	-5790.14	5412.122	-5249.31	-5819.22	5402.259	-5204.95	-5791.52
2025/8/1 14:40	5466.344	-5135.75	-5793.97	5498.288	-5157.24	-5823	5488.934	-5112.44	-5795.39
2025/8/1 14:41	5552.034	-5042.26	-5796.75	5583.474	-5064.24	-5825.75	5574.614	-5019.01	-5798.2
2025/8/1 14:42	5636.719	-4947.84	-5798.48	5667.662	-4970.35	-5827.45	5659.283	-4924.68	-5799.97
2025/8/1 14:43	5720.384	-4852.54	-5799.16	5750.84	-4875.56	-5828.12	5742.927	-4829.45	-5800.68
2025/8/1 14:44	5803.013	-4756.35	-5798.79	5832.993	-4779.91	-5827.75	5825.532	-4733.36	-5800.35
2025/8/1 14:45	5884.593	-4659.3	-5797.37	5914.106	-4683.41	-5826.34	5907.083	-4636.41	-5798.97
2025/8/1 14:46	5965.11	-4561.42	-5794.91	5994.165	-4586.07	-5823.89	5987.566	-4538.62	-5796.54
2025/8/1 14:47	6044.548	-4462.7	-5791.39	6073.157	-4487.91	-5820.4	6066.966	-4440.02	-5793.07
2025/8/1 14:48	6122.894	-4363.18	-5786.83	6151.068	-4388.96	-5815.88	6145.271	-4340.62	-5788.55
2025/8/1 14:49	6200.135	-4262.87	-5781.23	6227.885	-4289.22	-5810.32	6222.467	-4240.44	-5782.99
2025/8/1 14:50	6276.256	-4161.8	-5774.58	6303.594	-4188.73	-5803.73	6298.539	-4139.5	-5776.39
2025/8/1 14:51	6351.245	-4059.97	-5766.89	6378.181	-4087.48	-5796.1	6373.476	-4037.81	-5768.75
2025/8/1 14:52	6425.088	-3957.41	-5758.16	6451.635	-3985.51	-5787.45	6447.264	-3935.4	-5760.07
2025/8/1 14:53	6497.773	-3854.13	-5748.39	6523.943	-3882.83	-5777.77	6519.89	-3832.28	-5750.35
2025/8/1 14:54	6569.286	-3750.16	-5737.59	6595.092	-3779.47	-5767.06	6591.342	-3728.48	-5739.6
2025/8/1 14:55	6639.615	-3645.52	-5725.75	6665.069	-3675.43	-5755.33	6661.608	-3624.01	-5727.81
2025/8/1 14:56	6708.748	-3540.22	-5712.88	6733.864	-3570.73	-5742.57	6730.676	-3518.88	-5715
2025/8/1 14:57	6776.673	-3434.28	-5698.98	6801.463	-3465.41	-5728.8	6798.533	-3413.13	-5701.16
2025/8/1 14:58	6843.377	-3327.72	-5684.05	6867.856	-3359.46	-5714	6865.167	-3306.77	-5686.3
2025/8/1 14:59	6908.85	-3220.56	-5668.1	6933.03	-3252.93	-5698.2	6930.569	-3199.82	-5670.42
2025/8/1 15:00	6973.08	-3112.82	-5651.13	6996.975	-3145.81	-5681.38	6994.725	-3092.29	-5653.52
2025/8/1 15:01	7036.055	-3004.53	-5633.15	7059.679	-3038.14	-5663.56	7057.626	-2984.21	-5635.61
2025/8/1 15:02	7097.765	-2895.69	-5614.15	7121.132	-2929.92	-5644.73	7119.261	-2875.6	-5616.68
2025/8/1 15:03	7158.199	-2786.33	-5594.14	7181.323	-2821.19	-5624.91	7179.618	-2766.48	-5596.75
2025/8/1 15:04	7217.347	-2676.47	-5573.13	7240.242	-2711.96	-5604.08	7238.688	-2656.86	-5575.82
2025/8/1 15:05	7275.197	-2566.13	-5551.11	7297.878	-2602.24	-5582.27	7296.46	-2546.77	-5553.9
2025/8/1 15:06	7331.74	-2455.33	-5528.1	7354.222	-2492.07	-5559.46	7352.925	-2436.23	-5530.97
2025/8/1 15:07	7386.967	-2344.09	-5504.09	7409.263	-2381.45	-5535.67	7408.073	-2325.25	-5507.06
2025/8/1 15:08	7440.867	-2232.42	-5479.1	7462.993	-2270.41	-5510.9	7461.895	-2213.86	-5482.16
2025/8/1 15:09	7493.431	-2120.36	-5453.12	7515.402	-2158.97	-5485.15	7514.38	-2102.08	-5456.29
2025/8/1 15:10	7544.65	-2007.91	-5426.16	7566.481	-2047.15	-5458.43	7565.521	-1989.92	-5429.44
2025/8/1 15:11	7594.515	-1895.11	-5398.23	7616.22	-1934.96	-5430.75	7615.309	-1877.41	-5401.61
2025/8/1 15:12	7643.018	-1781.96	-5369.33	7664.612	-1822.43	-5402.1	7663.734	-1764.57	-5372.83
2025/8/1 15:13	7690.15	-1668.5	-5339.47	7711.649	-1709.58	-5372.5	7710.79	-1651.41	-5343.08
2025/8/1 15:14	7735.902	-1554.73	-5308.65	7757.32	-1596.42	-5341.95	7756.467	-1537.96	-5312.38
2025/8/1 15:15	7780.268	-1440.69	-5276.88	7801.62	-1482.98	-5310.45	7800.758	-1424.24	-5280.74
2025/8/1 15:16	7823.238	-1326.39	-5244.16	7844.54	-1369.28	-5278.02	7843.655	-1310.27	-5248.15
2025/8/1 15:17	7864.806	-1211.85	-5210.5	7886.073	-1255.34	-5244.65	7885.152	-1196.07	-5214.62
2025/8/1 15:18	7904.965	-1097.09	-5175.91	7926.21	-1141.17	-5210.35	7925.24	-1081.65	-5180.17
2025/8/1 15:19	7943.706	-982.136	-5140.39	7964.947	-1026.8	-5175.13	7963.913	-967.047	-5144.79
2025/8/1 15:20	7981.025	-867.006	-5103.95	8002.274	-912.253	-5138.99	8001.165	-852.272	-5108.5
2025/8/1 15:21	8016.914	-751.721	-5066.59	8038.187	-797.54	-5101.95	8036.989	-737.348	-5071.29
2025/8/1 15:22	8051.367	-636.3	-5028.33	8072.678	-682.686	-5064	8071.379	-622.295	-5033.18
2025/8/1 15:23	8084.377	-520.766	-4989.16	8105.742	-567.711	-5025.16	8104.328	-507.133	-4994.17
2025/8/1 15:24	8115.94	-405.139	-4949.11	8137.373	-452.635	-4985.43	8135.832	-391.884	-4954.28
2025/8/1 15:25	8146.049	-289.439	-4908.16	8167.564	-337.478	-4944.82	8165.885	-276.567	-4913.5
2025/8/1 15:26	8174.7	-173.687	-4866.34	8196.312	-222.262	-4903.33	8194.482	-161.203	-4871.85
2025/8/1 15:27	8201.887	-57.9035	-4823.65	8223.609	-107.005	-4860.98	8221.617	-45.8128	-4829.33
2025/8/1 15:28	8227.606	57.89018	-4780.09	8249.453	8.270576	-4817.76	8247.287	69.5833	-4785.95
2025/8/1 15:29	8251.852	173.6735	-4735.67	8273.837	123.5454	-4773.69	8271.486	184.9648	-4741.71
2025/8/1 15:30	8274.621	289.4259	-4690.41	8296.758	238.7987	-4728.78	8294.211	300.3111	-4696.63
2025/8/1 15:31	8295.908	405.1265	-4644.31	8318.212	354.0103	-4683.04	8315.457	415.6019	-4650.72
2025/8/1 15:32	8315.711	520.7547	-4597.38	8338.194	469.1596	-4636.46	8335.22	530.8166	-4603.98
2025/8/1 15:33	8334.026	636.2898	-4549.62	8356.7	584.2264	-4589.06	8353.499	645.9349	-4556.42
2025/8/1 15:34	8350.849	751.711	-4501.05	8373.728	699.1902	-4540.85	8370.288	760.9362	-4508.05
2025/8/1 15:35	8366.177	866.9978	-4451.68	8389.275	814.0306	-4491.84	8385.585	875.8003	-4458.87
2025/8/1 15:36	8380.008	982.1295	-4401.51	8403.336	928.7274	-4442.03	8399.388	990.5068	-4408.9
2025/8/1 15:37	8392.339	1097.085	-4350.55	8415.91	1043.26	-4391.44	8411.694	1105.035	-4358.15
2025/8/1 15:38	8403.168	1211.845	-4298.81	8426.994	1157.609	-4340.06	8422.501	1219.366	-4306.62
2025/8/1 15:39	8412.493	1326.388	-4246.3	8436.585	1271.753	-4287.92	8431.806	1333.478	-4254.32

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 15:40	8420.313	1440.693	-4193.03	8444.683	1385.672	-4235.02	8439.609	1447.351	-4201.26
2025/8/1 15:41	8426.625	1554.741	-4139.01	8451.284	1499.346	-4181.37	8445.907	1560.966	-4147.46
2025/8/1 15:42	8431.429	1668.511	-4084.25	8456.389	1612.754	-4126.98	8450.7	1674.301	-4092.92
2025/8/1 15:43	8434.724	1781.982	-4028.76	8459.995	1725.878	-4071.85	8453.987	1787.338	-4037.64
2025/8/1 15:44	8436.509	1895.134	-3972.55	8462.101	1838.695	-4016.01	8455.767	1900.056	-3981.65
2025/8/1 15:45	8436.784	2007.946	-3915.62	8462.707	1951.188	-3959.45	8456.039	2012.435	-3924.95
2025/8/1 15:46	8435.548	2120.4	-3858	8461.812	2063.334	-3902.19	8454.804	2124.456	-3867.55
2025/8/1 15:47	8432.802	2232.473	-3799.68	8459.417	2175.115	-3844.24	8452.061	2236.097	-3809.46
2025/8/1 15:48	8428.546	2344.147	-3740.69	8455.52	2286.51	-3785.6	8447.811	2347.341	-3750.68
2025/8/1 15:49	8422.781	2455.402	-3681.02	8450.123	2397.5	-3726.29	8442.054	2458.166	-3691.24
2025/8/1 15:50	8415.507	2566.216	-3620.7	8443.226	2508.065	-3666.33	8434.792	2568.554	-3631.14
2025/8/1 15:51	8406.726	2676.571	-3559.72	8434.83	2618.184	-3605.71	8426.026	2678.484	-3570.4
2025/8/1 15:52	8396.438	2786.447	-3498.11	8424.936	2727.839	-3544.45	8415.756	2787.937	-3509.01
2025/8/1 15:53	8384.647	2895.823	-3435.87	8413.544	2837.01	-3482.56	8403.986	2896.895	-3447
2025/8/1 15:54	8371.353	3004.681	-3373.02	8400.658	2945.677	-3420.05	8390.715	3005.337	-3384.37
2025/8/1 15:55	8356.559	3113	-3309.56	8386.277	3053.82	-3356.93	8375.947	3113.243	-3321.14
2025/8/1 15:56	8340.267	3220.761	-3245.51	8370.406	3161.421	-3293.22	8359.685	3220.596	-3257.32
2025/8/1 15:57	8322.48	3327.945	-3180.88	8353.045	3268.459	-3228.91	8341.93	3327.376	-3192.91
2025/8/1 15:58	8303.201	3434.532	-3115.67	8334.197	3374.916	-3164.04	8322.686	3433.563	-3127.93
2025/8/1 15:59	8282.433	3540.503	-3049.91	8313.866	3480.773	-3098.6	8301.955	3539.139	-3062.39
2025/8/1 16:00	8260.179	3645.84	-2983.6	8292.054	3586.01	-3032.61	8279.742	3644.085	-2996.3
2025/8/1 16:01	8236.444	3750.522	-2916.75	8268.765	3690.608	-2966.08	8256.05	3748.382	-2929.68
2025/8/1 16:02	8211.231	3854.532	-2849.39	8244.001	3794.549	-2899.02	8230.883	3852.011	-2862.53
2025/8/1 16:03	8184.544	3957.849	-2781.51	8217.768	3897.813	-2831.44	8204.245	3954.955	-2794.87
2025/8/1 16:04	8156.388	4060.457	-2713.13	8190.069	4000.383	-2763.36	8176.14	4057.193	-2726.71
2025/8/1 16:05	8126.768	4162.335	-2644.26	8160.908	4102.239	-2694.78	8146.574	4158.709	-2658.06
2025/8/1 16:06	8095.688	4263.466	-2574.92	8130.291	4203.363	-2625.72	8115.551	4259.483	-2588.94
2025/8/1 16:07	8063.155	4363.831	-2505.11	8098.221	4303.736	-2556.2	8083.076	4359.498	-2519.34
2025/8/1 16:08	8029.172	4463.412	-2434.86	8064.704	4403.341	-2486.21	8049.154	4458.735	-2449.3
2025/8/1 16:09	7993.747	4562.192	-2364.17	8029.745	4502.158	-2415.79	8013.792	4557.177	-2378.82
2025/8/1 16:10	7956.885	4660.151	-2293.05	7993.35	4600.171	-2344.93	7976.995	4654.806	-2307.91
2025/8/1 16:11	7918.592	4757.272	-2221.52	7955.525	4697.361	-2273.65	7938.77	4751.603	-2236.58
2025/8/1 16:12	7878.875	4853.537	-2149.59	7916.275	4793.71	-2201.96	7899.122	4847.552	-2164.86
2025/8/1 16:13	7837.74	4948.93	-2077.28	7875.608	4889.201	-2129.88	7858.059	4942.634	-2092.74
2025/8/1 16:14	7795.196	5043.431	-2004.59	7833.529	4983.817	-2057.41	7815.587	5036.834	-2020.25
2025/8/1 16:15	7751.248	5137.025	-1931.54	7790.046	5077.539	-1984.58	7771.713	5130.132	-1947.39
2025/8/1 16:16	7705.904	5229.694	-1858.14	7745.165	5170.35	-1911.39	7726.445	5222.513	-1874.18
2025/8/1 16:17	7659.173	5321.422	-1784.41	7698.894	5262.234	-1837.86	7679.791	5313.96	-1800.64
2025/8/1 16:18	7611.061	5412.19	-1710.35	7651.241	5353.173	-1764	7631.757	5404.455	-1726.77
2025/8/1 16:19	7561.578	5501.983	-1635.99	7602.213	5443.15	-1689.82	7582.353	5493.982	-1652.59
2025/8/1 16:20	7510.732	5590.784	-1561.33	7551.818	5532.15	-1615.33	7531.586	5582.525	-1578.11
