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COLOSSUS Memo #57

To: Distribution
From: M. Hamilton
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Subject: COLOSSUS Revisions 201 and 202

Revision 202 was GOOD.

Major Changes Incorporated into Revisions 201 and 202

1) The improperly defined END-E7 was moved to the correct location.
2) Some EBANK switching logic was incorporated into AVFLAGA for ECSTEER since users enter AVFLAGA in EBANK4 and ECSTEER is now in EBANK7.
3) The SWTOVER flag setting for the TVC DAP was moved in order that both CSM and CSM/LM set it for POSTBURN trim updates.
4) The new ALARM and ABORT routines were incorporated (See COLOSSUS Memo #41). Changes went into various places in the program wherever a TC ABORT occurred. Now all ABORTS will send out an ALARM and go to POODOO or BAILOUT. POODOO makes all restart phases inactive and ends up at GOTOPOOH. BAILOUT does a software restart.
5) A change went into CHKLINUS in R60. If R60 is called during P20 the LINUS BIT 14 is no longer set. This will prevent the possibility of R60 being lost forever.
6) A change was made to the Display Routines to prevent an ABORT if a PRIORITY display attempts to enter when PDSPFLAG (the priority bit) is set. This change goes along with no. 5 above.
7) A change was put into the Display Routines to set the XDSPFLAG for every MARK display set up. The only way to reset this bit is by means of ENDEXT. This change will lock out any normal displays throughout an extended verb as soon as the first display in the extended verb is initiated.

8) 4.11SPOT was zeroed in the RESTART TABLES since it is not used.

9) The check for both the MARK REJECT BUTTON and the ERROR RESET BUTTONS being depressed at the same time was moved in order that software restarts go through this logic. This change goes along with the new ALARM and ABORT routines. If a continuous ABORT loop results a DOFSTART will occur.

10) L/D1 and PAXERR1 were exchanged in DOWNLINK to conform to PCN #146.

11) A RELINT was added to INTPRET. Callers who went to INTPRET +N will now go to INTPRET + (N + 1).

12) The description of QUICTRIG was changed to show that it is no longer correct to call QUICTRIG for basic using USPRCADR. A BANKCALL or IBNKCALL should be used instead.

13) ROLLDAP was speeded up by using QUICTRIG instead of CDUTRIG.

14) IMUCOARK, OPTCOARK and IMUFINEK were fixed to check for a mode change first before doing a TC TESTXACT. Without this fix the TESTXACT test could have passed and the mode change test not passed with the result that extended verbs would be locked out forever.

15) Program descriptions were updated for LOCSAM.

16) Several decussing changes and program bug fixes went in for the new P40s.

17) The low order part of the DELV's is now zeroed for DOWNLINK purposes in IMU compensation.

18) READACCS was changed to start up in EBANK6 since the ENTRY portion of READACCS needs EBANK6 and other users don't care. The restart table calls to READACCS were also changed.

19) A change was put into the TVC initializing to reset the SWTOVER flag for TVCDAPON.

20) PCN #100 was implemented in P31 to eliminate the incompatibility between P37 and P40/P41.

21) The proceed and V32 display responses were exchanged on the 611 ALARM (no TIG for given elevation angle).

22) An entry point was added to RCSDAPON for the new ROOTOPOO logic in V37.

23) ECSTEER was set to 1 at the beginning of P37 (PCN #34).

24) ONMNITOR was corrected to read 2 times a sec. instead of 1 time a sec.

Known Problems in Revision 202

1) THETA (1) is illegally sharing with RONE in V82.
2) RTEVGAM, PBIAS and YBIAS (10 words) are now in fixed memory but the GSOP specifies them as erasables.
3) MDOT is an erasable in the AGC but specified as fixed in the GSOP.
4) TLS which is never used is using up 2 unshared erasables.
5) 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.
6) P22 and P23 erasables are illegally sharing with CONICS.
7) If a restart occurs during the maneuver in V49, an IMU.ZERO will take place since the IMUSE bit is off. The vehicle could be turning at a high maneuver rate and the DAP would not be controlling it for 13 secs.
8) UNITW should be 4 pad loaded erasables, not 6. The coding would need to be changed to go along with this saving of erasables.
9) BVECTOR is illegally sharing with DELVTPI and DELVTPF.
10) R32 should check for the SURFFLAG and do an ALM/END if it is on.
11) There is an erasable conflict between POINTEX in P20 and VVECT in CONICS.
12) DOWNRUPTS are lost frequently during burns.
13) The VHF mark counter should be set in R32 for COLOSSUS only.
14) There could be 3 DELAYJOBS going on during P34 with P20 in the background. If V82 were selected at this time an ABORT would result since only 3 DELAYJOBS are allowed at a time and V82 has 1 DELAYJOB. The number of DELAYLOCS should be increased by one.
15) The PROCEED on the V16N45 display in P35 does not recompute a new TIG. This coding does not conform to the GSOP.
16) Several obsolete flag bits are in COLOSSUS. These should be deleted.
17) The new FLAGWRDS should be initialized in FRESH START.
18) The terminate on the V51 display in SXTMARK now goes to GOTOPOOH. This leaves extended verbs locked out, MARKSTAT set, etc.

19) The two verb lights appear on the DSKY during UPLINK when all displays should be locked out.

20) The DRIFTFLG is not being initialized in FRESH START.

21) The polynomial fit for T(X) in TFF should be changed to include a wider hyperbolic range.

22) V45 has been selected for the new W-MATRIX display in DANCE. To be consistent, a new verb should be assigned for the resetting of the SURFFLAG.

23) If a restart takes place 8 secs after coming out of STANDBY the restart logic will detect the AGC warning light and cause a FRESH START. This logic should be deleted since there is another way of getting a FRESH START (push ERROR RESET and MARK REJECT) if it is needed.

24) V46 for a non SATURN DAP should clear Bit 9 of Channel 12 to prevent garbage from going into the SATURN error counters.

25) 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.

26) S11.1 has not been written for a Lunar environment. It has scaling problems now that P47 is using it.

27) It is possible for R53 to be doing a mark display at the same time R52 comes up with a prio display. The terminate on R52 goes to GOTOPOOH (V37 is a normal display). Since the R53 mark is a higher priority display the V37 display will go to sleep until the mark is answered.

Program Notes

13) R00 is not executed until the astronaut responds to the flashing V37 display by keying in 2 legal program digits followed by ENTER.

14) If a hardware restart occurs during a period when the IMUSE bit is not set, i.e., the current program does not require the IMU, the program performs an IMU ZERO, thus inhibiting DAP control for approximately 13 seconds.

15) Lambert computation should not be used within 3^{o} of target vector.

Statistical Summary for COLOSSUS 202

1) Number of modification changes	49
2) Number of cards	460
3) Total fixed memory changes	+65

Versions of COLOSSUS

Rev	Version	Testing Area
200	BURNCOL	P40s
196	RWSCOL	DAP
186	MOLASSES	P40s
186	ZELOSSUS	Lambert
168	JALOSSUS	DAP
190	MARRIAGE	Erasables
202	HUGHEXEC	executive