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COLOSSUS MEMO# 243

TO: Distribution
FROM: P. Rye
DATE: 2 February, 1970
SUBJECT: Revisions 84 through 89 of COMANCHE.

Revision 89 of COMANCHE was BAD. The following changes were incorporated into Revisions 84 through 89:

1. A check on Bit 3 of OPTMODES was added in the V37 logic ~~so that~~ if V37 is selected when this bit is 1 (during optics zeroing) the V37 selection will not be performed and alarm code 1520 is issued. (PCR 978)

2. A change was made to an ephemeris constant (1/C) correcting an error in the original implementation of PCR 986.1.

3. Coding was changed in the RCS Autopilot to allow MIN IMP firing by the RHC. (PCR 289)

4. The constant AZO was changed to the 1970-1971 value (PCR 986.1)

5. The definition of UPRPTBB was changed to be equated with MKRUPTBB rather than KEYRPTBB, since KEYRUPT and UPRUPT are no longer in the same bank.

6. A coding error in R64 was corrected. (PCR 292)

7. Ephemeris constants in the Planetary Inertial Orientation section were updated to the 1970-1971 values. (PCR 986.1)

8. A new log section containing ECADR's of locations for updates was added. A reprint of this log section will be included as part of Section 2 of GSOP so that the absolute addresses

given in Section 2 will always be consistent with the actual program. (ACB 100)

9. A comment in the Restart Tables was restored, having been inadvertently deleted. (ACB 103)

10. The P22 downlist was changed so that mark data is picked up as a snapshot, ensuring consistent data for each mark. (PCR 868).

11. 50 works of CDH coding were moved from Bank 05 to Bank 36 to make room for the expansion of the downlink list.

12. References to Bit 1 of OPTMODES were deleted. (PCN 994)

13. Extended verb 92 (System Test) was deleted. (PCR 857)

14. System test code which is now included in erasable programs was deleted from fixed memory. (PCR 857)

15. A restart bug resulting from the location of a restart point within a routine called via BANKCALL was corrected. The error was made in the original implementation of PCR 872.1.

16. Changes were made in P23 to allow an automatic maneuver for star acquisition along the track axis in R57 and to allow a choice of VECPOINT or a 3-axis maneuver to acquire landmark or horizon.

A new display is provided in R57 (V50N25FL, R1 = 15). A PROCEED response to this will initiate an automatic maneuver (R60) after displaying V01N70FL for star identification. An ENTER response will bypass both the N70 display and the maneuver and flash V59 for the calibration mark.

For landmark or horizon acquisition in P23, a PROCEED response to V50N25FL (R1 = 202) generates a 3-axis solution (shaft angle = 180°) for the R60 maneuver; an ENTER response generates a VECPOINT solution.

A calculation of horizon bias was added to determine bias as a linear function of range. This uses a newly defined, single precision, pad-loaded erasable, HORISLP.

Changes to COLOSSUS GSOP

17. Room was made in Bank 36 by transferring some interpreter code to Bank 32 and by implementing ACB 110 . ACB 110 eliminates P370ALARM as a subroutine by making RTEALRM do the alarm directly with a fixed return.

18. Comments were updated in P40 and P41.

19. VECPOINT was modified to exit always with Pushdown counter set to zero. (needed to implement PCR 860)

20. P20-P25 log section was renumbered to eliminate odd 6 digit numbers scattered throughout.

21. The rate drive in R61 was modified to establish LOS rate plus about .1 degree/second in the direction of the preferred tracking attitude when the attitude reference is outside the deadband but less than 10 degrees. (PCR 859)

22. P20 logic was changed to use desired rather than actual gimbal angles for rate drive maneuvers. (PCR 860)

23. The subroutine ADVANCE in P32-P33 log section was moved from Bank 37 to Bank 35 to implement PCR 859.

24. The single precision erasable ESTROKER was deleted. (PCR 822)

Changes to COLOSSUS GSOP

The following items should be examined for inclusion in the GSOP sections indicated.

Section 1 (Items 13, 14)

Section 2 (Items 1, 8, 10, 12, 16)

Section 3 (Item 3 , 24

Section 4 (Items 1, ~~13~~, 16, 21)

Section 5 (Items 2,4,7, 16, 21, 22)

Initialization and test data:

Pad loads and erasable initialization are affected by (16) and (24) above.