SATURN V GROU	IND COMPUTER INTERFACE TEST	V-22002-GSE39
HERE TEST PERFORMED	13. COMPUTER/ACE PROG. ID NOT ESTABLISHED	AS - 502 PENT. (IF APPLICABLE) 14. EST. TEST TIME
EST CONFIGURATION	NOT ESTABLISHED	
N/A	Check appropriate boxes and add any add	listana N
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
]IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	X DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	X ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	. WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	MCC-C
MEDICAL	SEARCH LIGHTS	MCC-H
]		FOOD SERVICE
]		
]		
]		
THERS:		
THER APPLICABLE REFERENCE DOC	CONTINUE ON KSC FORM 23-192 IF RE	QUIRED)

APOLLO/SATURN TEST CATALOG 1. TEST TITLE SATURN V GROUND COMPUTER TEST SUPPORT PROCEDURE SATURN V GROUND COMPUTER TEST SUPPORT PROCEDURE SATURN V GROUND COMPUTER TEST SUPPORT PROCEDURE GROUND COMPUTER

4. TEST OBJECTIVES

GROUND COMPUTER PREPARATION AND OPERATIONAL PROCEDURE FOR SATURN V
TEST SUPPORT.

5. TEST DESCRIPTION/EQUIPMENT STATUS

TEST PROCEDURE INCLUDES THE FOLLOWING:

- 1. PREPARATION FOR SUPPORT
- 2. OPERATIONAL PROGRAM LOADING AND INITIALIZATION
- 3. DISCRETE INITIALIZATION
- 4. NORMAL TERMINATION
- 5. OPERATIONAL PROGRAM REINITIALIZATION
- 6. COMPUTER EMERGENCY PROCEDURE
- 7. APPENDIX

6. PREPARED BY

8. NASA-KSC APPROVAL

10. APPROVAL DATE

7-19-66

7. ORGANIZATION

1BM-GROUND COMPUTER SYSTEM

10. APPROVAL DATE

7-19-66

11. VEHICLE EFFECTIVITY

AS-502

APOLLO/SATURN TEST CATALOG (Continuation Sheet)		PAGE 2 OF
. TEST TITLE		2. KSC TEST NO. V-22003-GSE39
SATURN V GROUND CO	OMPUTER TEST SUPPORT PROCEDURE	11. VEHICLE EFFECTIVITY
		AS - 502
. WHERE TEST PERFORMED N/A	13. COMPUTER/ACE PROG. IDEN	
. TEST CONFIGURATION N/A	7,01,20,7,01,10	
	(Check appropriate boxes and add any addition	onal)
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TH RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	Mcc-c
MEDICAL	SEARCH LIGHTS	мсс-н
		FOOD SERVICE
OTHERS:		
7. OTHER APPLICABLE REFERENCE DO	(CONTINUE ON KSC FORM 23-192 IF REQU	VIRED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE 2. KSC TEST NO. V-23000-GSE 39A FLIGHT CONTROL ESE READINESS TEST IU ESE

4. TEST OBJECTIVES

- A. TO VERIFY THAT ALL TEST SPECIFICATIONS AND DATA RE-QUIREMENTS FOR VEHICLE FLIGHT CONTROL SYSTEM EQUIP-MENT IS AVAILABLE.
- B. TO VERIFY AND PRESET LCC FLIGHT CONTROL PANEL METER AND RECORDER CONTROL SCALING CIRCUITS USING DDAS GROUND STATION COMMANDS.
- C. TO VERIFY PROPER OPERATION OF THE SUBSTITUTE AND TORQUE RAMPS IN THE ML ESE.
- D. TO VERIFY THE LCC RECORDER SYSTEM IS READY TO SUPPORT VEHICLE TESTS.
- 5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. APPLICABLE TEST SPECIFICATIONS AND DATA REQUIREMENTS
 ARE LISTED.
- B. PANEL METER AND RECORDER SCALING CIRCUITS ARE AD-JUSTED FOR ZERO AND ± FULL SCALE RANGES USING DIGITAL SIGNALS SUBSTITUTED FROM THE LCC DDAS GROUND STATION.
- C: THIS PROCEDURE PROVIDES STEPS FOR ADJUSTING AMPLITUDE AND SLOPE OF THE RAMP GENERATORS.
- D. A TABLE WILL BE DETERMINED, BASED ON CALIBRATION VOLTAGE INPUTS. THE FUNCTIONAL RECORDER SYSTEM CHECK WILL UTILIZE TABLE REFERENCE VALUES.

STATUS

A. THIS TEST PROCEDURE MAY BE PERFORMED PRIOR TO FLIGHT HARDWARE INSTALLATION.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY

8. NASA-KSC APPROVAL

10. APPROVAL DATE

11. VEHICLE EFFECTIVITY

IBM CORP.

NASA Flight Control

AS-502

APOLLO/SATORN II	EST CATALOG (Continuation Sheet)	PAGE 2 OF 2
TEST TITLE		2. KSC TEST NO. V-23000-GSE 39A
FLIGHT CONTR	OL ESE READINESS TEST	11. VEHICLE EFFECTIVITY
		AS - 502
LCC/ML	13. COMPUTER/ACE PROG. ID	DENT. (IF APPLICABLE) 14. EST. TEST TIME
. TEST CONFIGURATION		1 12 113
LCC FLIGHT CONTROL RE		
X GROUND POWER	(Check appropriate boxes and add any add X LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR		
	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	X DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR'S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	☐H.P. GAS	RFI MONITORING
TETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	
		RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□ wcc-c
MEDICAL	SEARCH LIGHTS	™сс-н
IU ELECTRICAL SYS		FOOD SERVICE
IU FLIGHT CONTROL		
OTHERS:		
	(CONTINUE ON KSC FORM 23-192 IF RE	EQUIRED)

LIGHT CONTROL SYSTEM NULL TEST (S-IC/IU) LEST TITLE LEST TITLE PAGE 1 OF 2 2. KSC TEST NO. V-23001-SA 502 3. STAGE, VEHICLE OR GSE IU/S-IC

4. TEST OBJECTIVES

A. TO DETERMINE THE S-IC ACTUATOR POSITION NULLS WITH HYDRAULICS ON AND NO INPUTS INTO THE CONTROL COMPUTER.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. WITH THE CONTROL COMPUTER AND STAGE HYDRAULICS ON, S-IC SERVO VALVE CURRENT AND ACTUATOR POSITIONS ARE RECORDED ON THE LCC FLIGHT CONTROL RECORDERS.
- B. RECORDED DATA IS COMPARED WITH TEST SPECIFICATIONS.

