Status of the RAND control network of Mars

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The RAND control network of Mars was begun during the Mariner 9 mission, and it has been expanded and improved since then. The network is based on measurements of points made on images taken by the Mariner 9 and Viking spacecraft. These points, often the centers of craters, are identified on pictures, and their geographic coordinates computed. Many of the early maps published by the U.S.G.S. used our control networks.

Based on telemetry from the Viking landers, the Radio Science Team was able to determine very accurate coordinates of the lander sites. Recently, the Pathfinder Radio Science Team reanalyzed Viking data and combined a solution with their new measurements (Science 278. 1749-1752, 1997). Thus we now have three points with accurate absolute coordinates. These are:

	Pathfinder	**Viking 1**	**Viking 2**
Longitude (deg)	33.229	47.927	225.695
Latitude (deg)	19.0949	22.2692	47.6680
Radius (km)	3389.715	3389.316	3381.795

The longitudes were computed from our control network based on Viking 1 and Pathfinder lander sites identified on Viking images and measured from the small crater Airy-0. Airy-0 defines the zero longitude on Mars just as Greenwich does on Earth.

Recently we received an identification of the Viking 2 lander site. We plan to test this identification. If it appears to be correct, we will tie it to our control network.

Currently the RAND network is computed from 32,578 measurements of 9,757 points on 1643 Viking images and 1054 Mariner 9 images.