2025/8/1 16:21	7458.531	5678.577	-1486.4	7500.065	5620.154	-1540.56	7479.466	5670.067	-1503.34
2025/8/1 16:22	7404.984	5765.345	-1411.19	7446.963	5707.148	-1465.51	7426	5756.592	-1428.31
2025/8/1 16:23	7350.102	5851.073	-1335.73	7392.519	5793.114	-1390.19	7371.199	5842.084	-1353.01
2025/8/1 16:24	7293.892	5935.744	-1260.02	7336.743	5878.037	-1314.63	7315.07	5926.527	-1277.47
2025/8/1 16:25	7236.365	6019.344	-1184.09	7279.645	5961.9	-1238.82	7257.625	6009.906	-1201.7
2025/8/1 16:26	7177.531	6101.856	-1107.95	7221.234	6044.689	-1162.8	7198.871	6092.204	-1125.71
2025/8/1 16:27	7117.399	6183.265	-1031.6	7161.519	6126.386	-1086.56	7138.82	6173.408	-1049.52
2025/8/1 16:28	7055.981	6263.556	-955.072	7100.511	6206.978	-1010.13	7077.482	6253.5	-973.131
2025/8/1 16:29	6993.286	6342.714	-878.367	7038.22	6286.448	-933.512	7014.866	6332.467	-896.569
2025/8/1 16:30	6929.326	6420.725	-801.504	6974.657	6364.782	-856.727	6950.984	6410.294	-819.844
2025/8/1 16:31	6864.112	6497.573	-724.496	6909.831	6441.965	-779.787	6885.847	6486.966	-742.97
2025/8/1 16:32	6797.655	6573.245	-647.356	6843.754	6517.982	-702.705	6819.465	6562.468	-665.96
2025/8/1 16:33	6729.967	6647.726	-570.099	6776.438	6592.818	-625.497	6751.85	6636.786	-588.828
2025/8/1 16:34	6661.058	6721.002	-492.739	6707.893	6666.459	-548.174	6683.014	6709.907	-511.588
2025/8/1 16:35	6590.942	6793.059	-415.289	6638.131	6738.892	-470.752	6612.968	6781.816	-434.253
2025/8/1 16:36	6519.631	6863.884	-337.764	6567.165	6810.101	-393.244	6541.724	6852.499	-356.839
2025/8/1 16:37	6447.136	6933.464	-260.178	6495.006	6880.075	-315.665	6469.294	6921.943	-279.359
2025/8/1 16:38	6373.471	7001.784	-182.545	6421.666	6948.798	-238.028	6395.692	6990.135	-201.826
2025/8/1 16:39	6298.648	7068.833	-104.878	6347.158	7016.257	-160.348	6320.929	7057.062	-124.255
2025/8/1 16:40	6222.681	7134.598	-27.1924	6271.495	7082.44	-82.6384	6245.019	7122.71	-46.6607
2025/8/1 16:41	6145.583	7199.065	50.49826	6194.69	7147.334	-4.91349	6167.974	7187.067	30.94406
2025/8/1 16:42	6067.366	7262.223	128.1797	6116.756	7210.925	72.8125	6089.808	7250.121	108.5447



Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 16:43	5988.046	7324.059	205.8379	6037.707	7273.202	150.5254	6010.534	7311.86	186.1271
2025/8/1 16:44	5907.636	7384.562	283.4586	5957.555	7334.151	228.211	5930.167	7372.27	263.6771
2025/8/1 16:45	5826.15	7443.72	361.0277	5876.316	7393.762	305.8552	5848.719	7431.341	341.1807
2025/8/1 16:46	5743.602	7501.521	438.531	5794.002	7452.021	383.4436	5766.206	7489.061	418.6237
2025/8/1 16:47	5660.006	7557.955	515.9543	5710.629	7508.919	460.9622	5682.641	7545.418	495.9919
2025/8/1 16:48	5575.379	7613.01	593.2835	5626.211	7564.442	538.3965	5598.04	7600.401	573.2713
2025/8/1 16:49	5489.734	7666.675	670.5045	5540.762	7618.58	615.7325	5512.416	7654	650.4475
2025/8/1 16:50	5403.087	7718.941	747.603	5454.298	7671.323	692.9559	5425.785	7706.204	727.5066
2025/8/1 16:51	5315.452	7769.796	824.5649	5366.834	7722.658	770.0523	5338.162	7757.001	804.4343
2025/8/1 16:52	5226.847	7819.232	901.3761	5278.384	7772.577	847.0077	5249.562	7806.383	881.2164
2025/8/1 16:53	5137.285	7867.237	978.0224	5188.965	7821.068	923.8076	5160.001	7854.339	957.839
2025/8/1 16:54	5046.784	7913.803	1054.49	5098.591	7868.122	1000.438	5069.495	7900.859	1034.288
2025/8/1 16:55	4955.358	7958.92	1130.764	5007.28	7913.729	1076.885	4978.059	7945.934	1110.549
2025/8/1 16:56	4863.025	8002.579	1206.831	4915.047	7957.88	1153.133	4885.71	7989.554	1186.608
2025/8/1 16:57	4769.801	8044.772	1282.677	4821.909	8000.565	1229.17	4792.464	8031.711	1262.45
2025/8/1 16:58	4675.703	8085.489	1358.288	4727.881	8041.775	1304.98	4698.337	8072.396	1338.063
2025/8/1 16:59	4580.746	8124.724	1433.65	4632.981	8081.502	1380.549	4603.346	8111.6	1413.432
2025/8/1 17:00	4484.949	8162.466	1508.748	4537.225	8119.737	1455.864	4507.509	8149.315	1488.542
2025/8/1 17:01	4388.328	8198.71	1583.57	4440.631	8156.472	1530.91	4410.841	8185.533	1563.38
2025/8/1 17:02	4290.901	8233.447	1658.1	4343.216	8191.699	1605.673	4313.36	8220.246	1637.932
2025/8/1 17:03	4192.685	8266.67	1732.325	4244.996	8225.41	1680.139	4215.084	8253.448	1712.184
2025/8/1 17:04	4093.698	8298.372	1806.232	4145.991	8257.599	1754.295	4116.029	8285.13	1786.122
2025/8/1 17:05	3993.958	8328.547	1879.806	4046.216	8288.257	1828.125	4016.215	8315.286	1859.732
2025/8/1 17:06	3893.481	8357.187	1953.034	3945.691	8317.378	1901.617	3915.658	8343.909	1933.001
2025/8/1 17:07	3792.288	8384.288	2025.902	3844.434	8344.955	1974.755	3814.376	8370.992	2005.914
2025/8/1 17:08	3690.395	8409.843	2098.396	3742.462	8370.982	2047.528	3712.388	8396.531	2078.459
2025/8/1 17:09	3587.822	8433.846	2170.504	3639.794	8395.453	2119.919	3609.713	8420.518	2150.62
2025/8/1 17:10	3484.586	8456.292	2242.21	3536.448	8418.363	2191.917	3506.368	8442.948	2222.385
2025/8/1 17:11	3380.707	8477.176	2313.502	3432.444	8439.705	2263.507	3402.372	8463.816	2293.74
2025/8/1 17:12	3276.203	8496.493	2384.367	3327.8	8459.475	2334.675	3297.744	8483.118	2364.672
2025/8/1 17:13	3171.093	8514.239	2454.791	3222.535	8477.667	2405.408	3192.503	8500.847	2435.167
2025/8/1 17:14	3065.396	8530.41	2524.76	3116.669	8494.277	2475.692	3086.668	8517	2505.211
2025/8/1 17:15	2959.133	8545.001	2594.262	3010.22	8509.301	2545.514	2980.258	8531.573	2574.792
2025/8/1 17:16	2852.321	8558.009	2663.284	2903.208	8522.734	2614.861	2873.293	8544.561	2643.896
2025/8/1 17:17	2744.98	8569.431	2731.811	2795.653	8534.573	2683.719	2765.792	8555.962	2712.51
2025/8/1 17:18	2637.13	8579.264	2799.832	2687.574	8544.814	2752.074	2657.774	8565.771	2780.62
2025/8/1 17:19	2528.791	8587.504	2867.333	2578.991	8553.455	2819.914	2549.26	8573.987	2848.215
2025/8/1 17:20	2419.983	8594.149	2934.302	2469.925	8560.492	2887.226	2440.269	8580.605	2915.28
2025/8/1 17:21	2310.725	8599.198	3000.726	2360.394	8565.922	2953.996	2330.821	8585.624	2981.803
2025/8/1 17:22	2201.038	8602.647	3066.591	2250.42	8569.744	3020.211	2220.936	8589.042	3047.771
2025/8/1 17:23	2090.941	8604.496	3131.886	2140.023	8571.955	3085.859	2110.634	8590.857	3113.172
2025/8/1 17:24	1980.455	8604.744	3196.598	2029.222	8572.554	3150.927	1999.937	8591.067	3177.992
2025/8/1 17:25	1869.6	8603.388	3260.714	1918.04	8571.539	3215.402	1888.863	8589.672	3242.219
2025/8/1 17:26	1758.397	8600.429	3324.223	1806.496	8568.91	3279.271	1777.434	8586.669	3305.842
2025/8/1 17:27	1646.866	8595.866	3387.111	1694.61	8564.665	3342.522	1665.67	8582.059	3368.846
2025/8/1 17:28	1535.027	8589.699	3449.368	1582.405	8558.804	3405.143	1553.592	8575.842	3431.221
2025/8/1 17:29	1422.903	8581.928	3510.98	1469.901	8551.327	3467.121	1441.22	8568.017	3492.954
2025/8/1 17:30	1310.512	8572.554	3571.936	1357.118	8542.233	3528.444	1328.576	8558.584	3554.033
2025/8/1 17:31	1197.877	8561.577	3632.225	1244.079	8531.525	3589.101	1215.681	8547.545	3614.446
2025/8/1 17:32	1085.017	8548.998	3691.834	1130.803	8519.202	3649.078	1102.555	8534.9	3674.181
2025/8/1 17:33	971.9546	8534.819	3750.752	1017.313	8505.265	3708.364	989.2198	8520.65	3733.227
2025/8/1 17:34	858.7101	8519.041	3808.967	903.6299	8489.716	3766.947	875.6962	8504.798	3791.571
2025/8/1 17:35	745.3048	8501.667	3866.468	789.7749	8472.556	3824.816	762.0058	8487.344	3849.203
2025/8/1 17:36	631.7598	8482.698	3923.245	675.7696	8453.788	3881.959	648.1696	8468.291	3906.111
2025/8/1 17:37	518.0963	8462.137	3979.285	561.6354	8433.413	3938.365	534.2092	8447.642	3962.284
2025/8/1 17:38	404.3356	8439.988	4034.577	447.3941	8411.436	3994.022	420.146	8425.399	4017.711
2025/8/1 17:39	290.499	8416.253	4089.112	333.0673	8387.857	4048.92	306.0013	8401.566	4072.38
2025/8/1 17:40	176.6078	8390.935	4142.878	218.6766	8362.682	4103.046	191.7968	8376.145	4126.282
2025/8/1 17:41	62.68349	8364.039	4195.865	104.2439	8335.913	4156.391	77.55404	8349.141	4179.404
2025/8/1 17:42	-51.2526	8335.569	4248.061	-10.2091	8307.554	4208.944	-36.7054	8320.557	4231.737
2025/8/1 17:43	-165.179	8305.528	4299.458	-124.661	8277.609	4260.693	-150.96	8290.399	4283.271
2025/8/1 17:44	-279.074	8273.923	4350.044	-239.089	8246.084	4311.63	-265.188	8258.67	4333.994
2025/8/1 17:45	-392.917	8240.757	4399.81	-353.472	8212.982	4361.742	-379.367	8225.376	4383.897

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 17:46	-506.685	8206.036	4448.746	-467.787	8178.31	4411.02	-493.477	8190.522	4432.969
2025/8/1 17:47	-620.358	8169.765	4496.842	-582.014	8142.072	4459.454	-607.494	8154.113	4481.201
2025/8/1 17:48	-733.913	8131.951	4544.088	-696.129	8104.275	4507.035	-721.398	8116.156	4528.584
2025/8/1 17:49	-847.33	8092.6	4590.475	-810.112	8064.924	4553.751	-835.167	8076.656	4575.106
2025/8/1 17:50	-960.586	8051.718	4635.994	-923.939	8024.027	4599.595	-948.778	8035.621	4620.76
2025/8/1 17:51	-1073.66	8009.313	4680.635	-1037.59	7981.589	4644.555	-1062.21	7993.057	4665.536
2025/8/1 17:52	-1186.53	7965.39	4724.39	-1151.04	7937.618	4688.624	-1175.44	7948.972	4709.425
2025/8/1 17:53	-1299.18	7919.958	4767.25	-1264.27	7892.121	4731.792	-1288.45	7903.372	4752.417
2025/8/1 17:54	-1411.58	7873.024	4809.205	-1377.26	7845.106	4774.05	-1401.22	7856.266	4794.504
2025/8/1 17:55	-1523.71	7824.597	4850.248	-1489.98	7796.581	4815.389	-1513.72	7807.661	4835.678
2025/8/1 17:56	-1635.55	7774.684	4890.371	-1602.42	7746.554	4855.801	-1625.93	7757.567	4875.929
2025/8/1 17:57	-1747.08	7723.295	4929.564	-1714.55	7695.034	4895.278	-1737.83	7705.991	4915.251
2025/8/1 17:58	-1858.28	7670.438	4967.82	-1826.35	7642.03	4933.81	-1849.4	7652.944	4953.634
2025/8/1 17:59	-1969.13	7616.122	5005.132	-1937.79	7587.551	4971.391	-1960.62	7598.433	4991.07
2025/8/1 18:00	-2079.6	7560.357	5041.491	-2048.86	7531.607	5008.011	-2071.46	7542.469	5027.552