STATUS

- A. THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-FORMED BY IU AND S-IC STAGE CONTRACTORS.
- B. ACTUATOR LOCKS ARE OFF FOR THIS TEST.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)			
6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE	
6. PREPARED BY J. R. Beynting for. B. T. J. M. Wardy ORGANIZATION	Vincent a. Elentri	June 13, 1966	
7. ORGANIZATION	9. ORGANIZATION LVO - 244	11. VEHICLE EFFECTIVITY	
IBM CORP	NASA- Flight Control	AS- 502	

APOLLO/SATURN TEST CATALOG (Continuation Sheet)		PAGE 2 OF 2
I. TEST TITLE		2. KSC TEST NO.
FLIGHT CONTROL SYST	EM NULL TEST (S-IC/IU)	V-23001-SA 502
TEIGHT CONTROL STST	EM NOEL 1231 (3-10/10)	AS - 502
12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT.	The state of the second colors and the secon
VAB/PAD 39A	S-IC ELECTRICALLY MATED,	0.5 HRS.
NORMAL	OPERATING CONDITION.	
	heck appropriate boxes and add any additiona	<u> </u>
X GROUND POWER	X LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
X IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□MCC-C
MEDICAL	SEARCH LIGHTS	 МСС-Н
X IU FLIGHT CONTROL		FOOD SERVICE
■ S-IC FLIGHT CONTROL		
OTHERS:		
o meno		ι
	CONTINUE ON KSC FORM 23-192 IF REQUIR	(ED)
17. OTHER APPLICABLE REFERENCE DOC	JMENTATION	

APOLLO/SATURN TEST CATALOG 1. TEST TITLE 1. TEST TITLE FLIGHT CONTROL SYSTEM NULL TEST (S-II/IU) PAGE 1 OF 2 2. KSC TEST NO. V-23002-SA 502 IU/S-II

4. TEST OBJECTIVES

A. TO DETERMINE THE S-II ACTUATOR POSITION NULLS WITH HYDRAULICS ON AND NO INPUTS INTO THE CONTROL COMPUTER.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. WITH THE CONTROL COMPUTER AND STAGE HYDRAULICS ON, RECORD S-II SERVO VALVE CURRENT AND ACTUATOR POSITIONS ON THE LCC FLIGHT CONTROL RECORDERS.
- B. RECORDED DATA IS COMPARED WITH TEST SPECIFICATIONS.

STATUS

- A. THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-FORMED BY IU AND S-II STAGE CONTRACTORS.
- B. ACTUATOR LOCKS ARE OFF FOR THIS TEST.

761

	(CONTINUE ON KSC FORM 23-192 IF REQUIRED	D)
I gm 2 land Hit hanford	I.NAA Vinnent a. Elent	June 15, 1966
7. ORGANIZATION	19. ORGANIZATION L. VO -244	II. VERICLE EFFECTIVITI
IBM CORP	NASA-Flight Control	

APOLLO/SATURN TES	T CATALOG (Continuation Sheet)	PAGE 2 OF 2
FLIGHT CONTROL SYS	TEM NULL TEST (S-II/IU)	2. KSC TEST NO. V-23002-SA 502 11. VEHICLE EFFECTIVITY AS- 502
WHERE TEST PERFORMED		(IF APPLICABLE) 14. EST. TEST TIME
	S-II ELECTRICALLY MATED,	CONTROL COMPUTER IN
NORMAL	OPERATING CONDITION. beck appropriate boxes and add any additional	
SUPPORT REQUIREMENTS CHECKLIST (C	X LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
X S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	TALDS
X IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	TX DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TH RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	□ CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
	X FACILITY COMM. (OIS)	WEATHER FORECAST
SECURITY POLICE	FILM CAMERAS	☐ MCC-C
MEDICAL	SEARCH LIGHTS	□wcc-H
☐ IU FLIGHT CONTROL	SEARCH EIGHTS	FOOD SERVICE
S-II FLIGHT CONTROL		
		21.4
OTHERS:		
		L
	CONTINUE ON KSC FORM 23-192 IF REQUI	RED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE FLIGHT CONTROL SYSTEM NULL TEST (S-IVB/IU) PAGE 1 OF 2 2. KSC TEST NO. V-23003-SA 502 3. STAGE, VEHICLE OR GSE IU/S-IVB

4. TEST OBJECTIVES

A. TO DETERMINE THE S-IVB ACTUATOR POSITION NULLS WITH HYDRAULICS ON AND NO INPUTS INTO THE CONTROL COMPUTER.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. WITH THE CONTROL COMPUTER AND STAGE HYDRAULICS ON, S-IVB SERVO VALVE CURRENT AND ACTUATOR POSITIONS ARE RECORDED ON THE LCC FLIGHT CONTROL RECORDERS FOR BOTH ACTIVE AND SPARE CHANNELS.
- B. RECORDED DATA IS COMPARED WITH TEST SPECIFICATIONS.

STATUS

- A. THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-FORMED BY IU AND S-IVB STAGE CONTRACTORS.
- B. ACTUATOR LOCKS ARE OFF FOR THIS TEST.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)		
6. PREPARED BY	Vincent a. Elentri	June 15, 1966
ORGANIZATION IBM CORP	9. ORGANIZATION LVO-244 NASA- Flight Control	11. VEHICLE EFFECTIVITY AS - 502

APOLLO/SATURN TES	T CATALOG (Continuation Sheet)	PAGE 2 OF 2
TEST TITLE		2. KSC TEST NO.
ELICHT CONTROL SVS	TEM NULL TEST (S-IVB/IU)	V-23003-SA 502
FLIGHT CONTROL STS	TEM NOLL TEST (S-TVB/TO)	AS - 502
2. WHERE TEST PERFORMED		IF APPLICABLE) 14. EST. TEST TIME
VAB/PAD 39A	N/A	0.5 HRS.
IU AND	S-IVB ELECTRICALLY MATED, OPERATING CONDITION.	CONTROL COMPUTER IN
6. SUPPORT REQUIREMENTS CHECKLIST (C	heck appropriate boxes and add any additiona	
X GROUND POWER	X LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
X SIVB STAGE POWER	GSE MEASURING (INS)	ALDS
X IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	X DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL- ME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	MCC-C
MEDICAL	SEARCH LIGHTS	Шмсс-н
■ IU FLIGHT CONTROL	X S-IVB MEASURING	FOOD SERVICE
S-IVB FLIGHT CONTROL		
S-148 FEIGHT CONTROL		
		0 010
OTHERS.		(4 () (
OTHERS:		()
(CONTINUE ON KSC FORM 23-192 IF REQUIR	ED)
17. OTHER APPLICABLE REFERENCE DOCL		

KSC OPERATIONS PAGE 1 OF 2 APOLLO/SATURN TEST CATALOG 2. KSC TEST NO. V-23004-SA 502 FUNCTIONAL, POLARITY, AND MEASURING CALIBRATION

4. TEST OBJECTIVES

1. TEST TITLE

- A. TO VERIFY PROPER OPERATION OF THE CONTROL RELAY PACKAGES.
- B. TO ACHIEVE THE FOLLOWING:
 - (1) S-IVB TELEMETRY CALIBRATION.

