

IT/DL PROGRAM CHANGE ROUTING SLIP

PCR/PCN # 32032

ANOMALY # _____

ADR # _____

COLOSSUS 3

LUMINARY 1E

COLOSSUS _____

LUMINARY _____

SKYLARK _____

MIT Approved PCN

NASA Approved PCR

NASA Approved Software Anomaly

MIT Approved ADR

NASA Approved PCN

MIT Approved Software Anomaly

A. Coding

Begin coding immediately

ACTION: Dennis Lollar Kyr
Brent Horn Becker

Program Supervisor's Approval: Maryann Hamel

Do not code until new GSOP material has been approved by the MIT Mission Design Review Board (MDRB) and distributed.

B. GSOP Preparation

Prepare GSOP revisions for MDRB consideration

J. KLAUSNER/E. OLSSON

ACTION: _____

Technical Committee Meeting not required.

Technical Committee Meeting(s) held on _____
Attendees: _____

C. KSC Testing and Checkout

Review for possible impact on KSC testing and checkout

ACTION: _____

D. Other Programs Affected

Review for corresponding changes in _____

ACTION: _____

Special Instructions

Project Manager: Stephen T. Hoff

Date: 1/28/71

APOLLO SPACECRAFT SOFTWARE CONFIGURATION CONTROL BOARD PROGRAM CHANGE REQUEST				NUMBER (Completed by FSB) SLO32	
1.0 COMPLETED BY ORIGINATOR					
1.1 ORIGINATOR M. C. Contella		DATE 6/10/70	1.2 ORGANIZATION FCSO		APPROVAL <i>PC Kramer</i>
		DATE 6-10-70			
1.3 EFFECTIVITY Skylab 1/2			1.4 TITLE OF CHANGE VHF RANGE RATE COMPUTATION AND DISPLAY		
1.5 REASON(S) FOR CHANGE In Skylab rendezvous, the CSM will be required to execute the terminal phase braking maneuver. Simulator experience on Mainline has shown this maneuver to be RCS propellant costly and of marked difficulty. The prime contributor to these problems has					
1.6 DESCRIPTION OF CHANGE The computation of range rate should incorporate a filter or smoothing technique to account for the noise and truncation of the VHF data. The method proposed was developed by MSC TRW Task AA35 and documented in TRW Memo 5522.7-70-85 (attached).					
2.0 SOFTWARE CONTROL BOARD OR FLIGHT SOFTWARE BRANCH DECISION FOR VISIBILITY IMPACT ESTIMATE BY MIT					
2.1 <input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED			2.2 REMARKS:		
2.3 SOFTWARE CONTROL BOARD OR FLIGHT SOFTWARE BRANCH SIGN OFF					
DATE					
3.0 MIT VISIBILITY IMPACT EVALUATION:					
3.1 SCHEDULE IMPACT			3.2 IMPACT OF PROVIDING DETAILED EVALUATION		
3.3 STORAGE IMPACT			3.4 REMARKS:		
3.5 MIT COORDINATOR					
DATE					
4.0 SOFTWARE CONTROL BOARD ACTION					
4.1 <input type="checkbox"/> IMPLEMENT AND PROVIDE DETAILED CHANGE EVAL. <input checked="" type="checkbox"/> PROVIDE DETAILED CHANGE EVALUATION <input type="checkbox"/> DIS-APPROVED			4.2 REMARKS		
4.3 SOFTWARE CONTROL BOARD SIGN OFF <i>[Signature]</i>					
DATE 7/10/70					
5.0 MIT DETAILED PROGRAM CHANGE EVALUATION					
5.1 MIT COORDINATOR			5.2 MIT EVALUATION		
DATE					
6.0 SOFTWARE CONTROL BOARD DECISION ON MIT DETAILED PROGRAM CHANGE EVALUATION					
6.1 <input checked="" type="checkbox"/> START OR CONTINUE IMPLEMENTATION <input type="checkbox"/> DISAPPROVED OR STOP IMPLEMENTATION			6.2 REMARKS:		
6.3 SOFTWARE CONTROL BOARD SIGN OFF					
DATE 1/13/71					

APOLLO SPACECRAFT SOFTWARE CONFIGURATION CONTROL BOARD
DATA AMPLIFICATION SHEET

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PROGRAM CHANGE REQUEST NO.	PREPARED BY M. C. Contella	DATE 6/10/70	ORGANIZATION FCSD
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CONTINUATION SECTION: (Refer to Block Number and Title on Program Change Request Form.)

1.5 Reason(s) for Change

been the lack of accuracy in the range rate display computed from the navigated state vectors (for ranges ≤ 1 NM).

An additional use of the proposed capability would be in the computation of backup rendezvous maneuver solutions. Experience has shown that greatly improved accuracy is achieved if range rate information (in addition to range) is available for backup solution calculations. The availability of backup solutions is more critical on Skylab in that the CMC is the only onboard solution and the MSFN capability is degraded due to orbital inclination.

It is required on Skylab to compute range rate directly from VHF range data independently of CMC state vectors.

1.6 Description of Change

The proposed display should have the following capabilities:

- Continuously estimate the current range rate (displayed at normal display rate ≈ 2 sec).
- Estimate the range rate at a specified TIG.
- Be selectable with P20 operating.
- Accurate to within 1 fps.

The following is the suggested display sequence:

VXXE

F	VO6NXX] TIG of range rate and range display. (If zero, display current estimate of range rate and range updating every two seconds.)
	R1 00XXX. hrs	
	R2 000XX. min	
	R3 0XX.XX sec	

PRO

F	V16NXX] Range NM Range rate fps PHI deg (as defined in existing Noun 53)
	R1 XXX.XX	
	R2 XXXX.X	
	R3 XXX.XX	

REMARKS: