To DELCO

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS 77058

REPLY TO ATTN OF: EG9-72-9-BT12-A2160

FEB 7 1972

25/1a N4G 3-1 gen

General Motors Corporation
Delco Electronics Division
Attn: Mr. Paul Larson
Apollo Program Director
Milwaukee, Wisconsin 53201

Subject: Contract NAS 9-10356, Skylark 48 Verification Plan

The Skylark 48 computer program has been released for manufacture and will be used for all Skylab missions. It is requested that the contractor use the Skylab simulation for GCD verification of this program. NASA MSC has established the following plan, in order of priority, for accomplishing this task.

a. Perform the following categories of individual hybrid simulation runs for the CSM RCS docked DAP:

1. Nominal automatic maneuvers
2. Vehicle bending
3. Universal tracking
4. Incorrect mass properties
5. Jet failure
6. Translation maneuvers
7. Two CSM docked attitude hold
8. Larger minimum impulse

b. Perform the following general categories of tests to verify the docked DAP:

1. Verification of the general capability of the Skylab DAP
2. Investigation of DAP off-nominal conditions - failure modes and effects

ROUTING DATA

	OPR	#	T	PGM	SIGNATOR	LOC	SUBJ
02/09/72	MSC	EG9-72-9-BT12-A2160	M	SKY	ALSON	529	

3. Resolution of special DAP problems that arise; e.g., the RCS jet duty cycle and multiple firing problem. The enclosure gives a simulator run schedule designed to aid resolution of this jet duty cycle and multiple firing problem.

c. Perform testing required to verify the primary and backup alignment programs.

It is requested that a schedule for performing this effort be forwarded to NASA MSC within seven days of receipt of this letter. This schedule information is of particular interest to Mr. Clark Hackler, MSC EG7.

This technical direction does not constitute a contract change but is used to better define the effort of the Statement of Work, Exhibit A, Paragraph 4.1.4.6.

Original Signed By:
Ralph Albon, Jr.
Ralph Albon
Project Officer, G&N
Apollo Spacecraft Program Office

cc:
Delco-Houston

bcc:
DCASO-DCRI-DMR (Delco)
BC25/H. R. Hodges
EG/R. G. Chilton
PD5/J. Gilbert
EG/D. C. Cheatham
EG2/K. Cox
EG7/C. T. Hackler
FS6/J. Williams

EG9/HHoward:dmr:1/21/72:2391

VARIABLES / MISSION FUNCTION	β 60°	β 30°	β -30°	β 60°	VENT TORQUES	OTHER VARIABLES
1. Rate Damping						Rate Disturbance
1.1 Automatic						
1.2 Manual						
2. Attitude Hold	X	X	X	X	Yes	
2.1 Wide DB - S.I. (P-20)	X	X	X	X	Yes	
2.2 Narrow DB - S.I.	X	X	X	X	Yes	CMG Torques, CMG Caging Torques
3. EREP - ZLV		X	X		Yes	ZLV Pass Initiation Point, Duration
4. Orbit Shaping						
5. Crew Rescue						
5.1 Control-Axial, CSM's-2	X	X	X	X		
5.2 Control-Axial, CSM's-1	X	X	X	X		
5.3 Control Radial, CSM's-2	X	X	X	X		
5.4 Control Radial, CSM's-1	X	X	X	X		
6. Maneuvers						Maneuver Eigenaxis

Skylab Docked DAP RCS Jet Duty Cycle Simulation
Test Matrix

Enclosure