OF S-IVB APS CONTROL RELAY PACKAGE

- (2) CALIBRATION OF S-IVB ENGINE DEFLECTION PANEL, VALVE MONITOR METERS, AND LCC FLIGHT CONTROL RECORDERS.
- VERIFICATION OF THE TEST (J-4) AND THE OUTPUT (J-2) CONNECTORS ON THE CONTROL RELAY PACKAGE.
- 5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. THE CONTROL RELAY PACKAGE WILL BE VISUALLY IN-SPECTED PRIOR TO CONNECTING TEST EQUIPMENT.
- RELAY OPERATION, RESULTING FROM CONTROL COMPUTER В. TEST RAMPS, WILL BE MONITORED AT TEST CONNECTOR J-4 WITH THE APS TEST SET.
- WHEN PROPER RELAY OPERATION IS VERIFIED FOR A GIVEN INPUT, TELEMETRY AND THE LCC RECORDERS AND PANEL METERS WILL BE CALIBRATED AS REQUIRED.

STATUS

- THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-FORMED BY IU AND S-IVB STAGE CONTRACTORS.
- В. THE APS LOAD BOX AND ASSOCIATED CABLES WILL BE CHECKED PRIOR TO THIS TEST.

IU/S-IVB

	(CC	NTINUE ON KSC FORM 23-192 IF REQUIRED)	
6. PREPARED BY		8. NASA-KSC APPROVAL	10. APPROVAL DATE
1.m. Ward	ma Diele	It Vincent a. Elentri	June 13, 1966
. ORGANIZATION	A 15	9. ORGANIZATION LVO - 244	11. VEHICLE EFFECTIVITY
IBM CORP.	DAC	NASA-Flight Control	AS- 502

	AND MEASURING CALIBRAT NTROL RELAY PACKAGE	AS - 502
OF S-IVB APS CO	NTROL RELAY PACKAGE	AS - 502
, WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDE	AS - 502
VAB/PAD 39A	l N/A	
TEST CONFIGURATION		3.0 HRS.
		TER IN OPERATING CONDITION
	Check appropriate boxes and add any addition	
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
X IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	CC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	Mcc-c
MEDICAL	SEARCH LIGHTS	MCC-H
IU FLIGHT CONTROL	K S-IVB MEASURING	FOOD SERVICE
X S-IVB FLIGHT CONTROL		
OTHERS:		700
7.11.71.71		
(CONTINUE ON KSC FORM 23-192 IF REQ	UIRED)
OTHER APPLICABLE REFERENCE DOC	JMENTATION	

RSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE PHI DOT A₁ GAIN AND DYNAMIC TEST (S-IC/IU) PAGE 1 OF 2 2. KSC TEST NO. V-23005-SA 502 3. STAGE, VEHICLE OR GSE IU/S-IC

4. TEST OBJECTIVES

- A. TO VERIFY THE FLIGHT CONTROL SYSTEM PHI DOT GAIN USING ATTITUDE RATE COMMANDS AND ENGINE ACTUATOR POSITIONS FOR ALL S-IC SWITCH POINTS.
- B. TO VERIFY THE FLIGHT CONTROL SYSTEM DYNAMIC RE-SPONSE TO ATTITUDE RATE STEP COMMANDS BY RECORD-ING ENGINE ACTUATOR POSITIONS.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. ATTITUDE RATE COMMANDS AND RESULTANT ACTUATOR POSITIONS ARE RECORDED FOR SPECIFIED PHI DOT IN-PUTS, TO VERIFY PROPER SYSTEM DC GAIN FOR THE S-IC STAGE.
- B. PHI DOT STEP COMMANDS ARE GENERATED BY CHANGING THE CONTROL COMPUTER FROM THE TEST MODE TO THE BURN MODE. ENGINE ACTUATOR POSITION RECORDINGS ARE COMPARED TO PUBLISHED CURVES IN ALL AXES FOR THE DYNAMIC TEST.

STATUS

- A. THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-FORMED BY IU AND S-IC STAGE CONTRACTORS.
- B. THE ENGINE ACTUATORS WILL BE DISCONNECTED FOR THE DYNAMIC TEST.

	CONTINUE ON KSC FORM 23-192 IF REQUIRED)	
Symptolle	Viscent a. Elentri	June 13, 1966
TEM CORP	9. ORGANIZATION LUO-249 NASA-Flight Control	AS- 502

APOLLO/SATURN TEST CATALOG (Continuation Sheet) PAGE 2 OF 2			
1. TEST TITLE : 2. KSC TEST NO.			
PHI DOT A1 GAIN AND DYNAMIC TEST (S-IC/IU)			
FILL DOT AT GAIN A	ND DINAMIC TEST (3-10/10)	AS - 502	
12. WHERE TEST PERFORMED		(IF APPLICABLE) 14. EST. TEST TIME	
VAB	EDS RATE GYRO/CONTROL SIG	I 2.0 HRS. GNAL PROCESSOR AND	
CONTROL	COMPUTER IN NORMAL OPERA	TING CONDITION.	
GROUND POWER	X LCC MEASURING (LVO)	ETR/KSC RADAR	
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER	
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)	
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS	
X IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)	
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING	
SM POWER	X DDAS	CIF TM STA. (MONITOR)	
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING	
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER	
TIMING	X RCA-110A COMPUTERS	CIF DATA	
COUNTDOWN CLOCK	ACE	TM RECORDS	
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.	
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.	
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING	
ETR R.S.O.	H.P. GAS	REI MONITORING	
ETR PAD SAFETY	CCF	RF READOUTS (ETR)	
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)	
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST	
FIRE FIGHTING	FILM CAMERAS	□ MCC-C	
MEDICAL	SEARCH LIGHTS	 МСС-Н	
X IU FLIGHT CONTROL		FOOD SERVICE	
S-IC FLIGHT CONTROL			
		\Box \bigcirc \bigcirc \bigcirc \bigcirc	
		-500	
OTHERS:			
	(CONTINUE ON KSC FORM 23-192 IF REQUI	(RED)	
17. OTHER APPLICABLE REFERENCE DO			