2025/8/1 18:01	-2189.67	7503.152	5076.89	-2159.54	7474.207	5043.664	-2181.91	7485.062	5063.073
2025/8/1 18:02	-2299.33	7444.518	5111.321	-2269.8	7415.362	5078.342	-2291.94	7426.222	5097.625
2025/8/1 18:03	-2408.55	7384.465	5144.778	-2379.62	7355.082	5112.038	-2401.54	7365.959	5131.2
2025/8/1 18:04	-2517.31	7323.003	5177.254	-2488.98	7293.379	5144.744	-2510.67	7304.284	5163.792
2025/8/1 18:05	-2625.59	7260.144	5208.742	-2597.86	7230.262	5176.453	-2619.32	7241.209	5195.393
2025/8/1 18:06	-2733.36	7195.899	5239.235	-2706.23	7165.743	5207.16	-2727.47	7176.744	5225.998
2025/8/1 18:07	-2840.62	7130.279	5268.727	-2814.08	7099.835	5236.856	-2835.09	7110.901	5255.6
2025/8/1 18:08	-2947.33	7063.296	5297.212	-2921.39	7032.549	5265.536	-2942.17	7043.693	5284.191
2025/8/1 18:09	-3053.48	6994.963	5324.684	-3028.13	6963.897	5293.194	-3048.69	6975.131	5311.767
2025/8/1 18:10	-3159.04	6925.291	5351.137	-3134.27	6893.892	5319.824	-3154.61	6905.228	5338.322
2025/8/1 18:11	-3264	6854.293	5376.566	-3239.81	6822.546	5345.419	-3259.93	6833.997	5363.849
2025/8/1 18:12	-3368.33	6781.982	5400.965	-3344.72	6749.874	5369.975	-3364.62	6761.45	5388.343
2025/8/1 18:13	-3472.02	6708.371	5424.328	-3448.98	6675.887	5393.485	-3468.66	6687.602	5411.799
2025/8/1 18:14	-3575.04	6633.474	5446.651	-3552.57	6600.601	5415.946	-3572.04	6612.465	5434.212
2025/8/1 18:15	-3677.38	6557.304	5467.929	-3655.47	6524.028	5437.351	-3674.72	6536.054	5455.576
2025/8/1 18:16	-3779.01	6479.876	5488.158	-3757.65	6446.184	5457.696	-3776.69	6458.383	5475.888
2025/8/1 18:17	-3879.91	6401.202	5507.332	-3859.1	6367.082	5476.977	-3877.93	6379.466	5495.143
2025/8/1 18:18	-3980.07	6321.299	5525.448	-3959.8	6286.738	5495.189	-3978.42	6299.318	5513.336
2025/8/1 18:19	-4079.47	6240.181	5542.502	-4059.72	6205.166	5512.328	-4078.15	6217.953	5530.463
2025/8/1 18:20	-4178.07	6157.862	5558.489	-4158.85	6122.382	5528.39	-4177.08	6135.387	5546.521
2025/8/1 18:21	-4275.88	6074.358	5573.407	-4257.17	6038.402	5543.371	-4275.2	6051.636	5561.506
2025/8/1 18:22	-4372.86	5989.684	5587.251	-4354.65	5953.24	5557.269	-4372.49	5966.715	5575.414
2025/8/1 18:23	-4469	5903.857	5600.019	-4451.29	5866.915	5570.079	-4468.94	5880.64	5588.242
2025/8/1 18:24	-4564.27	5816.891	5611.708	-4547.05	5779.44	5581.799	-4564.52	5793.427	5599.988
2025/8/1 18:25	-4658.67	5728.804	5622.314	-4641.92	5690.835	5592.426	-4659.21	5705.092	5610.648
2025/8/1 18:26	-4752.17	5639.612	5631.835	-4735.88	5601.114	5601.957	-4753	5615.653	5620.22
2025/8/1 18:27	-4844.75	5549.331	5640.27	-4828.91	5510.296	5610.391	-4845.86	5525.126	5628.702
2025/8/1 18:28	-4936.39	5457.978	5647.615	-4921	5418.397	5617.724	-4937.78	5433.529	5636.091
2025/8/1 18:29	-5027.09	5365.571	5653.869	-5012.12	5325.436	5623.955	-5028.74	5340.878	5642.386
2025/8/1 18:30	-5116.8	5272.127	5659.03	-5102.26	5231.429	5629.082	-5118.73	5247.191	5647.585
2025/8/1 18:31	-5205.53	5177.664	5663.097	-5191.39	5136.396	5633.104	-5207.71	5152.487	5651.686
2025/8/1 18:32	-5293.26	5082.198	5666.068	-5279.5	5040.354	5636.02	-5295.69	5056.782	5654.689
2025/8/1 18:33	-5379.96	4985.75	5667.943	-5366.58	4943.322	5637.828	-5382.63	4960.096	5656.592
2025/8/1 18:34	-5465.61	4888.335	5668.72	-5452.6	4845.318	5638.527	-5468.52	4862.447	5657.394
2025/8/1 18:35	-5550.21	4789.974	5668.398	-5537.55	4746.362	5638.118	-5553.35	4763.853	5657.096
2025/8/1 18:36	-5633.73	4690.685	5666.979	-5621.41	4646.472	5636.6	-5637.09	4664.334	5655.696
2025/8/1 18:37	-5716.16	4590.486	5664.46	-5704.16	4545.668	5633.972	-5719.74	4563.908	5653.195
2025/8/1 18:38	-5797.48	4489.397	5660.843	-5785.79	4443.97	5630.236	-5801.27	4462.595	5649.593
2025/8/1 18:39	-5877.68	4387.437	5656.128	-5866.28	4341.396	5625.39	-5881.66	4360.414	5644.89
2025/8/1 18:40	-5956.73	4284.626	5650.315	-5945.62	4237.968	5619.437	-5960.91	4257.385	5639.086
2025/8/1 18:41	-6034.63	4180.982	5643.404	-6023.78	4133.705	5612.376	-6039	4153.528	5632.183
2025/8/1 18:42	-6111.36	4076.526	5635.398	-6100.75	4028.628	5604.209	-6115.9	4048.863	5624.182
2025/8/1 18:43	-6186.9	3971.279	5626.296	-6176.53	3922.757	5594.937	-6191.62	3943.409	5615.083
2025/8/1 18:44	-6261.23	3865.259	5616.101	-6251.08	3816.112	5584.561	-6266.12	3837.188	5604.889
2025/8/1 18:45	-6334.35	3758.488	5604.813	-6324.4	3708.715	5573.084	-6339.4	3730.22	5593.601
2025/8/1 18:46	-6406.24	3650.985	5592.435	-6396.47	3600.586	5560.507	-6411.43	3622.526	5581.221
2025/8/1 18:47	-6476.88	3542.772	5578.969	-6467.28	3491.747	5546.832	-6482.22	3514.126	5567.751
2025/8/1 18:48	-6546.26	3433.87	5564.417	-6536.81	3382.219	5532.063	-6551.74	3405.041	5553.194

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 18:49	-6614.36	3324.299	5548.782	-6605.05	3272.023	5516.201	-6619.97	3295.293	5537.551
2025/8/1 18:50	-6681.18	3214.081	5532.065	-6671.98	3161.182	5499.249	-6686.91	3184.903	5520.828
2025/8/1 18:51	-6746.69	3103.236	5514.271	-6737.6	3049.716	5481.211	-6752.55	3073.893	5503.025
2025/8/1 18:52	-6810.89	2991.786	5495.402	-6801.88	2937.648	5462.09	-6816.86	2962.284	5484.146
2025/8/1 18:53	-6873.76	2879.754	5475.462	-6864.82	2825	5441.89	-6879.83	2850.097	5464.196
2025/8/1 18:54	-6935.29	2767.159	5454.454	-6926.41	2711.794	5420.614	-6941.46	2737.355	5443.177
2025/8/1 18:55	-6995.47	2654.025	5432.382	-6986.62	2598.052	5398.266	-7001.74	2624.079	5421.094
2025/8/1 18:56	-7054.28	2540.374	5409.25	-7045.45	2483.797	5374.851	-7060.64	2510.293	5397.951
2025/8/1 18:57	-7111.72	2426.226	5385.062	-7102.89	2369.051	5350.373	-7118.16	2396.017	5373.753
2025/8/1 18:58	-7167.77	2311.605	5359.823	-7158.92	2253.836	5324.837	-7174.28	2281.274	5348.503
2025/8/1 18:59	-7222.42	2196.532	5333.537	-7213.54	2138.177	5298.248	-7229	2166.087	5322.206
2025/8/1 19:00	-7275.66	2081.031	5306.21	-7266.73	2022.094	5270.611	-7282.3	2050.477	5294.869
2025/8/1 19:01	-7327.47	1965.123	5277.846	-7318.48	1905.612	5241.931	-7334.18	1934.469	5266.496
2025/8/1 19:02	-7377.86	1848.831	5248.451	-7368.79	1788.754	5212.214	-7384.62	1818.084	5237.092
2025/8/1 19:03	-7426.8	1732.177	5218.031	-7417.63	1671.542	5181.465	-7433.62	1701.344	5206.663
2025/8/1 19:04	-7474.29	1615.185	5186.59	-7465.01	1553.999	5149.692	-7481.16	1584.274	5175.216
2025/8/1 19:05	-7520.32	1497.878	5154.135	-7510.91	1436.149	5116.899	-7527.23	1466.896	5142.755
2025/8/1 19:06	-7564.88	1380.277	5120.672	-7555.32	1318.016	5083.094	-7571.83	1349.232	5109.289
2025/8/1 19:07	-7607.96	1262.406	5086.208	-7598.24	1199.622	5048.283	-7614.94	1231.306	5074.822
2025/8/1 19:08	-7649.56	1144.289	5050.748	-7639.66	1080.99	5012.473	-7656.56	1113.141	5039.362
2025/8/1 19:09	-7689.65	1025.948	5014.301	-7679.56	962.1457	4975.671	-7696.69	994.7604	5002.916
2025/8/1 19:10	-7728.24	907.4055	4976.872	-7717.94	843.1109	4937.885	-7735.3	876.1867	4965.491
2025/8/1 19:11	-7765.32	788.6858	4938.47	-7754.79	723.9097	4899.121	-7772.4	757.4435	4927.095
2025/8/1 19:12	-7800.88	669.8117	4899.1	-7790.11	604.5655	4859.388	-7807.98	638.5539	4887.734
2025/8/1 19:13	-7834.91	550.8066	4858.772	-7823.89	485.102	4818.693	-7842.03	519.5414	4847.416
2025/8/1 19:14	-7867.41	431.6935	4817.492	-7856.12	365.5429	4777.045	-7874.54	400.4291	4806.15
2025/8/1 19:15	-7898.36	312.496	4775.269	-7886.8	245.9118	4734.452	-7905.51	281.2405	4763.944
2025/8/1 19:16	-7927.77	193.2372	4732.111	-7915.91	126.2324	4690.922	-7934.93	161.9988	4720.806
2025/8/1 19:17	-7955.63	73.9406	4688.026	-7943.46	6.5283	4646.465	-7962.79	42.72745	4676.744
2025/8/1 19:18	-7981.93	-45.3705	4643.023	-7969.44	-113.177	4601.088	-7989.1	-76.5502	4631.767
2025/8/1 19:19	-8006.67	-164.673	4597.111	-7993.84	-232.859	4554.802	-8013.84	-195.811	4585.884
2025/8/1 19:20	-8029.84	-283.943	4550.298	-8016.66	-352.495	4507.615	-8037.02	-315.031	4539.104
2025/8/1 19:21	-8051.43	-403.157	4502.593	-8037.89	-472.061	4459.536	-8058.62	-434.188	4491.437
2025/8/1 19:22	-8071.45	-522.292	4454.007	-8057.54	-591.533	4410.576	-8078.64	-553.257	4442.892
2025/8/1 19:23	-8089.89	-641.326	4404.548	-8075.59	-710.888	4360.745	-8097.08	-672.216	4393.478
2025/8/1 19:24	-8106.74	-760.233	4354.226	-8092.05	-830.102	4310.051	-8113.94	-791.042	4343.205
2025/8/1 19:25	-8122	-878.992	4303.05	-8106.9	-949.152	4258.506	-8129.2	-909.711	4292.083
2025/8/1 19:26	-8135.67	-997.578	4251.032	-8120.16	-1068.01	4206.12	-8142.88	-1028.2	4240.122
2025/8/1 19:27	-8147.75	-1115.97	4198.181	-8131.81	-1186.66	4152.903	-8154.97	-1146.48	4187.333
2025/8/1 19:28	-8158.23	-1234.14	4144.507	-8141.85	-1305.08	4098.866	-8165.46	-1264.54	4133.726
2025/8/1 19:29	-8167.12	-1352.07	4090.021	-8150.29	-1423.24	4044.02	-8174.35	-1382.35	4079.312
2025/8/1 19:30	-8174.4	-1469.74	4034.734	-8157.12	-1541.12	3988.375	-8181.65	-1499.89	4024.101
2025/8/1 19:31	-8180.08	-1587.12	3978.657	-8162.34	-1658.69	3931.944	-8187.34	-1617.13	3968.105
2025/8/1 19:32	-8184.16	-1704.18	3921.8	-8165.95	-1775.93	3874.737	-8191.44	-1734.06	3911.334
2025/8/1 19:33	-8186.64	-1820.92	3864.174	-8167.95	-1892.83	3816.766	-8193.93	-1850.64	3853.799
2025/8/1 19:34	-8187.51	-1937.29	3805.792	-8168.33	-2009.35	3758.042	-8194.83	-1966.86	3795.513
2025/8/1 19:35	-8186.78	-2053.29	3746.664	-8167.11	-2125.47	3698.578	-8194.12	-2082.69	3736.487
2025/8/1 19:36	-8184.44	-2168.88	3686.803	-8164.28	-2241.18	3638.385	-8191.81	-2198.12	3676.732
2025/8/1 19:37	-8180.51	-2284.05	3626.219	-8159.84	-2356.44	3577.475	-8187.91	-2313.11	3616.26
2025/8/1 19:38	-8174.97	-2398.78	3564.925	-8153.79	-2471.24	3515.86	-8182.4	-2427.65	3555.083
2025/8/1 19:39	-8167.83	-2513.03	3502.933	-8146.13	-2585.55	3453.554	-8175.3	-2541.71	3493.214
2025/8/1 19:40	-8159.09	-2626.79	3440.256	-8136.87	-2699.35	3390.567	-8166.61	-2655.28	3430.664
2025/8/1 19:41	-8148.75	-2740.04	3376.904	-8126.02	-2812.62	3326.914	-8156.32	-2768.32	3367.446
