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COLOSSUS Memo #67

To: Distribution
From: M. Hamilton
Date: 21 June 1968
Subject: COLOSSUS Revisions 215 and 216

Revision 216 was GOOD.

Major Changes Incorporated into Revisions 215 and 216

- 1) The flagbit descriptions for SLOPESW, SOLNSW, NORMSW, RVSW, INFINFLG, ORDERSW, APSESW and COGAFLAG were previously backwards. They were corrected.
- 2) Extended verbs 44 and 45 were coded and hooked up to the extended verb fan table to set and reset the SURFFLAG.
- 3) Corrections were made to V66 and V47 to copy the permanent state vector into RN and VN and R-OTHER and V-OTHER.
- 4) The calculation of the sign input to Lambert was unitized to provide more accuracy.
- 5) The VHFRFLAG is now reset at the beginning of R32. This will prevent the incorporation of VHF marks from this time on until the VHFRFLAG is set up again by V87.
- 6) NOUPFLAG now equals R32FLAG since NOUPFLAG is only set and reset in R32.
- 7) If VHFREAD finds the UPDATFLG off or the NOUPFLAG on, it now goes to BADEND. This corrects the bug which caused the RADAR RUPT in this case to branch directly into a JOB.
- 8) The storage of -0 into RUPTAGN in VHFREAD was moved above the UPDATFLG and NOUPFLAG checks to allow the RADAR RUPT to go to TASKOVER.
- 9) A fix was put into the end of SERVICER to zero the VHF and optics mark counters.

- 10) A call to CLEANDSP was made before the V06N05 display in R54 and before the V53 display and the V01N71 display in R56. This change was added since these displays require some registers to be blanked. Normally one would use an R display routine for blanking but these displays require the previous VAC area on a response. CLEANDSP will not provide for the required register to blank after a key release. Thus, if the astronaut keys in characters followed by a key release, these characters will remain if they were keyed in over the blank register in the above displays.
- 11) PCN no. 442 was implemented. The purpose of this change was to adjust the entry angle dependent constants in P37.
- 12) The last phase change at the end of SERVICER was moved to protect PIPFREE and the resetting of the V37FLAG. This will also prevent the possibility of not being able to key in V37 if a restart took place after the resetting of the V37FLAG.
- 13) A correction was made to the constant YK1K2 in AUGGE-KUGL.
- 14) The subroutine P20FLGON ended up to be totally garbage due to two people entering changes into the same area in the last assembly. This problem was cleaned up.
- 15) The erasable DATATEST was eliminated from R22 since it is not needed.
- 16) IMU calibration was rearranged to save fixed memory.
- 17) A change was made to ADVTRACK to pick up LANDMARK instead of STARCODE for advance orbits.
- 18) Since a V37 or a restart sets OPTIND to -1, it was necessary to zero OPTIND in RELINUS for R52.
- 19) The illegal erasable overlay between RTX1 and RTX2 in INITVEL with THETL in P17 was resolved by rearranging P17 erasables.
- 20) The NOUPFLAG was tested backwards in R22. This mistake was corrected.
- 21) A fix was made to correct the wrong firing time deviation computed by the phase plane logic in the TVC DAP.
- 22) The VHFRFLAG is no longer reset in P20 now that V37 resets this flag.
- 23) A change was made to save 6 erasable locations by sharing DELVEET3 and DELVSIN since they contain the same information.

Known Problems in Revision 216

- 1) VHFCNTR should be set to zero in the W-MATRIX^{initialization} for RENDEZVOUS. *Problem*
- 2) MRKLEES should not be done at the end of R21 since this terminates tracking when only the marking should be terminated.
- 3) Extended verb 78 does both a GOPIN and an ENDEXT. The GOPIN is done too soon. The ENDEXT shouldn't be done at all since no TESTXACT is done at the beginning. *make this TC GOPIN*
- 4) If a V37 is selected in between the time a DOWNLIST ID and the second word of that list sent out, the list following will belong to the new DOWNLIST contrary to the ID.
- 5) There are cases when a burn program or R32 could be selected before the incorporation of a mark is finished. When R22 resumes (if after a burn this would be after a V37 selection of P20 or a tracking program) the rest of a mark could be incorporated on the new state vector.
- 6) There are some leftover SETMAXDB's at the end of the burn programs. These should be removed now that V37 and GOTOPPOOH restore the deadband to the state last set in R03.
- 7) There is no dynamic V16N85 display in P41. This violates the GSOP. Presently there is a V06N85 display.
- 8) Extended V82 does a V04N06 display and so do P21, P52, P38 and P37. This results in an erasable conflict because both the extended verbs and the normal programs use the same erasables for N06.
- 9) The comments in the erasable area should be updated.
- 10) N51 has not been hooked up to PINBALL for R05.
- 11) RTEVGAM, PBIAS and YBIAS (10 words) are now in fixed memory but the GSOP specifies them as erasables.
- 12) MDOT is an erasable in the AGC but specified as fixed in the GSOP.
- 13) PINBALL does not wake up displays sleeping due to astronaut use on any loads. Either a change should be made to PINBALL or ASTRONAUT decks will have to be changed.
- 14) UNITW should be 4 pad loaded erasables, not 6. The coding would need to be changed to go along with this saving of erasables.
- 15) The two verb lights appear on the DSKY during UPLINK when all displays should be locked out.
- 16) The polynomial fit for T(X) in TFF should be changed to include a wider hyperbolic range.
- 17) The state of all moon flags after a FRESH START in the MOON vicinity should be looked into. Presently they are reset to indicate earth.

Statistical Summary for COLOSSUS 214

1) Number of modification changes	34
2) Number of cards	120
3) Total fixed memory change	+17