KSC OPERATIONS APOLLO/SATURN TEST CATALOG TITLE PHI DOT A1 GAIN AND DYNAMIC TEST (S-II/IU) PAGE 1 OF 2 2. KSC TEST NO. V-23006-SA 502 P. STAGE, VEHICLE OR GSE

4. TEST OBJECTIVES

1. TEST TITLE

- A. TO VERIFY THE FLIGHT CONTROL SYSTEM PHI DOT GAIN USING ATTITUDE RATE COMMANDS AND ENGINE ACTUATOR POSITIONS FOR ALL S-II SWITCH POINTS.
- B. TO VERIFY THE FLIGHT CONTROL SYSTEM DYNAMIC RE-SPONSE TO ATTITUDE RATE STEP COMMANDS BY RECORD-ING ENGINE ACTUATOR POSITIONS.
- 5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. ATTITUDE RATE COMMANDS AND RESULTANT ACTUATOR POSITIONS ARE RECORDED, FOR SPECIFIED PHI DOT IN-PUTS, TO VERIFY PROPER SYSTEM DC GAIN FOR THE S-II STAGE.
- B. PHI DOT STEP COMMANDS ARE GENERATED BY CHANGING THE CONTROL COMPUTER FROM THE TEST MODE TO THE BURN MODE. ENGINE ACTUATOR POSITION RECORDINGS ARE COMPARED TO PUBLISHED CURVES IN ALL AXES FOR THE DYNAMIC TEST.

STATUS

- A. THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-FORMED BY IU AND S-II STAGE CONTRACTORS.
- B. THE ENGINE ACTUATORS WILL BE DISCONNECTED FOR THE DYNAMIC TEST.

369

IU/S-II

6. PREPARED BY Grawford-NAA	8. NASA-KSC APPROVAL Veneent a. Elentri	June 13, 1966
Worganization	9. ORGANIZATION	11. VEHICLE EFFECTIVITY
IBM CORP	LVO-244 NASA-Flight Coste	AS- 502

APOLLO/SATURN TES	T CATALOG (Continuation Sheet)	PAGE 2 OF 2
1. TEST TITLE		2. KSC TEST NO.
DUIT DOT 4		V-23006-SA 502
PHI DOT A1 GAIN AND	DYNAMIC TEST (S-11/1U)	AS - 502
12. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT.	(IF APPLICABLE) 14. EST. TEST TIME
VAB	NOT ESTABLISHED EDS RATE GYRO/CONTROL SIG	2.0 HRS:
CONTROL	COMPUTER IN NORMAL OPERAT	ING CONDITION.
	beck appropriate boxes and add any additional	
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
X S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
XIU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	▼ DDAS	CIF TH STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□ MCC-C
MEDICAL	SEARCH LIGHTS	□ MCC-H
X IU FLIGHT CONTROL		FOOD SERVICE
X S-II FLIGHT CONTROL		
		0 77/7
		5 10
OTHERS:	_	
. (0	CONTINUE ON KSC FORM 23-192 IF REQUIR	ED)
17. OTHER APPLICABLE REFERENCE DOCL	MENTATION	

.

RSC OPERATIONS APOLLO/SATURN TEST CATALOG LE PHI DOT A₁ GAIN AND DYNAMIC TEST (S-IVB/IU) RSC TEST NO. V-23007-SA 502 S. STAGE, VEHICLE OR GSE IU/S-IVB

4. TEST OBJECTIVES

1. TEST TITLE

- A. TO VERIFY THE FLIGHT CONTROL SYSTEM PHI DOT GAIN USING ATTITUDE RATE COMMANDS, ENGINE ACTUATOR POSITION, APS DUTY CYCLE FOR ALL S-IVB SWITCH POINTS AND MODES.
- B. TO VERIFY THE FLIGHT CONTROL SYSTEM DYNAMIC RE-SPONSE TO ATTITUDE RATE STEP COMMANDS BY RECORD-ING ENGINE ACTUATOR POSITIONS.
- 5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. ATTITUDE RATE COMMANDS AND RESULTANT ACTUATOR POSITIONS AND APS DUTY CYCLES ARE RECORDED FOR SPECIFIED PHI DOT INPUTS, TO VERIFY PROPER SYSTEM GAINS FOR THE S-IVB BURN AND COAST MODES.
- B. PHI DOT STEP COMMANDS ARE GENERATED BY CHANGING THE CONTROL COMPUTER FROM THE TEST MODE TO THE BURN MODE. ENGINE ACTUATOR POSITION RECORDINGS ARE COMPARED TO PUBLISHED CURVES FOR THE DYNAMIC TEST.

STATUS

- A. THIS PROCEDURE WILL BE JOINTLY WRITTEN AND PER-
- B. THE ENGINE ACTUATORS WILL BE DISCONNECTED FOR THE DYNAMIC TESTS.
- C. APS POWER MAY BE ON IF VALVE DUMMY LOADS ARE INSTALLED.

7/

	CONT	INUE ON KSC FORM 23-192 IF REQUIRED)	
6. PREPARED BY	M.O. Tiele	Vencent a. Elenty	June 13, 1966
PORGANIZATION 18M CORP	PAC	9. ORGANIZATION LVO-Z44 NASA-Flight Control	11. VEHICLE EFFECTIVITY AS - 502

WHERE TEST PERFORMED	ND DYNAMIC TEST (S-IVB/I	AS - 502
VAB	NOT ESTABLIS	
	EDS RATE GYRO/CONTROL S	SIGNAL PROCESSOR AND
	COMPUTER IN NORMAL OPER	
X GROUND POWER	X LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
SIVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	X DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	MCC-C
MEDICAL	SEARCH LIGHTS	мсс-н
IU FLIGHT CONTROL		FOOD SERVICE
S-IVB FLIGHT CONTRO	L 🗆	
		-
		P //
OTHERS		, ,
7. OTHER APPLICABLE REFERENCE DO	(CONTINUE ON KSC FORM 23-192 IF REC	QUIRED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG PAGE 1 OF 2 1. TEST TITLE 2. KSC TEST NO. V-23008-SA 502 S-IC DYNAMIC PRESSURE FEEDBACK TEST IU/S-IC

4. TEST OBJECTIVES

- A. TO VERIFY THAT THE DYNAMIC PRESSURE FEEDBACK (DPF)
 WITHIN THE S-IC SERVOACTUATOR IS FUNCTIONING
 PROPERLY.
- B. TO VERIFY DYNAMIC RATE OF THE LOADED SERVOACTUATOR.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. WITH THE CONTROL COMPUTER AND HYDRAULICS ON, APPLY A STEP INPUT TO THE SERVOACTUATOR.
- B. RECORD THE INPUT STEP AND THE SERVOACTUATOR MEASUR-ING POT OUTPUT.
- C. EXAMINE RECORDINGS TO VERIFY DPF OPERATION AND ACTUATOR RATE.