2025/8/1 19:42	-8136.82	-2852.75	3312.892	-8113.56	-2925.34	3262.607	-8144.44	-2880.82	3303.572
2025/8/1 19:43	-8123.3	-2964.9	3248.232	-8099.51	-3037.49	3197.658	-8130.97	-2992.76	3239.056
2025/8/1 19:44	-8108.19	-3076.47	3182.935	-8083.86	-3149.03	3132.081	-8115.92	-3104.12	3173.909
2025/8/1 19:45	-8091.49	-3187.45	3117.016	-8066.63	-3259.96	3065.889	-8099.28	-3214.86	3108.146
2025/8/1 19:46	-8073.21	-3297.79	3050.488	-8047.81	-3370.24	2999.094	-8081.07	-3324.98	3041.777
2025/8/1 19:47	-8053.35	-3407.5	2983.362	-8027.42	-3479.87	2931.711	-8061.29	-3434.45	2974.818
2025/8/1 19:48	-8031.91	-3516.53	2915.654	-8005.44	-3588.81	2863.753	-8039.93	-3543.24	2907.281
2025/8/1 19:49	-8008.9	-3624.88	2847.375	-7981.9	-3697.04	2795.233	-8017.02	-3651.35	2839.179
2025/8/1 19:50	-7984.33	-3732.52	2778.539	-7956.79	-3804.55	2726.166	-7992.54	-3758.74	2770.526
2025/8/1 19:51	-7958.2	-3839.43	2709.161	-7930.13	-3911.32	2656.564	-7966.5	-3865.4	2701.335

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 19:52	-7930.52	-3945.59	2639.253	-7901.91	-4017.32	2586.442	-7938.92	-3971.3	2631.62
2025/8/1 19:53	-7901.28	-4050.98	2568.829	-7872.14	-4122.53	2515.813	-7909.8	-4076.43	2561.395
2025/8/1 19:54	-7870.5	-4155.58	2497.904	-7840.83	-4226.94	2444.693	-7879.13	-4180.77	2490.673
2025/8/1 19:55	-7838.19	-4259.37	2426.491	-7807.99	-4330.51	2373.094	-7846.94	-4284.29	2419.469
2025/8/1 19:56	-7804.34	-4362.32	2354.604	-7773.62	-4433.24	2301.031	-7813.22	-4386.97	2347.796
2025/8/1 19:57	-7768.97	-4464.43	2282.258	-7737.74	-4535.11	2228.519	-7777.99	-4488.81	2275.668
2025/8/1 19:58	-7732.09	-4565.66	2209.466	-7700.34	-4636.09	2155.572	-7741.25	-4589.76	2203.1
2025/8/1 19:59	-7693.7	-4666.01	2136.243	-7661.43	-4736.16	2082.204	-7703	-4689.83	2130.106
2025/8/1 20:00	-7653.8	-4765.44	2062.604	-7621.04	-4835.31	2008.43	-7663.26	-4788.98	2056.7
2025/8/1 20:01	-7612.42	-4863.95	1988.562	-7579.15	-4933.51	1934.264	-7622.04	-4887.2	1982.896
2025/8/1 20:02	-7569.55	-4961.5	1914.133	-7535.79	-5030.76	1859.722	-7579.34	-4984.48	1908.71
2025/8/1 20:03	-7525.21	-5058.09	1839.331	-7490.96	-5127.02	1784.817	-7535.17	-5080.78	1834.154
2025/8/1 20:04	-7479.4	-5153.7	1764.171	-7444.68	-5222.28	1709.565	-7489.54	-5176.1	1759.245
2025/8/1 20:05	-7432.14	-5248.3	1688.667	-7396.94	-5316.53	1633.98	-7442.46	-5270.41	1683.997
2025/8/1 20:06	-7383.42	-5341.88	1612.834	-7347.77	-5409.74	1558.078	-7393.94	-5363.7	1608.423
2025/8/1 20:07	-7333.28	-5434.42	1536.688	-7297.16	-5501.9	1481.873	-7343.99	-5455.95	1532.54
2025/8/1 20:08	-7281.7	-5525.9	1460.243	-7245.14	-5593	1405.38	-7292.62	-5547.14	1456.361
2025/8/1 20:09	-7228.71	-5616.31	1383.513	-7191.71	-5683	1328.615	-7239.83	-5637.26	1379.902
2025/8/1 20:10	-7174.32	-5705.63	1306.515	-7136.89	-5771.91	1251.592	-7185.65	-5726.29	1303.177
2025/8/1 20:11	-7118.53	-5793.84	1229.262	-7080.68	-5859.69	1174.326	-7130.09	-5814.21	1226.201
2025/8/1 20:12	-7061.36	-5880.93	1151.771	-7023.1	-5946.34	1096.833	-7073.14	-5901	1148.989
2025/8/1 20:13	-7002.81	-5966.87	1074.056	-6964.17	-6031.83	1019.127	-7014.83	-5986.65	1071.557
2025/8/1 20:14	-6942.91	-6051.65	996.133	-6903.88	-6116.16	941.2246	-6955.16	-6071.14	993.9186
2025/8/1 20:15	-6881.66	-6135.26	918.0163	-6842.25	-6199.3	863.1401	-6894.16	-6154.46	916.0892
2025/8/1 20:16	-6819.08	-6217.68	839.7215	-6779.31	-6281.25	784.8889	-6831.82	-6236.59	838.0839
2025/8/1 20:17	-6755.17	-6298.9	761.2639	-6715.05	-6361.98	706.4862	-6768.16	-6317.52	759.9177
2025/8/1 20:18	-6689.96	-6378.89	682.6587	-6649.5	-6441.48	627.9473	-6703.21	-6397.23	681.6056
2025/8/1 20:19	-6623.45	-6457.65	603.9212	-6582.66	-6519.74	549.2874	-6636.96	-6475.71	603.1627
2025/8/1 20:20	-6555.66	-6535.16	525.0667	-6514.56	-6596.75	470.5217	-6569.43	-6552.93	524.604
2025/8/1 20:21	-6486.6	-6611.41	446.1106	-6445.2	-6672.48	391.6655	-6500.63	-6628.9	445.9447
2025/8/1 20:22	-6416.28	-6686.37	367.0681	-6374.6	-6746.92	312.734	-6430.59	-6703.58	367.1998
2025/8/1 20:23	-6344.72	-6760.04	287.9545	-6302.77	-6820.07	233.7426	-6359.31	-6776.98	288.3844
2025/8/1 20:24	-6271.94	-6832.41	208.7853	-6229.73	-6891.9	154.7063	-6286.8	-6849.07	209.5136
2025/8/1 20:25	-6197.94	-6903.46	129.5756	-6155.49	-6962.41	75.64053	-6213.09	-6919.85	130.6024
2025/8/1 20:26	-6122.75	-6973.17	50.34088	-6080.07	-7031.58	-3.43961	-6138.18	-6989.3	51.666
2025/8/1 20:27	-6046.38	-7041.54	-28.9036	-6003.49	-7099.41	-82.5189	-6062.09	-7057.4	-27.2807
2025/8/1 20:28	-5968.84	-7108.55	-108.143	-5925.75	-7165.87	-161.582	-5984.84	-7124.15	-106.222
2025/8/1 20:29	-5890.15	-7174.19	-187.361	-5846.88	-7230.95	-240.614	-5906.44	-7189.53	-185.144
2025/8/1 20:30	-5810.32	-7238.44	-266.543	-5766.88	-7294.65	-319.6	-5826.91	-7253.53	-264.031
2025/8/1 20:31	-5729.38	-7301.3	-345.674	-5685.79	-7356.96	-398.525	-5746.25	-7316.15	-342.869
2025/8/1 20:32	-5647.33	-7362.76	-424.738	-5603.6	-7417.85	-477.373	-5664.5	-7377.36	-421.641
2025/8/1 20:33	-5564.19	-7422.8	-503.721	-5520.35	-7477.33	-556.129	-5581.66	-7437.16	-500.333
2025/8/1 20:34	-5479.99	-7481.41	-582.607	-5436.04	-7535.38	-634.779	-5497.75	-7495.54	-578.931
2025/8/1 20:35	-5394.73	-7538.58	-661.381	-5350.69	-7592	-713.308	-5412.79	-7552.48	-657.418
2025/8/1 20:36	-5308.43	-7594.3	-740.028	-5264.32	-7647.16	-791.701	-5326.79	-7607.98	-735.782
2025/8/1 20:37	-5221.12	-7648.57	-818.532	-5176.95	-7700.87	-869.942	-5239.78	-7662.03	-814.006
2025/8/1 20:38	-5132.8	-7701.37	-896.88	-5088.59	-7753.11	-948.018	-5151.76	-7714.61	-892.075
2025/8/1 20:39	-5043.49	-7752.69	-975.056	-4999.27	-7803.87	-1025.91	-5062.75	-7765.72	-969.976
2025/8/1 20:40	-4953.22	-7802.52	-1053.04	-4909	-7853.15	-1103.61	-4972.78	-7815.35	-1047.69
2025/8/1 20:41	-4862.01	-7850.86	-1130.83	-4817.79	-7900.94	-1181.1	-4881.86	-7863.49	-1125.21
2025/8/1 20:42	-4769.86	-7897.69	-1208.4	-4725.66	-7947.22	-1258.37	-4790	-7910.13	-1202.52
2025/8/1 20:43	-4676.79	-7943.01	-1285.74	-4632.65	-7992	-1335.39	-4697.23	-7955.27	-1279.59
2025/8/1 20:44	-4582.83	-7986.82	-1362.83	-4538.75	-8035.26	-1412.17	-4603.57	-7998.89	-1356.43
2025/8/1 20:45	-4488	-8029.09	-1439.67	-4443.99	-8077	-1488.67	-4509.03	-8041	-1433.01
2025/8/1 20:46	-4392.31	-8069.83	-1516.22	-4348.39	-8117.21	-1564.89	-4413.63	-8081.57	-1509.32
2025/8/1 20:47	-4295.77	-8109.03	-1592.49	-4251.97	-8155.89	-1640.82	-4317.38	-8120.61	-1585.34
2025/8/1 20:48	-4198.42	-8146.68	-1668.46	-4154.75	-8193.02	-1716.44	-4220.32	-8158.1	-1661.06
2025/8/1 20:49	-4100.27	-8182.78	-1744.1	-4056.74	-8228.6	-1791.73	-4122.45	-8194.05	-1736.47
2025/8/1 20:50	-4001.33	-8217.32	-1819.42	-3957.96	-8262.63	-1866.68	-4023.8	-8228.44	-1811.56
2025/8/1 20:51	-3901.64	-8250.29	-1894.38	-3858.44	-8295.11	-1941.28	-3924.38	-8261.27	-1886.29
2025/8/1 20:52	-3801.19	-8281.68	-1968.99	-3758.2	-8326.01	-2015.52	-3824.21	-8292.54	-1960.68
2025/8/1 20:53	-3700.03	-8311.51	-2043.22	-3657.24	-8355.35	-2089.37	-3723.32	-8322.24	-2034.69
2025/8/1 20:54	-3598.16	-8339.75	-2117.06	-3555.6	-8383.12	-2162.83	-3621.72	-8350.36	-2108.32

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 20:55	-3495.61	-8366.4	-2190.5	-3453.28	-8409.31	-2235.89	-3519.44	-8376.9	-2181.55
2025/8/1 20:56	-3392.39	-8391.47	-2263.52	-3350.32	-8433.92	-2308.52	-3416.48	-8401.85	-2254.37
2025/8/1 20:57	-3288.53	-8414.94	-2336.12	-3246.73	-8456.95	-2380.72	-3312.88	-8425.22	-2326.77
2025/8/1 20:58	-3184.04	-8436.82	-2408.27	-3142.54	-8478.39	-2452.47	-3208.65	-8447	-2398.73
2025/8/1 20:59	-3078.96	-8457.09	-2479.96	-3037.75	-8498.23	-2523.77	-3103.81	-8467.18	-2470.24
2025/8/1 21:00	-2973.28	-8475.76	-2551.19	-2932.39	-8516.49	-2594.59	-2998.39	-8485.77	-2541.28
2025/8/1 21:01	-2867.04	-8492.83	-2621.93	-2826.49	-8533.15	-2664.92	-2892.39	-8502.75	-2611.84
2025/8/1 21:02	-2760.27	-8508.28	-2692.17	-2720.05	-8548.22	-2734.76	-2785.85	-8518.13	-2681.92
2025/8/1 21:03	-2652.96	-8522.13	-2761.9	-2613.11	-8561.68	-2804.08	-2678.78	-8531.9	-2751.48
2025/8/1 21:04	-2545.16	-8534.36	-2831.12	-2505.68	-8573.55	-2872.88	-2571.21	-8544.07	-2820.54
2025/8/1 21:05	-2436.87	-8544.99	-2899.79	-2397.79	-8583.82	-2941.14	-2463.14	-8554.63	-2889.06
2025/8/1 21:06	-2328.13	-8553.99	-2967.92	-2289.44	-8592.48	-3008.86	-2354.62	-8563.58	-2957.04
2025/8/1 21:07	-2218.94	-8561.39	-3035.49	-2180.67	-8599.55	-3076.01	-2245.64	-8570.92	-3024.46
2025/8/1 21:08	-2109.34	-8567.17	-3102.49	-2071.5	-8605.01	-3142.59	-2136.24	-8576.65	-3091.32
2025/8/1 21:09	-1999.34	-8571.33	-3168.9	-1961.93	-8608.87	-3208.58	-2026.44	-8580.76	-3157.6
2025/8/1 21:10	-1888.96	-8573.88	-3234.71	-1852.01	-8611.13	-3273.98	-1916.26	-8583.27	-3223.29
2025/8/1 21:11	-1778.23	-8574.81	-3299.92	-1741.74	-8611.79	-3338.77	-1805.71	-8584.16	-3288.37
2025/8/1 21:12	-1667.16	-8574.13	-3364.5	-1631.15	-8610.85	-3402.94	-1694.83	-8583.44	-3352.84
2025/8/1 21:13	-1555.78	-8571.84	-3428.45	-1520.25	-8608.31	-3466.48	-1583.62	-8581.12	-3416.68
2025/8/1 21:14	-1444.1	-8567.93	-3491.76	-1409.08	-8604.17	-3529.37	-1472.12	-8577.18	-3479.88
2025/8/1 21:15	-1332.16	-8562.42	-3554.41	-1297.64	-8598.44	-3591.61	-1360.33	-8571.64	-3542.43
2025/8/1 21:16	-1219.96	-8555.3	-3616.39	-1185.96	-8591.12	-3653.18	-1248.29	-8564.49	-3604.31
2025/8/1 21:17	-1107.54	-8546.57	-3677.7	-1074.07	-8582.21	-3714.08	-1136.02	-8555.74	-3665.53
2025/8/1 21:18	-994.903	-8536.24	-3738.32	-961.973	-8571.71	-3774.29	-1023.53	-8545.39	-3726.06
2025/8/1 21:19	-882.084	-8524.31	-3798.23	-849.702	-8559.63	-3833.81	-910.842	-8533.44	-3785.89
2025/8/1 21:20	-769.1	-8510.79	-3857.44	-737.274	-8545.97	-3892.61	-797.985	-8519.9	-3845.02
2025/8/1 21:21	-655.971	-8495.67	-3915.92	-624.71	-8530.73	-3950.7	-684.978	-8504.76	-3903.43
2025/8/1 21:22	-542.72	-8478.96	-3973.67	-512.032	-8513.91	-4008.06	-571.841	-8488.04	-3961.11
