

Massachusetts Institute of Technology  
C. S. Draper Laboratory  
Cambridge, Massachusetts

LUMINARY Memo #133, Revision #1

To: Distribution  
From: P. Volante, V. Dunbar  
Date: 4 May 1970  
Subject: Implementation of PCR 287

Note: Since this memo was originally issued, two changes have been made in the implementation of PCR 287. They are:

1. Since ranges greater than 1000 N.M. are truncated by the Noun 54 scaling (xxxx.x) so that 1032.60 is displayed as 032.60, 999.99 is displayed in R1 of Noun 54 if the range is greater than 1000 N.M.
2. In P22, if the range is greater than 400 N.M. and the range rate is positive, a flashing Verb 37 is displayed instead of V 16 N 54. This is done because at the end of the tracking interval in P22, the RR antenna is repositioned by R25 since it tracks into the mode limits. The repositioning breaks lock-on so R21 is called to attempt to re-acquire the CSM. Since the CSM is not within the RR mode limits, the predesignate routine is called to see if the CSM will enter the RR mode limits within 10 minutes. Extrapolation of the state vector ahead eventually results in a range greater than 560 N.M. (approximately) which causes overflow in the LOS computation subroutine (LPS20.1) which results in a V16N54 display. However, when the range and range rate computation is done to update the Noun 54 display, the present time is used (instead of some future time). So the range is found to be less than 400 N.M. Then R21 is called again and again it calls the predesignate routine. Thus a vicious circle is established which continues until the true range is greater than 400 N.M. at which time Noun 54 is displayed continuously. By checking for positive range rate and exiting via a flashing Verb 37, the behavior described above is avoided. A flashing Verb 37 during P22 thus indicates that the CSM is moving away from the landing site. A revised flow chart follows:

PCR 287  
P20 AND P22