STATUS

- A. VERIFY SERVOACTUATORS ARE CONNECTED TO THE F-1 ENGINES.
- B. VERIFY ACTUATOR LOCKS OFF.

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	(CONTINUE ON KSC FORM 23-192 IF REQUIRED)	
Syron Felle	Vincent a. Elentri	10. APPROVAL DATE
FORGANIZATION TBC	9. ORGANIZATION LVO-244 NASH- Flight Control	11. VEHICLE EFFECTIVITY AS = 502

APOLLO/SATURN TES	T CATALOG (Continuation Sheet)	PAGE 2 OF 2
TEST TITLE		2. KSC TEST NO.
S-IC DYNAMIC PR	RESSURE FEEDBACK TEST	V-23008-SA 502
. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. IDENT	AS-502
VAB/PAD 39A	NOT ESTABLISHED	. (IF APPLICABLE) 14. EST. TEST TIME
CONTROL COMPUTED IN NO		
	DRMAL OPERATING CONDITION Theck appropriate boxes and add any addition	
X GROUND POWER	X LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
X IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	X DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TH RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS .	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (015)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	MCC-C
MEDICAL	SEARCH LIGHTS	мсс-н
X IU FLIGHT CONTROL		FOOD SERVICE
S-1C FLIGHT CONTROL		
[man-		0 771
		□) / (/
OTHERS:	,	()
		*
*		
7. OTHER APPLICABLE REFERENCE DOCL	CONTINUE ON KSC FORM 23-192 IF REQU	IRED)

APOLLO/SATURN TEST CATALOG 1. TEST TITLE S-II DYNAMIC PRESSURE FEEDBACK TEST PAGE 1 OF 2 2. KSC TEST NO. V-23009-SA 502 3. STAGE, VEHICLE OR GSE IU/S-II

4. TEST OBJECTIVES

- A. TO VERIFY THAT THE DYNAMIC PRESSURE FEEDBACK (DPF) WITHIN THE S-II SERVOACTUATOR IS FUNCTIONING PROPERLY.
- B. TO VERIFY DYNAMIC RATE OF THE LOADED SERVO-ACTUATOR.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. WITH THE CONTROL COMPUTER AND HYDRAULICS ON, APPLY A STEP INPUT TO THE SERVOACTUATOR.
- B. RECORD THE INPUT STEP AND THE SERVOACTUATOR MEASURING POT OUTPUT.
- C. EXAMINE RECORDINGS TO VERIFY DPF OPERATION AND ACTUATOR RATE.

STATUS

- A. VERIFY SERVOACTUATORS ARE CONNECTED TO THE J-2 ENGINES.
- B. VERIFY ACTUATOR LOCKS OFF.

(CO	NTINUE ON KSC FORM 23-192 IF REQUIRED)	
6. PREPARED BY GRACEGEY - NAA	Vencent a. E lents.	June 13, 1966
7 ORGANIZATION	9. ORGANIZATION LVO - 244	11. VEHICLE EFFECTIVITY
IBM CORP	NASH-Flight Control	AS - 502

APOLLO/SATURN TEST CATALOG (Continuation Sheet) PAGE 2 OF 2			
TEST TITLE	* .	2. KSC TEST NO.	
S-II DYNAMIC PR	RESSURE FEEDBACK TEST	V-23009-SA 502	
		AS - 502	
WHERE TEST PERFORMED		(IF APPLICABLE) 14. EST. TEST TIME	
VAB/PAD 39A	NOT ESTABLISHED		
	RMAL OPERATING CONDITION		
	Check appropriate boxes and add any addition		
GROUND POWER	CC MEASURING (LVO)	ETR/KSC RADAR	
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER	
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)	
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS	
X IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)	
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING	
SM POWER	X DDAS	CIF TM STA. (MONITOR)	
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING	
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER	
TIMING	X RCA-110A COMPUTERS	CIF DATA	
COUNTDOWN CLOCK	ACE	TM RECORDS	
ETR SEQUENCER	L/Y W-G EC\$	REAL-TIME CIF COMPUT.	
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.	
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING	
ETR R.S.O.	H.P. GAS	RFI MONITORING	
ETR PAD SAFETY	CCF	RF READOUTS (ETR)	
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)	
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST	
FIRE FIGHTING	FILM CAMERAS	□ MCC-C	
MEDICAL	SEARCH LIGHTS	MCCH	
☑ IU FLIGHT CONTROL		FOOD SERVICE	
S-II FLIGHT CONTROL			
		\bar{a} / γ /	
OTHER			
OTHERN	• 4	- 1	
	CONTINUE ON KSC FORM 23-192 IF REQUI	RED)	
7. OTHER APPLICABLE REFERENCE DOC			

S-IVB DYNAMIC PRESSURE FEEDBACK TEST KSC OPERATIONS APOLLO/SATURN TEST CATALOG PAGE 1 OF 2 **ENEC TEST NO. V-23010-SA 502 **STAGE, VEHICLE OR GSE IU/S-IVB

4. TEST OBJECTIVES

- A. TO VERIFY THAT THE DYNAMIC PRESSURE FEEDBACK (DPF) WITHIN THE S-IVB SERVOACTUATOR IS FUNCTIONING PROPERLY.
- B. TO VERIFY DYNAMIC RATE OF THE LOADED SERVO-ACTUATOR.

5. TEST DESCRIPTION/EQUIPMENT STATUS

DESCRIPTION

- A. WITH THE CONTROL COMPUTER AND HYDRAULICS ON, APPLY A STEP INPUT TO THE SERVOACTUATOR.
- B. RECORD THE INPUT STEP AND THE SERVOACTUATOR MEASURING POT OUTPUT.
- C. EXAMINE RECORDINGS TO VERIFY DPF OPERATION AND ACTUATOR RATE.

STATUS

- A. VERIFY SERVOACTUATORS ARE CONNECTED TO THE J-2 ENGINE.
- B. VERIFY ACTUATOR LOCKS OFF.
- C. VERIFY APS POWER OFF.