2025/8/1 21:23	-429.368	-8460.67	-4030.67	-399.26	-8495.53	-4064.67	-458.595	-8469.73	-4018.06
2025/8/1 21:24	-315.935	-8440.8	-4086.93	-286.415	-8475.59	-4120.54	-345.261	-8449.84	-4074.25
2025/8/1 21:25	-202.444	-8419.35	-4142.42	-173.517	-8454.08	-4175.66	-231.861	-8428.38	-4129.69
2025/8/1 21:26	-88.914	-8396.33	-4197.14	-60.5884	-8431.02	-4230	-118.416	-8405.35	-4184.36
2025/8/1 21:27	24.63218	-8371.75	-4251.07	52.35128	-8406.41	-4283.57	-4.94701	-8380.75	-4238.25
2025/8/1 21:28	138.1738	-8345.6	-4304.22	165.2809	-8380.26	-4336.35	108.5252	-8354.59	-4291.36
2025/8/1 21:29	251.6897	-8317.9	-4356.56	278.1798	-8352.57	-4388.33	221.9791	-8326.87	-4343.66
2025/8/1 21:30	365.1588	-8288.66	-4408.09	391.0273	-8323.35	-4439.51	335.3938	-8297.61	-4395.16
2025/8/1 21:31	478.56	-8257.87	-4458.8	503.8027	-8292.6	-4489.87	448.7482	-8266.8	-4445.84
2025/8/1 21:32	591.8722	-8225.55	-4508.68	616.4854	-8260.33	-4539.42	562.0211	-8234.45	-4495.7
2025/8/1 21:33	705.0746	-8191.69	-4557.73	729.055	-8226.55	-4588.13	675.1917	-8200.58	-4544.72
2025/8/1 21:34	818.146	-8156.32	-4605.93	841.4908	-8191.27	-4636	788.2388	-8165.18	-4592.9
2025/8/1 21:35	931.0657	-8119.44	-4653.27	953.7724	-8154.49	-4683.02	901.1417	-8128.27	-4640.23
2025/8/1 21:36	1043.813	-8081.04	-4699.75	1065.879	-8116.22	-4729.19	1013.879	-8089.85	-4686.7
2025/8/1 21:37	1156.366	-8041.15	-4745.36	1177.792	-8076.47	-4774.5	1126.431	-8049.93	-4732.3
2025/8/1 21:38	1268.706	-7999.78	-4790.09	1289.488	-8035.24	-4818.93	1238.776	-8008.52	-4777.03
2025/8/1 21:39	1380.81	-7956.92	-4833.94	1400.95	-7992.55	-4862.49	1350.894	-7965.62	-4820.87
2025/8/1 21:40	1492.66	-7912.59	-4876.89	1512.156	-7948.4	-4905.15	1462.763	-7921.25	-4863.82
2025/8/1 21:41	1604.233	-7866.79	-4918.94	1623.086	-7902.81	-4946.93	1574.364	-7875.41	-4905.87
2025/8/1 21:42	1715.51	-7819.54	-4960.08	1733.721	-7855.78	-4987.8	1685.675	-7828.11	-4947.02
2025/8/1 21:43	1826.47	-7770.85	-5000.3	1844.04	-7807.31	-5027.77	1796.677	-7779.37	-4987.25
2025/8/1 21:44	1937.093	-7720.72	-5039.6	1954.023	-7757.43	-5066.83	1907.349	-7729.19	-5026.56
2025/8/1 21:45	2047.358	-7669.17	-5077.97	2063.652	-7706.14	-5104.96	2017.67	-7677.58	-5064.94
2025/8/1 21:46	2157.247	-7616.21	-5115.41	2172.906	-7653.45	-5142.16	2127.621	-7624.55	-5102.39
2025/8/1 21:47	2266.738	-7561.84	-5151.9	2281.765	-7599.37	-5178.44	2237.181	-7570.11	-5138.89
2025/8/1 21:48	2375.811	-7506.08	-5187.44	2390.21	-7543.92	-5213.77	2346.331	-7514.28	-5174.45
2025/8/1 21:49	2484.447	-7448.94	-5222.03	2498.222	-7487.09	-5248.16	2455.049	-7457.06	-5209.06
2025/8/1 21:50	2592.626	-7390.43	-5255.66	2605.781	-7428.91	-5281.6	2563.317	-7398.46	-5242.7
2025/8/1 21:51	2700.329	-7330.56	-5288.32	2712.868	-7369.38	-5314.08	2671.115	-7338.5	-5275.39
2025/8/1 21:52	2807.536	-7269.34	-5320.01	2819.465	-7308.53	-5345.6	2778.423	-7277.19	-5307.1
2025/8/1 21:53	2914.227	-7206.79	-5350.73	2925.552	-7246.34	-5376.15	2885.222	-7214.54	-5337.83
2025/8/1 21:54	3020.383	-7142.92	-5380.46	3031.109	-7182.85	-5405.73	2991.492	-7150.56	-5367.58
2025/8/1 21:55	3125.985	-7077.73	-5409.2	3136.12	-7118.06	-5434.33	3097.213	-7085.26	-5396.35
2025/8/1 21:56	3231.015	-7011.25	-5436.96	3240.564	-7051.99	-5461.96	3202.367	-7018.66	-5424.12
2025/8/1 21:57	3335.452	-6943.48	-5463.72	3344.423	-6984.64	-5488.59	3306.935	-6950.77	-5450.9

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 21:58	3439.278	-6874.45	-5489.47	3447.679	-6916.03	-5514.24	3410.897	-6881.6	-5476.68
2025/8/1 21:59	3542.475	-6804.15	-5514.22	3550.314	-6846.17	-5538.89	3514.235	-6811.17	-5501.46
2025/8/1 22:00	3645.024	-6732.61	-5537.97	3652.309	-6775.08	-5562.55	3616.929	-6739.48	-5525.22
2025/8/1 22:01	3746.907	-6659.84	-5560.7	3753.646	-6702.77	-5585.2	3718.963	-6666.56	-5547.97
2025/8/1 22:02	3848.105	-6585.85	-5582.41	3854.308	-6629.26	-5606.85	3820.316	-6592.42	-5569.71
2025/8/1 22:03	3948.6	-6510.66	-5603.11	3954.276	-6554.55	-5627.48	3920.971	-6517.06	-5590.42
2025/8/1 22:04	4048.374	-6434.28	-5622.78	4053.534	-6478.66	-5647.11	4020.909	-6440.51	-5610.11
2025/8/1 22:05	4147.409	-6356.72	-5641.43	4152.062	-6401.6	-5665.72	4120.113	-6362.78	-5628.77
2025/8/1 22:06	4245.689	-6278.01	-5659.04	4249.845	-6323.4	-5683.31	4218.565	-6283.88	-5646.41
2025/8/1 22:07	4343.194	-6198.15	-5675.63	4346.865	-6244.05	-5699.88	4316.246	-6203.84	-5663.01
2025/8/1 22:08	4439.908	-6117.17	-5691.18	4443.105	-6163.59	-5715.43	4413.14	-6122.65	-5678.57
2025/8/1 22:09	4535.813	-6035.06	-5705.7	4538.548	-6082.02	-5729.96	4509.229	-6040.35	-5693.1
2025/8/1 22:10	4630.893	-5951.86	-5719.17	4633.177	-5999.36	-5743.45	4604.496	-5956.93	-5706.59
2025/8/1 22:11	4725.13	-5867.58	-5731.61	4726.975	-5915.62	-5755.91	4698.923	-5872.43	-5719.03
2025/8/1 22:12	4818.508	-5782.23	-5743	4819.926	-5830.83	-5767.35	4792.494	-5786.86	-5730.43
2025/8/1 22:13	4911.011	-5695.83	-5753.35	4912.014	-5744.98	-5777.75	4885.192	-5700.23	-5740.79
2025/8/1 22:14	5002.621	-5608.4	-5762.66	5003.223	-5658.11	-5787.11	4977	-5612.55	-5750.09
2025/8/1 22:15	5093.322	-5519.94	-5770.92	5093.536	-5570.22	-5795.44	5067.902	-5523.85	-5758.35
2025/8/1 22:16	5183.099	-5430.49	-5778.13	5182.938	-5481.34	-5802.73	5157.882	-5434.15	-5765.56
2025/8/1 22:17	5271.936	-5340.05	-5784.29	5271.413	-5391.48	-5808.99	5246.924	-5343.45	-5771.72
2025/8/1 22:18	5359.817	-5248.64	-5789.4	5358.945	-5300.65	-5814.2	5335.011	-5251.77	-5776.83
2025/8/1 22:19	5446.726	-5156.28	-5793.47	5445.52	-5208.87	-5818.38	5422.128	-5159.14	-5780.88
2025/8/1 22:20	5532.648	-5062.98	-5796.48	5531.122	-5116.16	-5821.51	5508.26	-5065.56	-5783.88
2025/8/1 22:21	5617.567	-4968.77	-5798.44	5615.735	-5022.54	-5823.61	5593.391	-4971.07	-5785.83
2025/8/1 22:22	5701.47	-4873.66	-5799.36	5699.346	-4928.02	-5824.66	5677.506	-4875.66	-5786.73
2025/8/1 22:23	5784.341	-4777.67	-5799.22	5781.94	-4832.62	-5824.68	5760.59	-4779.37	-5786.58
2025/8/1 22:24	5866.166	-4680.81	-5798.04	5863.502	-4736.36	-5823.65	5842.628	-4682.21	-5785.37
2025/8/1 22:25	5946.929	-4583.11	-5795.81	5944.018	-4639.25	-5821.59	5923.606	-4584.2	-5783.11
2025/8/1 22:26	6026.618	-4484.57	-5792.52	6023.474	-4541.31	-5818.48	6003.51	-4485.35	-5779.8
2025/8/1 22:27	6105.218	-4385.23	-5788.2	6101.855	-4442.57	-5814.34	6082.325	-4385.68	-5775.45
2025/8/1 22:28	6182.714	-4285.1	-5782.82	6179.149	-4343.03	-5809.17	6160.037	-4285.22	-5770.04
2025/8/1 22:29	6259.095	-4184.19	-5776.41	6255.342	-4242.71	-5802.95	6236.632	-4183.98	-5763.59
2025/8/1 22:30	6334.345	-4082.52	-5768.95	6330.42	-4141.64	-5795.71	6312.097	-4081.98	-5756.09
2025/8/1 22:31	6408.453	-3980.12	-5760.45	6404.371	-4039.83	-5787.43	6386.42	-3979.24	-5747.55
2025/8/1 22:32	6481.405	-3877	-5750.91	6477.181	-3937.3	-5778.12	6459.585	-3875.77	-5737.96
2025/8/1 22:33	6553.188	-3773.19	-5740.33	6548.837	-3834.07	-5767.78	6531.581	-3771.6	-5727.34
2025/8/1 22:34	6623.79	-3668.69	-5728.72	6619.328	-3730.16	-5756.41	6602.395	-3666.75	-5715.68
2025/8/1 22:35	6693.198	-3563.53	-5716.07	6688.64	-3625.58	-5744.02	6672.014	-3561.23	-5702.98
2025/8/1 22:36	6761.401	-3457.73	-5702.4	6756.762	-3520.35	-5730.6	6740.426	-3455.07	-5689.25
2025/8/1 22:37	6828.385	-3351.31	-5687.7	6823.682	-3414.5	-5716.17	6807.62	-3348.28	-5674.49
2025/8/1 22:38	6894.141	-3244.28	-5671.98	6889.388	-3308.04	-5700.72	6873.582	-3240.88	-5658.71
2025/8/1 22:39	6958.656	-3136.67	-5655.23	6953.868	-3200.99	-5684.25	6938.302	-3132.9	-5641.9
2025/8/1 22:40	7021.919	-3028.49	-5637.47	7017.112	-3093.37	-5666.77	7001.768	-3024.34	-5624.07
2025/8/1 22:41	7083.918	-2919.78	-5618.69	7079.107	-2985.21	-5648.29	7063.968	-2915.25	-5605.22
2025/8/1 22:42	7144.644	-2810.53	-5598.9	7139.844	-2876.51	-5628.8	7124.893	-2805.62	-5585.36
2025/8/1 22:43	7204.086	-2700.78	-5578.11	7199.311	-2767.29	-5608.31	7184.531	-2695.49	-5564.49
2025/8/1 22:44	7262.232	-2590.55	-5556.31	7257.499	-2657.59	-5586.82	7242.872	-2584.87	-5542.62
2025/8/1 22:45	7319.074	-2479.85	-5533.52	7314.396	-2547.41	-5564.34	7299.905	-2473.78	-5519.75
2025/8/1 22:46	7374.601	-2368.7	-5509.73	7369.993	-2436.78	-5540.87	7355.621	-2362.25	-5495.88
2025/8/1 22:47	7428.804	-2257.13	-5484.95	7424.281	-2325.72	-5516.41	7410.009	-2250.29	-5471.01
2025/8/1 22:48	7481.672	-2145.15	-5459.19	7477.249	-2214.24	-5490.98	7463.061	-2137.92	-5445.17
2025/8/1 22:49	7533.198	-2032.79	-5432.44	7528.888	-2102.37	-5464.56	7514.766	-2025.17	-5418.33
2025/8/1 22:50	7583.371	-1920.07	-5404.73	7579.189	-1990.12	-5437.18	7565.116	-1912.06	-5390.53
2025/8/1 22:51	7632.184	-1806.99	-5376.04	7628.143	-1877.52	-5408.83	7614.102	-1798.6	-5361.75
2025/8/1 22:52	7679.628	-1693.6	-5346.39	7675.742	-1764.59	-5379.52	7661.715	-1684.82	-5332
2025/8/1 22:53	7725.694	-1579.9	-5315.77	7721.977	-1651.34	-5349.25	7707.947	-1570.73	-5301.29
2025/8/1 22:54	7770.374	-1465.92	-5284.21	7766.84	-1537.8	-5318.03	7752.789	-1456.36	-5269.63
2025/8/1 22:55	7813.662	-1351.68	-5251.7	7810.322	-1423.99	-5285.87	7796.235	-1341.73	-5237.02
2025/8/1 22:56	7855.548	-1237.19	-5218.24	7852.417	-1309.92	-5252.77	7838.276	-1226.86	-5203.46
2025/8/1 22:57	7896.027	-1122.48	-5183.85	7893.116	-1195.62	-5218.73	7878.904	-1111.77	-5168.97
2025/8/1 22:58	7935.09	-1007.57	-5148.54	7932.413	-1081.1	-5183.77	7918.114	-996.484	-5133.55
2025/8/1 22:59	7972.732	-892.481	-5112.3	7970.3	-966.396	-5147.88	7955.897	-881.017	-5097.2
2025/8/1 23:00	8008.945	-777.231	-5075.14	8006.771	-851.517	-5111.08	7992.248	-765.393	-5059.94

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/1 23:01	8043.723	-661.841	-5037.07	8041.818	-736.486	-5073.37	8027.159	-649.632	-5021.77
2025/8/1 23:02	8077.061	-546.334	-4998.11	8075.436	-621.324	-5034.76	8060.626	-533.757	-4982.69
2025/8/1 23:03	8108.952	-430.729	-4958.24	8107.618	-506.052	-4995.25	8092.641	-417.787	-4942.71
