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LUMINARY Memo #136

To: Distribution
From: Dana Densmore
Date: 29 January 1970
Subject: LUMINARY Revisions 140-143

The following changes were incorporated into Revisions 140-143:

- 1) PCN 990 was implemented to fix anomaly L-1C-04. V44 (terminate RR Continuous Designate) was changed to check for RR antenna re-mode in progress and not disable the RR error counters (thus stopping the antenna drive) until the remode is complete.
- 2) (PCR L-15) Redundant coding was deleted from V41 and V44 to make room for implementation of PCR 990. A call to CLRADMOD at RRDESNBK replaced clearing of bits 15 and 10 of RADMODES. CLRADMOD also clears bit 2 of Channel 12, but that is done a little later in the code here anyway so that shouldn't make any difference. Then at RRDESEND a clearing of RADMODES bits 10 and 15 immediately preceding a TC CLRADMOD was deleted.
- 3) (PCR 979) The coding that issued the 521 alarm was deleted. The alarm was issued during P20 and P22 radar reads if the data good signal wasn't present. In this case the Tracker Fail light on the DSKY and the No Track light on LM Panel 3 are already on so the alarm is unnecessary. To delete the alarm the whole routine NOMORE (10 words) was deleted. NOMORE checked to see what program got the bad data condition and bypassed the alarm if it wasn't P20 or P22.
- 4) (ACB L-13) A routine was written in the Executive to release the current job's vac area. The new routine, VACRLEAS, puts the NOVAC fixloc in the low order part of PRIORITY and pulls the vac area address out. It decrements this address and puts it into the VAC USE register. Then it returns. Four calls were put in to the

guidance displays during landings, just before the N63 display in P63, just before the N64 display in P64 in two places, and just before the N60 display at VERTDISP. Another call to it was put in the Ascent Guidance just before the N63 display. We were going to call it just before the V16N63 display in CUTOFF but it was decided the job didn't need to be a FINDVAC in the first place. It was changed to a NOVAC.

- 5) (PCR 982) R59 was provided with the capability of locating via N79 any celestial body specified by N88. The coding at R59A was changed to call PLANET rather than just using a starcode to get a star vector.
- 6) (PCR 983) N88 in routine PLANET was changed to accept a unit vector by scaling STARAD before unitizing so that no overflow will occur.
- 7) DISPN5X (6 words) plus a constant (1 word) was moved from Bank 37 to Bank 40 to make room for implementation of PCR 896. DISPN5X is called by a TCF within itself and as a NOVAC job. It calls GOMARKF as a BANKCALL and B5OFF. It CAFs a VN constant, also was in Bank 37, which was only used by DISPN5X and moved with it.
- 8) Routine NEWANGLE (21 words) was moved from Bank 25 to Bank 24 to make room for implementation of PCR 896. NEWANGLE is only called in interpretive.
- 9) (PCR 896) The landing radar processing in R12 was rewritten to center each series of reads around PIPTIME. READACCS sets up a WAITLIST call to R12READ for 250 milliseconds before the next PIPTIME. R12READ calls the first read and by setting NSAMP to six permits the radar interrupt processing to call the rest of the reads at 100 ms intervals, sum the velocity reads and store the altitude reading. R12 in SERVICER then averages the velocity reads and updates the state vector. In the course of implementing this change SERVICER processing was shortened by putting much of the radar read request logic into the radar interrupt routine, and the radar interrupt routine itself was rewritten and simplified.

Changes to LUMINARY GSOP:

Section 4 should reflect the changes described above in: (1), (3), (5), (6), (9).

Section 5 should reflect the changes described above in: (1), (3), (5), (9).