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MEMO

TO: R. Larson
FROM: Hapet Berberian
DATE: October 13, 1970
SUBJECT: Differences Between Slant Range and Ground-Track Range During Lunar Powered Descent Over Fra Mauro.

GENERAL INFORMATION AND SIMULATION RESULTS

PCR number 334 requests that N68 display ground-track distance to the computed landing site rather than slant range. Slant range can be defined by the magnitude of the difference between the vehicle position vector and the site position vector. Ground-track distance is the down-range component of the above vector difference. A display of ground-track distance may be more desirable than that of slant range since all terrain features are mapped as a function of the former.

The differences between slant and ground-track range were computed from a simulated landing on a nominal trajectory over science site Fra Mauro. It can be seen from Fig. 1 that the difference is about 1200 feet at high gate and reduces to about 200 feet at a ground-track range of 1.4 n.m. before the site.

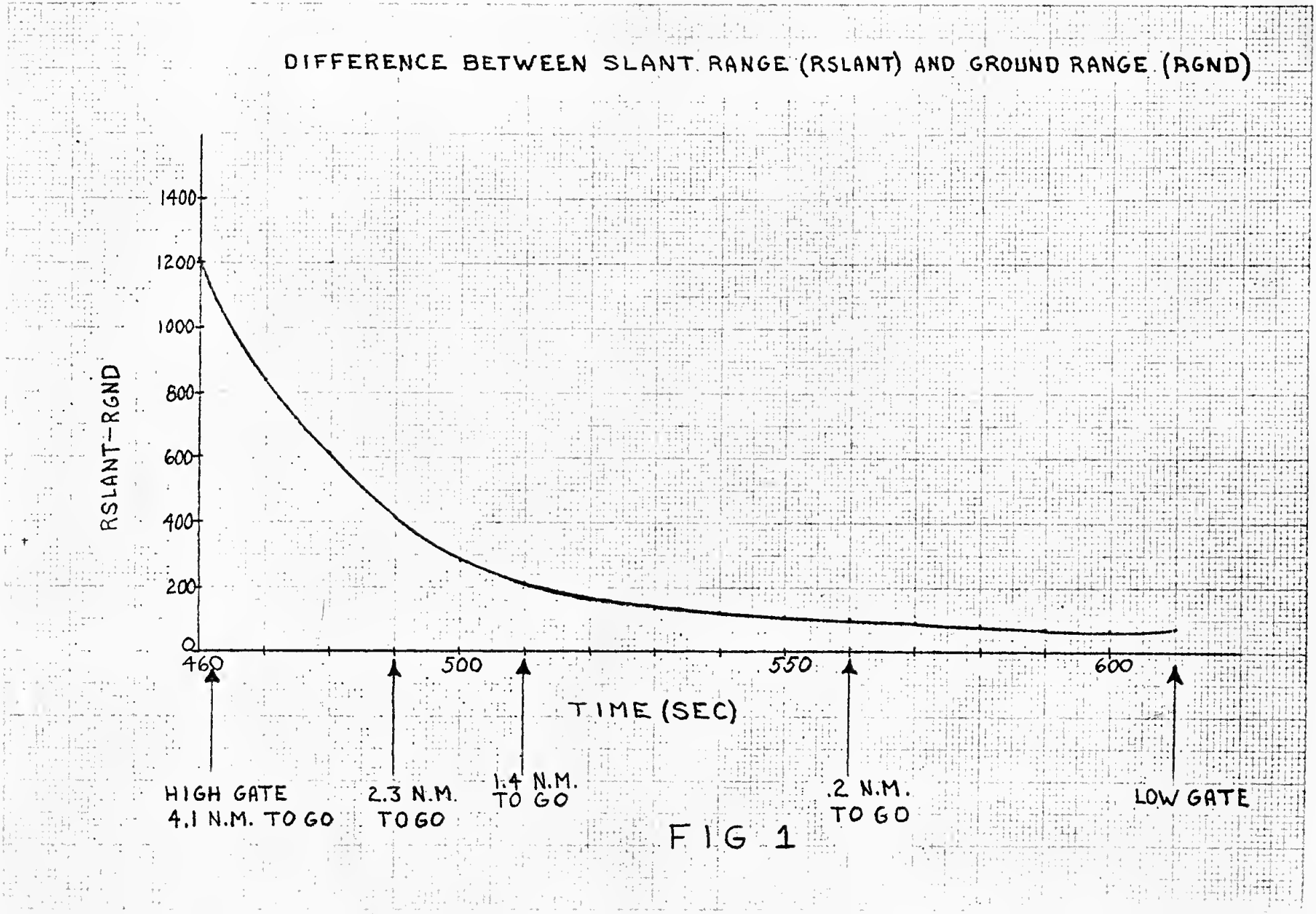
DIFFERENCE BETWEEN SLANT RANGE (RSLANT) AND GROUND RANGE (RGND)
RSLANT-RGND
1400
1200
1000
800
600
400
200
0
460
500
550
600
TIME (SEC)
HIGH GATE
4.1 N.M. TO GO
2.3 N.M.
TO GO
1.4 N.M.
TO GO
.2 N.M.
TO GO
LOW GATE

FIG 1