6. PREPARED BY	8. NASA-KSC		10. APPROVAL DATE
d.m. Ward	M. a Tule Vinc	ent a. Elentri	June 13, 1966
ORGANIZATION	9. ORGANIZA	TION 40-244	11. VEHICLE EFFECTIVITY
IBIN CORP	DAC NASA-	Flight Control	AS- 502

APOLLO/SATURN	TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2
S-IVB DYNAMIC	PRESSURE FEEDBACK TEST	2. KSC TEST NO. V-23010-SA 502 11. VEHICLE EFFECTIVITY AS-502
WHERE TEST PERFORMED VAB/PAD 39A TEST CONFIGURATION	NOT ESTABLE	IDENT. (IF APPLICABLE) 14. EST. TEST TIME
CONTROL COMPUTER IN	NORMAL OPERATING CONDIT	
to the state of th	ST (Check appropriate boxes and old any as	
GROUND POWER	CC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (MS)	ALDS
X IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	CC TM RECORDING
SM POWER	[X] DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	X RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G EC\$	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□ MCC-C
MEDICAL	SEARCH LIGHTS	 МСС-Н
IN THE SHE CONTROL		FOOD SERVICE
X S-IVB FLIGHT CONT	ROL -	
OTHERS		_ (' ' '
	(CONTINUE ON KEC PORM 35-192 IF	Bournes.

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE VISUAL INSPECTION AND FUNCTIONAL TEST OF SPARE S-1C HYDRAULIC ACTUATOR IN THE LABORATORY. PAGE 1 OF 2 2. KSC TEST NO. V-23011- SIC2 3. STAGE, VEHICLE OR GSE AS-502 (Test)

4. TEST OBJECTIVES

TO VERIFY BY VISUAL INSPECTION THAT NO PHYSICAL DAMAGE HAS OCCURRED DURING SHIPMENT AND TO VERIFY PROPER OPERATION OF THE S-1C ACTUATOR UNDER STATIC CONDITIONS BY PERFORMING FUNCTIONAL AND ELECTRICAL CALIBRATION TESTS IN THE LAB.

5. TEST DESCRIPTION/EQUIPMENT STATUS

TEST DESCRIPTION:

PART I:

THE HYDRAULIC ACTUATOR WILL BE VISUALLY INSPECTED FOR ANY PHYSICAL DAMAGE RELATIVE TO ACTUATOR SURFACES, PLUGS, PINS, ETC.

PART II:

INSULATION RESISTANCE AND CONTINUITY TESTS WILL BE PERFORMED ON THE TORQUE MOTOR COILS AND THE BETA MEASURING POTENTIOMETERS. BETA MEASURING POTENTIOMETER NOISE, LINEARITY, AND NULL TESTS WILL BE ACCOMPLISHED.

STATUS:

A. PROCEDURE SET-UP AND CONDITIONS:

VISUAL INSPECTION WILL BE ACCOMPLISHED PRIOR TO ANY OTHER TEST, THE FUNCTION AND ELECTRICAL CALIBRATION TEST WILL BE CONDUCTED PRIOR TO THE LENGTH ADJUSTMENT TEST.

B. LABORATORY TEST EQUIPMENT REQUIRED:

WHEATSTONE BRIDGE, LEEDS AND NORTHRUP CO. MODEL 5305; MEGGER, VIBRO TEST ASSOCIATED RESEARCH, MODEL 201; OSCILLOSCOPE, TEKTRONIX, MODEL 545B; LENGTH ADJUSTMENT FIXTURE AND MECHANICAL STROKER ADAPTER; MID-STROKE LOCKS AND BREAKOUT BOXES (SUITCASE TYPE); RECORDER, PORTABLE FOUR CHANNEL, BRUSH MARK 240 SYSTEM; DIGITAL VOLTMETER, HEWLETT PACKARD 3440A; 0-30 VDC POWER SUPPLY, HEWLETT PACKARD 721A; PORTABLE SUBSTITUTE CONTROL COMPUTER; HYDRAULIC ACTUATOR HOLDING AND HANDLING FIXTURES.

C. MANPOWER REQUIRED:

1 ENGINEER; 1 EQUIPMENT SPECIALIST
(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

Syron & Telle	V.a. Elenti	June 13, 1966
7. OROMIZATION	9. ORGANIZATION LVO-244	11. EHICLE EFFECTIVITY
Boeing S-1C Stage	NASA-Flight Control	AS- 502