2025/8/1 23:04	8139.39	-315.046	-4917.49	8138.36	-390.689	-4954.86	8123.2	-301.743	-4901.85
2025/8/1 23:05	8168.372	-199.307	-4875.86	8167.654	-275.256	-4913.59	8152.297	-185.647	-4860.11
2025/8/1 23:06	8195.89	-83.5328	-4833.35	8195.495	-159.774	-4871.44	8179.926	-69.5199	-4817.49
2025/8/1 23:07	8221.942	32.25646	-4789.98	8221.88	-44.2637	-4828.42	8206.084	46.6182	-4774.01
2025/8/1 23:08	8246.521	148.0399	-4745.76	8246.802	71.25515	-4784.55	8230.765	162.746	-4729.67
2025/8/1 23:09	8269.625	263.7968	-4700.68	8270.257	186.7616	-4739.82	8253.966	278.8425	-4684.48
2025/8/1 23:10	8291.248	379.5065	-4654.76	8292.241	302.2352	-4694.25	8275.682	394.8868	-4638.44
2025/8/1 23:11	8311.387	495.1481	-4608.01	8312.749	417.6552	-4647.85	8295.91	510.8581	-4591.58
2025/8/1 23:12	8330.039	610.701	-4560.43	8331.778	533.0013	-4600.61	8314.645	626.7355	-4543.89
2025/8/1 23:13	8347.199	726.1446	-4512.04	8349.323	648.2528	-4552.56	8331.885	742.4981	-4495.38
2025/8/1 23:14	8362.866	841.4581	-4462.84	8365.383	763.3891	-4503.7	8347.627	858.1251	-4446.06
2025/8/1 23:15	8377.036	956.621	-4412.84	8379.952	878.3898	-4454.04	8361.868	973.5957	-4395.95
2025/8/1 23:16	8389.707	1071.613	-4362.05	8393.03	993.2344	-4403.58	8374.606	1088.889	-4345.05
2025/8/1 23:17	8400.877	1186.412	-4310.48	8404.612	1107.902	-4352.34	8385.838	1203.985	-4293.37
2025/8/1 23:18	8410.543	1301	-4258.14	8414.697	1222.373	-4300.32	8395.562	1318.862	-4240.91
2025/8/1 23:19	8418.703	1415.354	-4205.04	8423.282	1336.626	-4247.54	8403.777	1433.5	-4187.7
2025/8/1 23:20	8425.358	1529.455	-4151.19	8430.366	1450.642	-4193.99	8410.482	1547.878	-4133.73
2025/8/1 23:21	8430.504	1643.283	-4096.59	8435.946	1564.398	-4139.71	8415.675	1661.975	-4079.02
2025/8/1 23:22	8434.141	1756.816	-4041.26	8440.022	1677.877	-4084.68	8419.356	1775.772	-4023.58
2025/8/1 23:23	8436.268	1870.034	-3985.2	8442.592	1791.056	-4028.92	8421.523	1889.248	-3967.42
2025/8/1 23:24	8436.886	1982.918	-3928.43	8443.656	1903.916	-3972.45	8422.177	2002.382	-3910.54
2025/8/1 23:25	8435.993	2095.447	-3870.96	8443.213	2016.436	-3915.26	8421.317	2115.154	-3852.97
2025/8/1 23:26	8433.59	2207.6	-3812.8	8441.262	2128.596	-3857.38	8418.944	2227.543	-3794.7
2025/8/1 23:27	8429.677	2319.358	-3753.95	8437.803	2240.377	-3798.8	8415.058	2339.531	-3735.75
2025/8/1 23:28	8424.254	2430.701	-3694.43	8432.837	2351.757	-3739.55	8409.66	2451.096	-3676.13
2025/8/1 23:29	8417.323	2541.608	-3634.25	8426.364	2462.718	-3679.63	8402.75	2562.218	-3615.85
2025/8/1 23:30	8408.885	2652.06	-3573.42	8418.385	2573.239	-3619.05	8394.331	2672.877	-3554.93
2025/8/1 23:31	8398.94	2762.038	-3511.95	8408.901	2683.299	-3557.83	8384.403	2783.055	-3493.36
2025/8/1 23:32	8387.491	2871.52	-3449.85	8397.912	2792.88	-3495.97	8372.969	2892.73	-3431.17
2025/8/1 23:33	8374.539	2980.487	-3387.13	8385.42	2901.962	-3433.48	8360.03	3001.883	-3368.36
2025/8/1 23:34	8360.087	3088.921	-3323.8	8371.427	3010.524	-3370.38	8345.589	3110.495	-3304.95
2025/8/1 23:35	8344.136	3196.801	-3259.88	8355.935	3118.548	-3306.67	8329.648	3218.545	-3240.95
2025/8/1 23:36	8326.69	3304.108	-3195.37	8338.947	3226.013	-3242.37	8312.21	3326.015	-3176.36
2025/8/1 23:37	8307.751	3410.822	-3130.3	8320.463	3332.9	-3177.49	8293.278	3432.886	-3111.21
2025/8/1 23:38	8287.323	3516.925	-3064.66	8300.488	3439.19	-3112.04	8272.856	3539.137	-3045.49
2025/8/1 23:39	8265.409	3622.397	-2998.47	8279.025	3544.863	-3046.03	8250.947	3644.75	-2979.23
2025/8/1 23:40	8242.012	3727.22	-2931.74	8256.075	3649.9	-2979.48	8227.555	3749.706	-2912.44
2025/8/1 23:41	8217.137	3831.374	-2864.49	8231.644	3754.283	-2912.39	8202.684	3853.986	-2845.12
2025/8/1 23:42	8190.787	3934.84	-2796.72	8205.735	3857.992	-2844.78	8176.339	3957.571	-2777.29
2025/8/1 23:43	8162.967	4037.6	-2728.45	8178.351	3961.008	-2776.65	8148.524	4060.442	-2708.97
2025/8/1 23:44	8133.683	4139.635	-2659.69	8149.498	4063.312	-2708.03	8119.244	4162.582	-2640.16
2025/8/1 23:45	8102.937	4240.927	-2590.46	8119.179	4164.886	-2638.92	8088.504	4263.971	-2570.87
2025/8/1 23:46	8070.737	4341.457	-2520.76	8087.4	4265.711	-2569.33	8056.309	4364.591	-2501.12
2025/8/1 23:47	8037.087	4441.207	-2450.6	8054.165	4365.769	-2499.29	8022.666	4464.424	-2430.93
2025/8/1 23:48	8001.993	4540.159	-2380.01	8019.48	4465.041	-2428.79	7987.58	4563.452	-2360.3
2025/8/1 23:49	7965.462	4638.295	-2308.99	7983.35	4563.508	-2357.85	7951.058	4661.657	-2289.24
2025/8/1 23:50	7927.498	4735.598	-2237.55	7945.782	4661.154	-2286.49	7913.105	4759.022	-2217.77
2025/8/1 23:51	7888.109	4832.049	-2165.71	7906.781	4757.959	-2214.72	7873.728	4855.528	-2145.91
2025/8/1 23:52	7847.301	4927.63	-2093.48	7866.353	4853.907	-2142.55	7832.935	4951.159	-2073.66
2025/8/1 23:53	7805.081	5022.326	-2020.88	7824.506	4948.978	-2069.99	7790.732	5045.896	-2001.04
2025/8/1 23:54	7761.457	5116.117	-1947.91	7781.245	5043.156	-1997.05	7747.127	5139.723	-1928.06
2025/8/1 23:55	7716.436	5208.987	-1874.59	7736.579	5136.423	-1923.76	7702.128	5232.623	-1854.74
2025/8/1 23:56	7670.025	5300.919	-1800.93	7690.514	5228.762	-1850.12	7655.742	5324.578	-1781.08
2025/8/1 23:57	7622.233	5391.897	-1726.95	7643.058	5320.156	-1776.14	7607.977	5415.573	-1707.1
2025/8/1 23:58	7573.067	5481.902	-1652.66	7594.219	5410.587	-1701.84	7558.843	5505.59	-1632.81
2025/8/1 23:59	7522.537	5570.92	-1578.07	7544.005	5500.039	-1627.23	7508.347	5594.614	-1558.23
2025/8/2 0:00	7470.65	5658.933	-1503.19	7492.424	5588.494	-1552.33	7456.498	5682.627	-1483.38
2025/8/2 0:01	7417.416	5745.926	-1428.04	7439.485	5675.937	-1477.15	7403.306	5769.614	-1408.25
2025/8/2 0:02	7362.844	5831.881	-1352.64	7385.197	5762.351	-1401.7	7348.78	5855.56	-1332.88
2025/8/2 0:03	7306.943	5916.785	-1276.99	7329.569	5847.72	-1325.99	7292.93	5940.447	-1257.26

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/2 0:04	7249.722	6000.619	-1201.11	7272.61	5932.027	-1250.04	7235.764	6024.261	-1181.42
2025/8/2 0:05	7191.193	6083.37	-1125.02	7214.33	6015.257	-1173.87	7177.294	6106.987	-1105.37
2025/8/2 0:06	7131.364	6165.022	-1048.72	7154.738	6097.394	-1097.48	7117.529	6188.609	-1029.12
2025/8/2 0:07	7070.246	6245.56	-972.232	7093.845	6178.422	-1020.89	7056.48	6269.112	-952.682
2025/8/2 0:08	7007.85	6324.968	-895.568	7031.661	6258.326	-944.118	6994.158	6348.481	-876.076
2025/8/2 0:09	6944.186	6403.232	-818.742	6968.197	6337.09	-867.172	6930.574	6426.702	-799.313
2025/8/2 0:10	6879.265	6480.337	-741.768	6903.463	6414.701	-790.068	6865.739	6503.761	-722.407
2025/8/2 0:11	6813.099	6556.269	-664.66	6837.47	6491.142	-712.82	6799.664	6579.642	-645.372
2025/8/2 0:12	6745.7	6631.013	-587.432	6770.23	6566.399	-635.442	6732.361	6654.333	-568.221
2025/8/2 0:13	6677.078	6704.557	-510.096	6701.754	6640.459	-557.947	6663.841	6727.819	-490.969
2025/8/2 0:14	6607.246	6776.884	-432.669	6632.054	6713.305	-480.35	6594.118	6800.087	-413.63
2025/8/2 0:15	6536.216	6847.983	-355.163	6561.142	6784.925	-402.666	6523.202	6871.122	-336.217
2025/8/2 0:16	6464	6917.84	-277.593	6489.03	6855.305	-324.907	6451.108	6940.913	-258.745
2025/8/2 0:17	6390.611	6986.441	-199.972	6415.73	6924.43	-247.089	6377.846	7009.446	-181.227
2025/8/2 0:18	6316.062	7053.773	-122.315	6341.255	6992.288	-169.225	6303.431	7076.708	-103.678
2025/8/2 0:19	6240.366	7119.824	-44.636	6265.619	7058.865	-91.3299	6227.875	7142.687	-26.1118
2025/8/2 0:20	6163.535	7184.581	33.05123	6188.833	7124.148	-13.418	6151.192	7207.369	51.45785
2025/8/2 0:21	6085.584	7248.032	110.7325	6110.912	7188.124	64.49662	6073.395	7270.744	129.0167
2025/8/2 0:22	6006.526	7310.164	188.3935	6031.87	7250.781	142.3996	5994.498	7332.799	206.5506
2025/8/2 0:23	5926.374	7370.966	266.0203	5951.719	7312.106	220.2767	5914.515	7393.522	284.0456
2025/8/2 0:24	5845.144	7430.425	343.5986	5870.473	7372.088	298.1136	5833.46	7452.902	361.4876
2025/8/2 0:25	5762.849	7488.531	421.1143	5788.148	7430.714	375.8958	5751.348	7510.928	438.8624
2025/8/2 0:26	5679.503	7545.272	498.5532	5704.757	7487.972	453.6091	5668.192	7567.588	516.156
2025/8/2 0:27	5595.123	7600.638	575.9012	5620.316	7543.852	531.2391	5584.008	7622.872	593.3543
2025/8/2 0:28	5509.721	7654.616	653.1441	5534.838	7598.341	608.7714	5498.811	7676.769	670.4432
2025/8/2 0:29	5423.314	7707.198	730.2678	5448.34	7651.429	686.1918	5412.615	7729.269	747.4086
2025/8/2 0:30	5335.916	7758.372	807.2581	5360.835	7703.106	763.4857	5325.437	7780.362	824.2365
2025/8/2 0:31	5247.544	7808.128	884.1009	5272.341	7753.36	840.6389	5237.291	7830.038	900.9129
2025/8/2 0:32	5158.212	7856.457	960.782	5182.871	7802.181	917.637	5148.193	7878.287	977.4237
2025/8/2 0:33	5067.937	7903.349	1037.287	5092.444	7849.56	994.4656	5058.159	7925.099	1053.755
2025/8/2 0:34	4976.734	7948.794	1113.603	5001.073	7895.487	1071.111	4967.205	7970.466	1129.892
2025/8/2 0:35	4884.62	7992.784	1189.715	4908.776	7939.952	1147.557	4875.348	8014.379	1205.822
2025/8/2 0:36	4791.612	8035.31	1265.608	4815.57	7982.945	1223.792	4782.603	8056.83	1281.531
2025/8/2 0:37	4697.725	8076.363	1341.27	4721.47	8024.459	1299.8	4688.987	8097.808	1357.004
2025/8/2 0:38	4602.977	8115.935	1416.686	4626.493	8064.483	1375.566	4594.517	8137.308	1432.227
2025/8/2 0:39	4507.384	8154.018	1491.841	4530.658	8103.011	1451.078	4499.209	8175.32	1507.188
2025/8/2 0:40	4410.964	8190.604	1566.723	4433.98	8140.032	1526.32	4403.081	8211.837	1581.871
2025/8/2 0:41	4313.733	8225.685	1641.317	4336.477	8175.541	1601.279	4306.15	8246.851	1656.264
2025/8/2 0:42	4215.71	8259.254	1715.609	4238.167	8209.528	1675.94	4208.433	8280.356	1730.352
2025/8/2 0:43	4116.911	8291.304	1789.586	4139.068	8241.987	1750.289	4109.948	8312.345	1804.121
2025/8/2 0:44	4017.355	8321.829	1863.234	4039.197	8272.91	1824.313	4010.712	8342.81	1877.559
