

Coordinates of Lunar Anthropogenic Targets
LROC Science Operations Team
Arizona State University
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The following table lists latitude and longitude coordinates in the mean Earth/polar axis (ME) coordinate system of all Soviet Union and United States robotic space hardware and craters produced through spacecraft impact that have been identified by the LROC Team.

To generate the list of observed latitudes and longitudes, we compiled a list of line and sample coordinates for the center of each object in each image. Each image was then initialized using the USGS Integrated Software for Imagers and Spectrometers software package, attaching the appropriate spacecraft position and pointing information, along with the GLD100 lunar shape model for elevation. ISIS routines were then used to compute the latitude and longitude of the spacecraft (or crater) in that image. The LRO spacecraft position was provided by the latest cross-over corrected spacecraft positioning kernels provided by the LRO LOLA team, with an orbital position uncertainty of ± 15 m. Finally, temperature-corrected NAC camera kernels produced by the LROC team contributed to the high precision and accuracy. The coordinates listed in the table are the mean from multiple images acquired for a particular site.

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Object	Mean Observed Lat	Mean Observed Lon	Elevation (m)	Uncertainty (m)
Surveyor 1	-2.4745	316.6602	-1889	5.6
Surveyor 3	-3.0162	336.5820	-1433	2.6
Surveyor 5	1.4551	23.1943	-2052	11.9
Surveyor 6	0.4742	358.5725	-757	6.7
Surveyor 7	-40.9812	348.4873	81	3.5
Luna 16	-0.5137	56.3638	-2452	3.7
Luna 17	38.23764	324.99837	-2471	0.5
Lunokhod 1	38.3150	324.9919	-2471	3.8
Luna 20	3.7863	56.6242	-1780	4.3
Luna 21	25.9994	30.4076	-2680	13.4
Lunokhod 2	25.8323	30.9222	-2761	7.5
Luna 23	12.6667	62.1511	-3668	3.0
Luna 24	12.7142	62.2129	-3670	3.7
Chang'e 3	44.1214	340.4883	-2630	9.1
Yutu Rover	44.1208	340.4878	-2630	12.9
Ranger 6	9.3864	21.4806	-1996	4.4
Ranger 7	-10.6340	339.3230	-1791	6.4
Ranger 8	2.6376	24.7881	-2165	4.9
Ranger 9	-12.8281	357.6116	-1531	5.8
A13 SIVB	-2.5550	332.1125	-1166	9.8
A14 SIVB	-8.1810	333.9695	-1785	4.5
A15 SIVB	-1.2897	348.1755	-1109	3.8
A16 SIVB	1.9210	335.3770	-1104	19.2
A17 SIVB	-4.1681	347.6693	-1206	5.6
GRAIL-A	75.6088	333.4060	750	10.7
GRAIL-B	75.6508	333.1659	1039	12.2
LADEE	11.8494	266.7506	2803	6.1