Laboratory (Bench) 6. SUPPORT REQUIREMENTS CHECKLIST (Check appropriate boars and add any additional) GROUND POWER SIB ON SIC STADE PWR SIB ON SIC STADE PWR SISTADE POWER SISTADE POWER SID STADE POWER SID POAS APPERCORDING SID FOR STA, (MONITOR) SID POWER SID POWER SID POWER SID POWER SID POAS APPERCORDING SID FOR STA, (MONITOR) SID POWER SID POWER SID POWER SID POAS APPERCORDING SID POWER SID POAS APPERCORDING SID FOR STADE RECORDING SID	APOLLO/SATURN	TEST CATALOG (Continuation Sheet)		PAGE 2 OF 2
Spare S-TC Hydraulic Actuator in the Laboratory Saturn V Plight Control Lab 19, Computer/age page, Identity (A Hours) Saturn V Plight Control Lab 19, Computer/age page, Identity (A Hours) Saturn V Plight Control Lab 19, Computer/age page, Identity (A Hours) Support sequirements Checklist (Chock appropriate bases and add any additional) GROUND POWER Support sequirements Checklist (Chock appropriate bases and add any additional) GROUND POWER Support sequirements Checklist (Chock appropriate bases and add any additional) GROUND POWER Support sequirements (LVD) Support sequ				MA TO DESCRIPTION OF THE PROPERTY OF THE PROPE
2. MIRRE TEST PERFORMED SALUTI V FILIGHT CONTrol Lab 13. COMPUTER/ARE PROG. IGENT. (IP APPLICABLE) 14. EST. TEST TIME B/A 4. HOURS 4. HOURS 4. HOURS 5. VEST CONTROLUMATION Laboratory (Bench) 5. SUPPORT REQUIREMENTS CHECKLIST (Corca appropriate bases and and any additional) GROUND POWER LCC MEASURING (LVD) ETR/KSC RADAR ETR COMMAND XMITTER S-II STAGE POWER LCC MEASURING (LVD) S-II STAGE POWER LCC MEASURING (LVD) S-II STAGE POWER GSE MEASURING (LVD) S-II STAGE POWER GSE MEASURING (LVD) S-II STAGE POWER LCC DATA DISPLAT LCC TM STA. (MONITOR) LEM POWER LCC DATA DISPLAT LCC TM RECORDING SM POWER DDAS CIF TM STA. (MONITOR) SM POWER DDAS TAPE RECORDING CIF TM STA. (MONITOR) BACK-UP BATTERIES SERVICE STRUCTURE MEAS. CIF COMPUTER TIMING RCA-110A COMPUTERS CIF DATA COUNTDOWN CLOCK ACE TM RECORDS ETR SEQUENCER L/V W.G ECS REALITIME CIF COMPUT. ETR SEQUENCER L/V W.G ECS REALITIME CIF COMPUT. ETR S.R.O. FACILITY ECS (GAS) RFI MONITORING ETR RAD. H.P. GAS RFI MONITORING ETR RAD. H.P. GAS RFI MONITORING ETR PAD SAPETY CCF RF READOUTS (ESC) SECURITY POLICE FACILITY TO (OTV) RF READOUTS (ESC) SECURITY POLICE FACILITY COMM. (DIS) WEATHER FORECAST FIRE FIGHTING FILM CAMERAS MCC-C MEDICAL SEARCH LIGHTS MCC-H FOOD SERVICE OTHERM NOBE REQUIRED (CONTINUE ON REC PORM SALE PLEQUIRED)	Visual Inspec	ition and Functional Test of		
SALURY V Flight Control Lab 1. YEST COMPISURATION Laboratory (Bench) 6. SUPPORT REQUIREMENTS CHECKLIST (Check appropriate bases and add any additional) GROUND POWER SIB OR SIG STAGE PWR SISTAGE POWER SISTAGE STRUCTURE MEAS. SISTAGE POWER SISTAGE STRUCTURE MEAS. SISTAGE COMMAND (C.C.) THE RECORDING SISTAGE STRUCTURE MEAS. SISTAGE COMMAND (C.C.) SISTAGE STRUCTURE MEAS. SISTAGE STRUCTUR				
LABOTATORY (Bench) 16. SUPPORT REQUIREMENTS CHECKLIST (Check appropriate bonce and all any additional) GROUND POWER			DENT. (IF APPL	
SUPPORT REQUIREMENTS CHECKLIST (Check appropriate boars and and any additional) GROUND POWER LCC MEASURING (NU) S-18 OR 5-1C STAGE PVR LCC MEASURING (NU) S-18 STAGE POWER GOSE MEASURING (NU) LLOC CALL COMMAND (C.L.) S-19 STAGE POWER GOSE MEASURING (NU) LLOC DATA DISPLAT LLOC TO MECORDING LLOC TO MECORDING GOSE MEASURING (NU) LLOC TO MECORDING LLOC TO MECORDING GOS MEASURING (NU) COMPOWER DOAS GOST TO STA. (MONITOR) COMPOWER DOAS TAPE RECORDING GOST TO RECOMENTO GOST TO RECORDING	S. TEST CONFIGURATION		***************************************	
GROUND POWER CCC MEASURING (LVO)			ditional)	
S-II STAGE POWER				R/KSC RADAR
SLIVE STACE POWER	S-IB OR S-IC STAGE PWR	LCC MEASURING (MS)	ETI	R COMMAND XMITTER
LEC DATA DISPLAY LCC TM STA. (MONITOR) LEM POWER	SHI STAGE POWER	GSE MEASURING (LVG)	Loc	CAL COMMAND (C.L.)
LEM POWER SM POWER DDAS CIF TM STA. (MONITOR) CIF TM RECORDING CIF DATA COMPUT. FERT RECORDING COMPUT. FERT S.G. FERT S.G. FACILITY ECS (GAS) CIF COMPUT. CIF DATA COMPUT. CIF DATA CIC COMPUT. CIF DATA CIF DATA CIF DATA CIC COMPUT. CIF DATA CIC COMPUT. CIF DATA CIC COMPUT. CIF DATA CIF DATA CIC COMPUT. CIF DATA CIC COM	SIVE STAGE POWER	GSE MEASURING (INS)	ALI	DS
SM POWER CM POWER DDAS TAPE RECORDING CIF TM STA. (MONITOR) CM POWER DDAS TAPE RECORDING CIF TM RECORDING CIF TM RECORDING CIF TM RECORDING CIF COMPUTER CIF DATA CIF DATA CIF DATA CIF DATA COUNTDOWN CLOCK CETR SEQUENCER CM W-G ECS CM W-C ECS	U POWER	LCC DATA DISPLAT	□ LCC	C TM STA. (MONITOR)
DDAS TAPE RECORDING BACK-UP BATTERIES SERVICE STRUCTURE MEAS. CIF TM RECORDING CIF COMPUTER CIF DATA COUNTDOWN CLOCK ETR SEQUENCER CIF V W-G ECS ETR COUNTDOWN CLOCK ETR S.R.O. ETR S.R.O. ETR R.S.O. ETR PAD SAPETY CCF KSC PAD SAPETY FACILITY TV (OTV) SECURITY POLICE FACILITY COMM. (018) FIRE FIGHTING FILM CAMERAS MCC-C MEDICAL CONTINUS ON REC PORM None Required (CONTINUS ON REC PORM CIF TM RECORDING CIF TM RECORDING CIF DATA CIF DATA CIF TM RECORDING CIF DATA CIF DATA CIF MRECORDING CIF DATA CIF MRECORDING CIF DATA CIF MRECORDING CIF DATA CIF DATA CIF DATA CIF MRECORDING CIF DATA CIF MRECORDING CIF DATA C	LEM POWER	CIF DATA DISPLAY	□ rcc	C TM RECORDING
BACK-UP BATTERIES SERVICE STRUCTURE MEAS. CIF COMPUTER CIF DATA COUNTDOWN CLOCK ETR SEQUENCER L/Y W-G ECS ETR COUNTDOWN CLOCK CM W-G ECS ETR S.R.O. ETR S.R.O. ETR R.S.O. ETR PAD SAFETY CCF KSC PAD SAFETY FACILITY TV (OTV) SECURITY POLICE FACILITY COMM. (018) FIRE FIGHTING FIRE FIGHTING FILM CAMERAS MCC-C MEDICAL CONTINUE ON REC PORT TREQUIRED)	SM POWER	DDAS	CIF	TM STA. (MONITOR)
TIMING RCA-110A COMPUTERS CIF DATA	CM POWER	DDAS TAPE RECORDING	CIF	TM RECORDING
COUNTDOWN CLOCK CT SEQUENCER L/Y W.G ECS CT SEQUENCER L/Y W.G ECS CT SEQUENCER CT W.G ECS CT SECURITY ECS (GAS) SET R S.O. CT SECURITY POLICE FIRE FIGHTING FILM CAMERAS MEDICAL NOTHERS NOTHERS NOTHERS CONTINUE ON REC PORT COUNTDOWN CLOCK CT W.G ECS CT COMPUT. CT	BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF	COMPUTER
ETR SEQUENCER	TIMING	RCA-110A COMPUTERS	CIF	DATA
ETR COUNTDOWN CLOCK CM W-G ECS POST-TEST CIF COMPUT. ETR S.R.O. FACILITY ECS (GAS) KSC TRACKING ETR R.S.O. H.P. GAS RFI MONITORING ETR PAD SAFETY CCF RF READOUTS (ETR) KSC PAD SAFETY FACILITY TV (OTV) RF READOUTS (KSC) SECURITY POLICE FACILITY COMM. (OIS) WEATHER FORECAST FIRE FIGHTING FILM CAMERAS MCC-C MEDICAL SEARCH LIGHTS MCC-H CONTINUE ON MEC POME SERVICE CONTINUE ON MEC POME SERVICED	COUNTDOWN CLOCK	ACE	TM	RECORDS
ETR S.R.O. FACILITY ECS (GAS) KSC TRACKING ETR R.S.O. H.P. GAS RFI MONITORING ETR PAD SAFETY CCF RF READOUTS (ETR) KSC PAD SAFETY FACILITY TV (OTV) RF READOUTS (KSC) SECURITY POLICE FACILITY COMM. (OIS) WEATHER FORECAST FIRE FIGHTING FILM CAMERAS MCC-C MEDICAL SEARCH LIGHTS MCC-H FOOD SERVICE OTHERS NORE REQUIRED	ETR SEQUENCER	L/Y W-G ECS	RE/	AL-TIME CIF COMPUT.
ETR R.S.O.	ETR COUNTDOWN CLOCK	CM W-G ECS	POS	ST-TEST CIF COMPUT.
ETR PAD SAFETY	ETR S.R.O.	FACILITY ECS (GAS)	KSC	TRACKING
KSC PAD SAFETY	ETR R.S.O.	H.P. GAS	RFI	MONITORING
SECURITY POLICE FACILITY COMM. (DIS) WEATHER FORECAST FIRE FIGHTING FILM CAMERAS MCC-C MEDICAL SEARCH LIGHTS MCC-H FOOD SERVICE OTHERS None Required MCC-H MCC-H MCC-H FOOD SERVICE MCC-H MCC-H MCC-H FOOD SERVICE MCC-H MCC-H MCC-H FOOD SERVICE MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H FOOD SERVICE MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-H MCC-	ETR PAD SAFETY	CCF	RF	READOUTS (ETR)
FIRE FIGHTING	KSC PAD SAFETY	FACILITY TV (OTV)	RF	READOUTS (KSC)
SEARCH LIGHTS MCC-H FOOD SERVICE OTHERS None Required (CONTINUE ON ASC FORM A SEC PROUISED)	SECURITY POLICE	FACILITY COMM. (OIS)	₩E/	ATHER FORECAST
	FIRE FIGHTING	FILM CAMERAS	MC	c-c
OTHERS None Required (CONTINUE ON REC PORT TO THE QUIRED)	MEDICAL	SEARCH LIGHTS	MCC	С-Н
OTHERS None Required (CONTINUE ON MIC PORT TO THE QUIRED)			FOC	OD SERVICE
OTHERS None Required (CONTINUE ON MIC PORT TO THE QUIRED)				
OTHERS. None Required (CONTINUE ON ASC PERM A SEE THEOURED)				
OTHERS. None Required (CONTINUE ON ASC PERM A SEE THEOURED)				11111
None Required (CONTINUE ON MIC PORT TO SEQUIRED)				960
(CONTINUE ON ASC PORM A LE PREQUIRED)				
	None Required	7.3		
III WITER OF FRIGHTS ON MINISTER PERSONNELLE	17 OTHER APPLICABLE REFERENCE		#QUIRED)	
	III WITHIN PIT I WITH THE	Property of the state of the st		