2025/8/2 0:45	3917.06	8350.821	1936.538	3938.572	8302.29	1897.996	3910.744	8371.746	1950.651
2025/8/2 0:46	3816.043	8378.276	2009.486	3837.213	8330.122	1971.326	3810.06	8399.146	2023.385
2025/8/2 0:47	3714.322	8404.186	2082.063	3735.136	8356.398	2044.288	3708.679	8425.005	2095.745
2025/8/2 0:48	3611.917	8428.545	2154.256	3632.361	8381.113	2116.868	3606.62	8449.317	2167.719
2025/8/2 0:49	3508.845	8451.35	2226.052	3528.907	8404.261	2189.053	3503.9	8472.076	2239.294
2025/8/2 0:50	3405.125	8472.594	2297.436	3424.792	8425.836	2260.828	3400.539	8493.279	2310.456
2025/8/2 0:51	3300.777	8492.273	2368.397	3320.035	8445.834	2332.18	3296.554	8512.919	2381.192
2025/8/2 0:52	3195.818	8510.382	2438.919	3214.656	8464.249	2403.095	3191.964	8530.993	2451.488
2025/8/2 0:53	3090.268	8526.917	2508.99	3108.673	8481.078	2473.561	3086.789	8547.496	2521.332
2025/8/2 0:54	2984.146	8541.873	2578.597	3002.107	8496.315	2543.562	2981.047	8562.424	2590.71
2025/8/2 0:55	2877.471	8555.248	2647.726	2894.977	8509.956	2613.086	2874.758	8575.774	2659.61
2025/8/2 0:56	2770.263	8567.037	2716.365	2787.303	8521.999	2682.119	2767.94	8587.542	2728.017
2025/8/2 0:57	2662.542	8577.239	2784.5	2679.104	8532.439	2750.648	2660.613	8597.725	2795.921
2025/8/2 0:58	2554.327	8585.848	2852.119	2570.4	8541.274	2818.66	2552.796	8606.32	2863.307
2025/8/2 0:59	2445.637	8592.864	2919.208	2461.212	8548.501	2886.141	2444.509	8613.325	2930.163
2025/8/2 1:00	2336.494	8598.284	2985.754	2351.561	8554.117	2953.079	2335.771	8618.738	2996.477
2025/8/2 1:01	2226.916	8602.106	3051.746	2241.465	8558.12	3019.46	2226.603	8622.556	3062.236
2025/8/2 1:02	2116.924	8604.328	3117.17	2130.946	8560.509	3085.272	2117.023	8624.778	3127.427
2025/8/2 1:03	2006.538	8604.949	3182.015	2020.024	8561.281	3150.501	2007.053	8625.403	3192.038
2025/8/2 1:04	1895.778	8603.967	3246.267	1908.721	8560.435	3215.136	1896.711	8624.429	3256.057
2025/8/2 1:05	1784.665	8601.383	3309.914	1797.056	8557.972	3279.163	1786.019	8621.855	3319.472
2025/8/2 1:06	1673.219	8597.195	3372.943	1685.051	8553.888	3342.569	1674.996	8617.681	3382.27



Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/2 1:07	1561.461	8591.403	3435.344	1572.726	8548.186	3405.343	1563.662	8611.908	3444.44
2025/8/2 1:08	1449.412	8584.007	3497.104	1460.103	8540.864	3467.472	1452.038	8604.534	3505.97
2025/8/2 1:09	1337.092	8575.009	3558.21	1347.203	8531.923	3528.944	1340.144	8595.56	3566.848
2025/8/2 1:10	1224.522	8564.407	3618.652	1234.048	8521.363	3589.747	1228.001	8584.988	3627.063
2025/8/2 1:11	1111.722	8552.204	3678.416	1120.657	8509.186	3649.868	1115.629	8572.817	3686.602
2025/8/2 1:12	998.7152	8538.401	3737.493	1007.054	8495.392	3709.296	1003.049	8559.05	3745.455
2025/8/2 1:13	885.5208	8522.999	3795.87	893.2588	8479.983	3768.02	890.2814	8543.687	3803.61
2025/8/2 1:14	772.1604	8506	3853.535	779.2935	8462.962	3826.026	777.3474	8526.731	3861.056
2025/8/2 1:15	658.6552	8487.406	3910.478	665.1797	8444.329	3883.305	664.2676	8508.184	3917.782
2025/8/2 1:16	545.0264	8467.22	3966.688	550.9391	8424.088	3939.844	551.063	8488.048	3973.777
2025/8/2 1:17	431.2951	8445.445	4022.153	436.5932	8402.242	3995.632	437.7543	8466.326	4029.029
2025/8/2 1:18	317.4828	8422.084	4076.863	322.164	8378.793	4050.659	324.3627	8443.021	4083.53
2025/8/2 1:19	203.6106	8397.14	4130.807	207.6731	8353.746	4104.913	210.9091	8418.137	4137.267
2025/8/2 1:20	89.70017	8370.617	4183.974	93.14256	8327.103	4158.382	97.41459	8391.677	4190.23
2025/8/2 1:21	-24.2273	8342.518	4236.353	-21.4059	8298.869	4211.058	-16.0997	8363.645	4242.41
2025/8/2 1:22	-138.15	8312.849	4287.935	-135.95	8269.048	4262.928	-129.613	8334.045	4293.795
2025/8/2 1:23	-252.047	8281.614	4338.709	-250.469	8237.645	4313.983	-243.103	8302.882	4344.375
2025/8/2 1:24	-365.897	8248.817	4388.666	-364.939	8204.666	4364.212	-356.549	8270.161	4394.142
2025/8/2 1:25	-479.677	8214.464	4437.794	-479.34	8170.115	4413.605	-469.931	8235.888	4443.084
2025/8/2 1:26	-593.367	8178.561	4486.085	-593.649	8133.997	4462.152	-583.226	8200.066	4491.193
2025/8/2 1:27	-706.944	8141.114	4533.528	-707.843	8096.32	4509.843	-696.413	8162.703	4538.459
2025/8/2 1:28	-820.388	8102.127	4580.115	-821.902	8057.089	4556.669	-809.472	8123.804	4584.871
2025/8/2 1:29	-933.677	8061.609	4625.835	-935.803	8016.311	4602.619	-922.38	8083.375	4630.422
2025/8/2 1:30	-1046.79	8019.565	4670.68	-1049.52	7973.993	4647.686	-1035.12	8041.424	4675.102
2025/8/2 1:31	-1159.7	7976.003	4714.64	-1163.04	7930.141	4691.858	-1147.66	7997.957	4718.902
2025/8/2 1:32	-1272.4	7930.929	4757.708	-1276.34	7884.765	4735.129	-1259.99	7952.981	4761.813
2025/8/2 1:33	-1384.85	7884.352	4799.873	-1389.39	7837.87	4777.487	-1372.09	7906.505	4803.827
2025/8/2 1:34	-1497.04	7836.279	4841.128	-1502.17	7789.467	4818.926	-1483.92	7858.534	4844.935
2025/8/2 1:35	-1608.95	7786.719	4881.464	-1614.66	7739.562	4859.436	-1595.48	7809.079	4885.128
2025/8/2 1:36	-1720.55	7735.681	4920.873	-1726.84	7688.165	4899.008	-1706.74	7758.147	4924.4
2025/8/2 1:37	-1831.82	7683.172	4959.348	-1838.69	7635.285	4937.636	-1817.68	7705.746	4962.74
2025/8/2 1:38	-1942.75	7629.203	4996.879	-1950.18	7580.931	4975.31	-1928.28	7651.887	5000.143
2025/8/2 1:39	-2053.3	7573.783	5033.46	-2061.29	7525.113	5012.024	-2038.52	7596.577	5036.599
2025/8/2 1:40	-2163.47	7516.921	5069.083	-2172.01	7467.841	5047.768	-2148.37	7539.827	5072.102
2025/8/2 1:41	-2273.22	7458.628	5103.741	-2282.3	7409.126	5082.537	-2257.82	7481.646	5106.644
2025/8/2 1:42	-2382.54	7398.913	5137.426	-2392.16	7348.977	5116.322	-2366.84	7422.045	5140.218
2025/8/2 1:43	-2491.41	7337.788	5170.131	-2501.55	7287.406	5149.117	-2475.41	7361.034	5172.816
2025/8/2 1:44	-2599.8	7275.263	5201.851	-2610.45	7224.424	5180.915	-2583.52	7298.623	5204.433
2025/8/2 1:45	-2707.69	7211.349	5232.577	-2718.85	7160.042	5211.709	-2691.14	7234.824	5235.061
2025/8/2 1:46	-2815.07	7146.058	5262.305	-2826.73	7094.273	5241.492	-2798.24	7169.647	5264.695
2025/8/2 1:47	-2921.91	7079.401	5291.026	-2934.05	7027.127	5270.259	-2904.82	7103.104	5293.326
2025/8/2 1:48	-3028.19	7011.391	5318.736	-3040.8	6958.619	5298.002	-3010.85	7035.208	5320.951
2025/8/2 1:49	-3133.89	6942.039	5345.428	-3146.97	6888.759	5324.718	-3116.3	6965.969	5347.562
2025/8/2 1:50	-3238.99	6871.358	5371.098	-3252.52	6817.562	5350.399	-3221.16	6895.401	5373.153
2025/8/2 1:51	-3343.48	6799.362	5395.738	-3357.44	6745.04	5375.04	-3325.41	6823.516	5397.72
2025/8/2 1:52	-3447.32	6726.062	5419.345	-3461.7	6671.207	5398.636	-3429.03	6750.327	5421.257
2025/8/2 1:53	-3550.5	6651.473	5441.913	-3565.29	6596.077	5421.182	-3531.99	6675.846	5443.759
2025/8/2 1:54	-3653	6575.607	5463.436	-3668.19	6519.664	5442.673	-3634.28	6600.088	5465.22
2025/8/2 1:55	-3754.8	6498.48	5483.911	-3770.37	6441.981	5463.104	-3735.88	6523.066	5485.637
2025/8/2 1:56	-3855.87	6420.105	5503.333	-3871.82	6363.044	5482.471	-3836.76	6444.794	5505.003
2025/8/2 1:57	-3956.21	6340.496	5521.698	-3972.52	6282.868	5500.77	-3936.92	6365.286	5523.316
2025/8/2 1:58	-4055.79	6259.668	5539.001	-4072.44	6201.467	5517.997	-4036.31	6284.557	5540.57
2025/8/2 1:59	-4154.58	6177.636	5555.238	-4171.56	6118.857	5534.147	-4134.94	6202.621	5556.762
2025/8/2 2:00	-4252.58	6094.415	5570.407	-4269.87	6035.054	5549.218	-4232.77	6119.493	5571.889
2025/8/2 2:01	-4349.76	6010.02	5584.503	-4367.35	5950.074	5563.206	-4329.8	6035.188	5585.945
2025/8/2 2:02	-4446.1	5924.468	5597.524	-4463.97	5863.932	5576.108	-4425.99	5949.723	5598.929
2025/8/2 2:03	-4541.58	5837.774	5609.466	-4559.73	5776.645	5587.921	-4521.34	5863.112	5610.836
2025/8/2 2:04	-4636.19	5749.955	5620.326	-4654.59	5688.229	5598.642	-4615.81	5775.371	5621.664
2025/8/2 2:05	-4729.9	5661.026	5630.102	-4748.54	5598.703	5608.268	-4709.4	5686.518	5631.411
2025/8/2 2:06	-4822.7	5571.004	5638.791	-4841.56	5508.082	5616.799	-4802.09	5596.567	5640.072
2025/8/2 2:07	-4914.57	5479.907	5646.392	-4933.63	5416.384	5624.23	-4893.85	5505.537	5647.647
2025/8/2 2:08	-5005.49	5387.751	5652.901	-5024.74	5323.626	5630.562	-4984.67	5413.443	5654.134
2025/8/2 2:09	-5095.44	5294.553	5658.318	-5114.87	5229.828	5635.791	-5074.53	5320.303	5659.529

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/2 2:10	-5184.41	5200.332	5662.642	-5203.99	5135.005	5639.917	-5163.41	5226.134	5663.832
2025/8/2 2:11	-5272.38	5105.105	5665.869	-5292.1	5039.178	5642.939	-5251.29	5130.954	5667.04
2025/8/2 2:12	-5359.32	5008.889	5668.001	-5379.17	4942.363	5644.855	-5338.16	5034.781	5669.154
2025/8/2 2:13	-5445.23	4911.704	5669.034	-5465.18	4844.581	5645.666	-5424	4937.633	5670.171
2025/8/2 2:14	-5530.08	4813.568	5668.97	-5550.12	4745.849	5645.37	-5508.8	4839.527	5670.091
2025/8/2 2:15	-5613.86	4714.498	5667.807	-5633.98	4646.188	5643.967	-5592.52	4740.482	5668.913
2025/8/2 2:16	-5696.56	4614.515	5665.546	-5716.72	4545.615	5641.458	-5675.17	4640.518	5666.637
2025/8/2 2:17	-5778.14	4513.636	5662.186	-5798.35	4444.152	5637.842	-5756.72	4539.652	5663.263
2025/8/2 2:18	-5858.61	4411.882	5657.727	-5878.84	4341.817	5633.12	-5837.15	4437.905	5658.79
2025/8/2 2:19	-5937.94	4309.271	5652.17	-5958.18	4238.63	5627.293	-5916.45	4335.294	5653.219
2025/8/2 2:20	-6016.12	4205.823	5645.516	-6036.34	4134.612	5620.361	-5994.6	4231.84	5646.551
2025/8/2 2:21	-6093.13	4101.559	5637.765	-6113.33	4029.782	5612.326	-6071.59	4127.563	5638.785
2025/8/2 2:22	-6168.95	3996.497	5628.919	-6189.11	3924.161	5603.189	-6147.4	4022.481	5629.924
2025/8/2 2:23	-6243.58	3890.659	5618.978	-6263.67	3817.77	5592.952	-6222.02	3916.616	5619.968
2025/8/2 2:24	-6316.99	3784.064	5607.945	-6337.01	3710.63	5581.617	-6295.43	3809.987	5608.918
2025/8/2 2:25	-6389.18	3676.733	5595.822	-6409.1	3602.761	5569.185	-6367.62	3702.615	5596.777
2025/8/2 2:26	-6460.12	3568.686	5582.609	-6479.93	3494.184	5555.659	-6438.56	3594.52	5583.546
