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TO: Distribution

FROM: K. W. Greene

DATE: 10 July 1970

SUBJECT: Notes on SCB Meeting #39 held at MSC on 7/10/70

I Review of Action Items from previous meetings:

(a) Colossus 3 - MIT was to supply to FSB a list of all telemetry changes between Colossus 2E and Colossus 3 (Artemis).
Status - Closed.

(b) Variable Servicer - FSB is to determine the effect upon the ground flight control complex of implementing variable servicer in Luminary to reduce T-LOSS.
Status - Meetings have been held at MSC and the impact looks minimal at this time. A design review meeting is to be held and a decision as to whether to include this change in Luminary 1E for Apollo 15 made at the next SCB.

(c) Crosspointers - MIT is to determine whether or not there is a significant error in the crosspointer indication of horizontal velocity in Auto - P66.
Status - MIT has reproduced the error seen at GAC, and two memos were presented which described the problem. There are several alternatives under investigation which would be solutions to this problem:

(1) Change R10 computation to double precision.
(2) Change parts to R10 computation to double precision.
(3) Rewrite R10 (Saves computer time and 75 words)
(4) Zerlina would fix this problem and also the $\dot{H}$ tape meter difficulty.

It was decided that nothing would be done to the rope for Apollo 14 and that the above posibilities would be further explored for Apollo 15

(d) Bit Failure Protection - FSB is to determine which flagwords and channel bits are such that we should protect ourselves against that bit failing. Meetings for both Colossus and Luminary have been held.

Status - The meeting produced no bits in the Colossus program that FSB felt should be protected; thereare some candidates in Luminary program that are being further explored.

(NOTE: A PCR for Colossus to protect channel 31 bits 13, 14, 15 was presented to the board and approved for a detail evaluation. B. Tindall urged that this investigation be completed by the next SCB meeting).

(e) DPS throttle oscillations during terminal descent.

Status - A PCR was implemented into Luminary 1D to fix this problem. A meeting is scheduled for Tuesday 7/14/70 to review the results of this change and to determine the gains that are to be used for Apollo 14 (the gains are in erasable).

(f) V68 - A presentation was made by MPAD summarizing the results of the investigation as to the effect of using V68 to terminate the Terrain Model. The Data Priority Meetings are going to continue the study of the use of V68 in Apollo 14.

(g) PCR 1044 Redesign of R53-R57.

Status - MIT presented a memo describing how this change was to be implemented. MSC is to review this change and a decision as to whether or not to implement will be made at the next SCB meeting.

(h) PCR 1039 Terrain Model Improvements.

Status - MIT presented a memo describing the improvements made by the implementation of PCR 1039.

This item has been closed.

(i) Saturn DAP - MIT was to supply MSC with details of the effect of hardware restarts upon CMC output to the Saturn.

Status - MIT reported that the voltage goes to zero for 0.2 seconds. G&C (C. T. Hackler) is to determine what effect this has on the Saturn.

II New Action Items

(a) PCN 1046 "Change Time to Perform IMUCDU Zero" should be looked at for possible inclusion in Luminary as well as Colossus.

(b) Prepare up to date Users Guide for MINKEY which is to be dated 17 July 1970. This should represent Rev. 49 of Artemis.

(c) PCN 1048 "Initialization of Elevation Angle in P34/74" should be looked at for possible inclusion in Colossus as well as Luminary.

III Skylab SCB

A short Skylab SCB was held with the following results:

(a) PCR SL001 "AAP Colossus Downlink Deletions". This PCR was approved for a detail evaluation by MIT.

(b) It was reported that the PCR to define the Skylab DAP requirements was being rewritten but was not available at the board for action.

(c) PCR SL0032 "VHF Range Rate Computation and Display" was approved for Skylab. The requirements were slightly modified at the board to state that this capability should be provided when P20 and P47 and running. (Note: There was a discussion as to whether this change should be implemented into Mainline Apollo. It was felt that this would be a nice capability to have, but was not mandatory for Mainline but was mandatory for Skylab, and because of the complexity of the change and the impact on Mainline that this change would be made effective on Skylab only).

IV Colossus 2E PCRs

(a) PCN 1046 "Change Time to Perform IMUCDU Zero".
Status - Approved.
Comment - It was suggested that the possibility of performing a similar change in Luminary be investigated by MIT.

(b) PCN 1047 "GSOP Clarification of V56 Logic".
Status - Approved.

V Colossus 3 PCRs

(a) PCR 308 "Improved Short Burn Logic".
Status - Disapproved.

(b) PCR 1045 "Delete SIV B Capability During P22".
Status - Approved.

(c) PCR 1049 "CSM Auto-Rendezvous Sequence (MINKEY)".
Status - Approved.
Comment - In order to define and document a baseline for MINKEY the PCR was amended to say that the Users Guide to be dated 17 July 1970 would be the description of MINKEY implemented to date (REV 49). Additional changes would then be made by writing new PCRs/PCNs.

(d) PCR 1050 "Revised Manual Booster Backup Guidance".
Status - Approved for a Detail Evaluation.
Comment - Some concern was expressed on the results obtained in testing this change on the various simulations. It appears that the simulators are giving different results. It was decided that a design review should be held to evaluate the design and the necessity of the change. No one at present at the meeting could express a real need, as a result the design review meeting should also consider the necessity for the change. An idea that a program to cutoff the engine for the critical TLI burn would be more desirable.

(e) PCR 1051 "Universal Pointing".
Status - Approved.

(f) PCR 1054 "Time of Longitude P29".
Status - Approved.

(g) PCR 317.1 "Rescaling Nouns Containing Range and Range Rate".
Status - Approved.

(h) PCR 318 "Software Workaround for State Failures of Channel 31 bits 15, 14 and 13".
Status - Approved for a detail evaluation.

VI Luminary 1D PCRs.

(a) PCN 1042 "Sect. 3 Rev. 4 GSOP Fix for L-1C-08".
Status - Approved.

(b) PCN 1048 "Initialization of Elevation Angle in P34/P74".
Status - Approved.
Comment - This change should be evaluated as to whether or not it should be applied to Colossus.

(c) PCN 1052 "P66 IMU/CG Offset Compensation,"
Status - Approved.

(d) PCN 1007 "GSOP Sect 2. Rev. 9 Editorial Changes".
Status - Approved.

(e) PCN 1008 "GSOP Section 3 Editorial Changes".
Status - Approved.

VII Luminary 1E PCRs

(a) PCR 1044 "Redesign of R53-R57".
Status - Remains Approved for detail evaluation.
Comment - MSC is to review MIT proposed method of implementation.

(b) PCR 317.2 "Rescaling Nouns Containing Range and Range Rate".
Status - Approved.

(c) A PCR defining the change to the LGC required to automatically update the AGS with rendezvous radar is to be written by FSB.

(d) A PCR proposing that the terrain model be changed from a five slope model to a ten slope model was presented. A separate meeting between MIT and MSC is to be held to decide on the necessity of this change.

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K. W. Greene

KWG/brl

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