2025/8/2 2:27	-6529.8	3459.945	5568.309	-6549.48	3384.921	5541.041	-6508.26	3485.722	5569.227
2025/8/2 2:28	-6598.21	3350.529	5552.926	-6617.75	3274.993	5525.334	-6576.68	3376.244	5553.821
2025/8/2 2:29	-6665.34	3240.462	5536.461	-6684.72	3164.422	5508.541	-6643.83	3266.105	5537.333
2025/8/2 2:30	-6731.17	3129.762	5518.917	-6750.37	3053.228	5490.665	-6709.68	3155.327	5519.764
2025/8/2 2:31	-6795.68	3018.453	5500.298	-6814.7	2941.435	5471.71	-6774.22	3043.932	5501.118
2025/8/2 2:32	-6858.87	2906.555	5480.606	-6877.69	2829.064	5451.679	-6837.44	2931.94	5481.397
2025/8/2 2:33	-6920.73	2794.09	5459.845	-6939.32	2716.137	5430.577	-6899.32	2819.374	5460.606
2025/8/2 2:34	-6981.23	2681.08	5438.02	-6999.59	2602.676	5408.406	-6959.86	2706.255	5438.746
2025/8/2 2:35	-7040.38	2567.547	5415.133	-7058.48	2488.703	5385.172	-7019.04	2592.605	5415.823
2025/8/2 2:36	-7098.14	2453.513	5391.19	-7115.99	2374.241	5360.878	-7076.85	2478.446	5391.841
2025/8/2 2:37	-7154.53	2339	5366.194	-7172.09	2259.313	5335.531	-7133.27	2363.8	5366.803
2025/8/2 2:38	-7209.51	2224.029	5340.15	-7226.79	2143.94	5309.134	-7188.3	2248.689	5340.714
2025/8/2 2:39	-7263.09	2108.625	5313.064	-7280.06	2028.146	5281.692	-7241.92	2133.136	5313.58
2025/8/2 2:40	-7315.25	1992.808	5284.939	-7331.9	1911.954	5253.212	-7294.13	2017.164	5285.404
2025/8/2 2:41	-7365.98	1876.602	5255.781	-7382.29	1795.385	5223.699	-7344.9	1900.794	5256.191
2025/8/2 2:42	-7415.27	1760.029	5225.597	-7431.24	1678.464	5193.158	-7394.24	1784.049	5225.949
2025/8/2 2:43	-7463.11	1643.112	5194.391	-7478.72	1561.213	5161.596	-7442.13	1666.953	5194.681
2025/8/2 2:44	-7509.49	1525.874	5162.169	-7524.74	1443.655	5129.018	-7488.56	1549.527	5162.393
2025/8/2 2:45	-7554.4	1408.337	5128.938	-7569.27	1325.813	5095.432	-7533.52	1431.796	5129.093
2025/8/2 2:46	-7597.84	1290.524	5094.703	-7612.31	1207.711	5060.843	-7577.01	1313.781	5094.785
2025/8/2 2:47	-7639.79	1172.459	5059.472	-7653.86	1089.371	5025.26	-7619.01	1195.507	5059.476
2025/8/2 2:48	-7680.24	1054.165	5023.25	-7693.9	970.8177	4988.688	-7659.51	1076.995	5023.174
2025/8/2 2:49	-7719.19	935.6638	4986.046	-7732.42	852.0737	4951.135	-7698.51	958.2703	4985.884
2025/8/2 2:50	-7756.64	816.9798	4947.866	-7769.43	733.1624	4912.609	-7736	839.3549	4947.614
2025/8/2 2:51	-7792.56	698.1357	4908.717	-7804.91	614.1071	4873.117	-7771.97	720.2724	4908.371
2025/8/2 2:52	-7826.95	579.1549	4868.607	-7838.86	494.9315	4832.667	-7806.41	601.0462	4868.163
2025/8/2 2:53	-7859.82	460.0606	4827.544	-7871.26	375.6588	4791.267	-7839.31	481.6997	4826.997
2025/8/2 2:54	-7891.14	340.8761	4785.536	-7902.12	256.3126	4748.926	-7870.68	362.2564	4784.881
2025/8/2 2:55	-7920.92	221.6249	4742.59	-7931.42	136.9162	4705.651	-7900.5	242.7396	4741.823
2025/8/2 2:56	-7949.15	102.3301	4698.716	-7959.17	17.49322	4661.452	-7928.77	123.1729	4697.832
2025/8/2 2:57	-7975.82	-16.9848	4653.92	-7985.35	-101.933	4616.337	-7955.47	3.57984	4652.916
2025/8/2 2:58	-8000.93	-136.296	4608.214	-8009.96	-221.339	4570.316	-7980.62	-116.016	4607.083
2025/8/2 2:59	-8024.47	-255.581	4561.604	-8033	-340.701	4523.396	-8004.19	-235.591	4560.344
2025/8/2 3:00	-8046.44	-374.816	4514.101	-8054.46	-459.996	4475.589	-8026.19	-355.122	4512.705
2025/8/2 3:01	-8066.84	-493.978	4465.713	-8074.34	-579.2	4426.903	-8046.61	-474.586	4464.178
2025/8/2 3:02	-8085.65	-613.043	4416.45	-8092.64	-698.291	4377.348	-8065.44	-593.958	4414.771
2025/8/2 3:03	-8102.88	-731.988	4366.322	-8109.34	-817.244	4326.935	-8082.69	-713.215	4364.494
2025/8/2 3:04	-8118.52	-850.789	4315.338	-8124.46	-936.036	4275.672	-8098.34	-832.334	4313.357
2025/8/2 3:05	-8132.57	-969.424	4263.509	-8137.98	-1054.64	4223.571	-8112.41	-951.291	4261.37
2025/8/2 3:06	-8145.02	-1087.87	4210.844	-8149.91	-1173.05	4170.641	-8124.87	-1070.06	4208.543
2025/8/2 3:07	-8155.88	-1206.1	4157.354	-8160.24	-1291.22	4116.894	-8135.74	-1188.63	4154.886
2025/8/2 3:08	-8165.15	-1324.1	4103.049	-8168.96	-1409.14	4062.34	-8145	-1306.96	4100.41
2025/8/2 3:09	-8172.81	-1441.83	4047.94	-8176.09	-1526.78	4006.989	-8152.66	-1425.03	4045.126
2025/8/2 3:10	-8178.87	-1559.29	3992.038	-8181.62	-1644.12	3950.854	-8158.72	-1542.83	3989.044
2025/8/2 3:11	-8183.33	-1676.43	3935.354	-8185.54	-1761.14	3893.945	-8163.17	-1660.32	3932.176
2025/8/2 3:12	-8186.18	-1793.25	3877.899	-8187.86	-1877.81	3836.274	-8166.01	-1777.49	3874.533

Time (UTCG)	Phobos			S/C, 50x100km QSO			S/C, 24x34km QSO		
	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)	x (km)	y (km)	z (km)
2025/8/2 3:13	-8187.43	-1909.72	3819.684	-8188.58	-1994.12	3777.852	-8167.24	-1894.31	3816.126
2025/8/2 3:14	-8187.08	-2025.82	3760.72	-8187.69	-2110.04	3718.691	-8166.87	-2010.76	3756.967
2025/8/2 3:15	-8185.12	-2141.51	3701.02	-8185.2	-2225.54	3658.802	-8164.89	-2126.82	3697.067
2025/8/2 3:16	-8181.56	-2256.79	3640.595	-8181.12	-2340.61	3598.198	-8161.3	-2242.46	3636.439
2025/8/2 3:17	-8176.4	-2371.63	3579.457	-8175.43	-2455.22	3536.89	-8156.1	-2357.66	3575.095
2025/8/2 3:18	-8169.64	-2486	3517.618	-8168.14	-2569.35	3474.892	-8149.3	-2472.39	3513.046
2025/8/2 3:19	-8161.27	-2599.88	3455.09	-8159.26	-2682.97	3412.214	-8140.9	-2586.64	3450.304
2025/8/2 3:20	-8151.31	-2713.26	3391.885	-8148.79	-2796.08	3348.871	-8130.89	-2700.39	3386.884
2025/8/2 3:21	-8139.75	-2826.11	3328.017	-8136.72	-2908.63	3284.873	-8119.28	-2813.6	3322.796
2025/8/2 3:22	-8126.6	-2938.4	3263.497	-8123.07	-3020.62	3220.235	-8106.08	-2926.26	3258.054
2025/8/2 3:23	-8111.86	-3050.11	3198.338	-8107.83	-3132.02	3154.968	-8091.28	-3038.34	3192.671
2025/8/2 3:24	-8095.54	-3161.23	3132.554	-8091.01	-3242.81	3089.087	-8074.89	-3149.83	3126.659
2025/8/2 3:25	-8077.62	-3271.73	3066.156	-8072.61	-3352.97	3022.603	-8056.92	-3260.7	3060.032
2025/8/2 3:26	-8058.13	-3381.6	2999.159	-8052.64	-3462.47	2955.53	-8037.36	-3370.93	2992.803
2025/8/2 3:27	-8037.06	-3490.8	2931.575	-8031.1	-3571.3	2887.882	-8016.21	-3480.5	2924.986
2025/8/2 3:28	-8014.42	-3599.31	2863.418	-8008	-3679.43	2819.672	-7993.5	-3589.38	2856.594
2025/8/2 3:29	-7990.22	-3707.13	2794.701	-7983.34	-3786.85	2750.913	-7969.21	-3697.56	2787.64
2025/8/2 3:30	-7964.45	-3814.21	2725.437	-7957.13	-3893.52	2681.619	-7943.36	-3805.01	2718.139
2025/8/2 3:31	-7937.12	-3920.56	2655.641	-7929.36	-3999.45	2611.804	-7915.95	-3911.72	2648.104
2025/8/2 3:32	-7908.25	-4026.14	2585.326	-7900.06	-4104.59	2541.481	-7886.98	-4017.65	2577.549
2025/8/2 3:33	-7877.83	-4130.93	2514.506	-7869.22	-4208.94	2470.665	-7856.47	-4122.8	2506.488
2025/8/2 3:34	-7845.87	-4234.91	2443.195	-7836.86	-4312.46	2399.369	-7824.41	-4227.14	2434.936
2025/8/2 3:35	-7812.38	-4338.07	2371.407	-7802.97	-4415.16	2327.608	-7790.82	-4330.64	2362.906
2025/8/2 3:36	-7777.36	-4440.38	2299.156	-7767.57	-4516.99	2255.395	-7755.7	-4433.3	2290.413
2025/8/2 3:37	-7740.83	-4541.82	2226.457	-7730.67	-4617.95	2182.745	-7719.06	-4535.09	2217.472
2025/8/2 3:38	-7702.78	-4642.38	2153.323	-7692.26	-4718.01	2109.672	-7680.91	-4635.98	2144.096
2025/8/2 3:39	-7663.24	-4742.03	2079.769	-7652.37	-4817.16	2036.191	-7641.25	-4735.97	2070.3
2025/8/2 3:40	-7622.19	-4840.76	2005.809	-7610.99	-4915.37	1962.315	-7600.09	-4835.03	1996.1
2025/8/2 3:41	-7579.67	-4938.54	1931.459	-7568.14	-5012.64	1888.06	-7557.45	-4933.14	1921.509
2025/8/2 3:42	-7535.67	-5035.36	1856.732	-7523.83	-5108.93	1813.44	-7513.33	-5030.28	1846.543
2025/8/2 3:43	-7490.19	-5131.21	1781.643	-7478.06	-5204.24	1738.469	-7467.74	-5126.44	1771.217
2025/8/2 3:44	-7443.26	-5226.05	1706.207	-7430.85	-5298.54	1663.163	-7420.68	-5221.59	1695.544
2025/8/2 3:45	-7394.88	-5319.87	1630.44	-7382.2	-5391.82	1587.535	-7372.18	-5315.72	1619.541
2025/8/2 3:46	-7345.07	-5412.66	1554.355	-7332.13	-5484.05	1511.602	-7322.23	-5408.81	1543.223
2025/8/2 3:47	-7293.82	-5504.39	1477.967	-7280.64	-5575.23	1435.377	-7270.85	-5500.84	1466.603
2025/8/2 3:48	-7241.15	-5595.06	1401.292	-7227.75	-5665.33	1358.875	-7218.06	-5591.79	1389.698
2025/8/2 3:49	-7187.08	-5684.64	1324.345	-7173.47	-5754.34	1282.112	-7163.85	-5681.65	1312.523
2025/8/2 3:50	-7131.61	-5773.11	1247.14	-7117.81	-5842.24	1205.102	-7108.25	-5770.4	1235.093
2025/8/2 3:51	-7074.75	-5860.46	1169.693	-7060.77	-5929.02	1127.86	-7051.25	-5858.02	1157.423
2025/8/2 3:52	-7016.52	-5946.67	1092.019	-7002.38	-6014.65	1050.401	-6992.89	-5944.5	1079.529
2025/8/2 3:53	-6956.93	-6031.73	1014.133	-6942.64	-6099.13	972.7409	-6933.16	-6029.81	1001.425
2025/8/2 3:54	-6895.99	-6115.61	936.05	-6881.57	-6182.44	894.8938	-6872.08	-6113.95	923.1271
2025/8/2 3:55	-6833.71	-6198.31	857.7855	-6819.17	-6264.56	816.8751	-6809.66	-6196.89	844.6509
2025/8/2 3:56	-6770.1	-6279.81	779.3548	-6755.47	-6345.47	738.6998	-6745.92	-6278.63	766.0115
2025/8/2 3:57	-6705.18	-6360.09	700.773	-6690.47	-6425.17	660.383	-6680.86	-6359.14	687.2244
2025/8/2 3:58	-6638.97	-6439.14	622.0555	-6624.18	-6503.64	581.9398	-6614.51	-6438.42	608.305
2025/8/2 3:59	-6571.47	-6516.95	543.2175	-6556.63	-6580.86	503.3853	-6546.87	-6516.43	529.2687
2025/8/2 4:00	-6502.69	-6593.49	464.2744	-6487.83	-6656.82	424.7347	-6477.96	-6593.19	450.131
2025/8/2 4:01	-6432.66	-6668.75	385.2415	-6417.78	-6731.5	346.003	-6407.79	-6668.65	370.9073
2025/8/2 4:02	-6361.38	-6742.72	306.1342	-6346.5	-6804.9	267.2054	-6336.38	-6742.83	291.6129
2025/8/2 4:03	-6288.88	-6815.4	226.9676	-6274.02	-6877	188.3569	-6263.74	-6815.69	212.2635
2025/8/2 4:04	-6215.16	-6886.75	147.7573	-6200.33	-6947.78	109.4727	-6189.88	-6887.22	132.8743
2025/8/2 4:05	-6140.23	-6956.77	68.51843	-6125.46	-7017.24	30.56784	-6114.83	-6957.42	53.46091
2025/8/2 4:06	-6064.13	-7025.45	-10.7336	-6049.42	-7085.35	-48.3426	-6038.59	-7026.27	-25.9614
2025/8/2 4:07	-5986.85	-7092.78	-89.9835	-5972.23	-7152.12	-127.244	-5961.18	-7093.76	-105.377