S-1C HYDRAULIC ACTUATOR LENGTH SETUP IN LABORATORY KSC OPERATIONS PAGE 1 of 2 2. KSC TEST NO. V-23012-SIC2 S. STAGE, VEHICLE OR GSE AS-502 (OPS)

4. TEST OBJECTIVES

TO SET THE S-1C ACTUATOR LENGTH FOR A PARTICULAR VEHICLE POSITION.

5, TEST DESCRIPTION/EQUIPMENT STATUS

TEST DESCRIPTION:

- A. THE S-1C ACTUATOR WILL BE SET FOR A PARTICULAR VEHICLE POSITION USING A LENGTH ADJUSTMENT FIXTURE. THE ACTUATOR LENGTH WILL BE SET AS SPECIFIED IN THE FINAL ALIGNMENT REPORT FOR VEHICLE.
- B. PROCEDURE SETUP AND CONDITIONS:

THIS TEST WILL BE CONDUCTED IN THE LABORATORY ONLY IF AN ACTUATOR REPLACEMENT ON THE VEHICLE IS REQUIRED.

STATUS:

A. LABORATORY TEST EQUIPMENT REQUIRED:

LENGTH ADJUSTMENT FIXTURE
HYDRAULIC ACTUATOR HANDLING FIXTURE
MICROMETER (3")

- B. MANPOWER REQUIRED:
 - (1) ENGINEER; (1) EQUIPMENT SPECIALIST

37/

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)	
6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE
Sunn Jelle	V.a. Elantri	June 13, 1966
7. ORBANIZATION	9. ORGANIZATION LVO-294	11. VEHICLE EFFECTIVITY
Boeing S-1C Stage	NASA-Flight Control	As - 502

APOLLO/SATURN TE	ST CATALOG (Continuation Sheet)	PAGE 2 OF
TEST TITLE	2 2 2	2. KSC TEST NO. V-23012-SIC2
S-IC Hydraulic Actuator	11. VEHICLE EFFECTIVITY	
. WHERE TEST PERFORMED	LIS COMPUTER/ACE PROGUESTS	AS - 502
Saturn V Flight Control	A Total	4 Hours
, TEST CONFIGURATION		:
	y (Bench) Check appropriate boxes and add any additions	aU.
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVC)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
U POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	MCC-C
MEDICAL	SEARCH LIGHTS	MCC-H
		FOOD SERVICE
		0 4/1
OTHERS:		/ 0 -
None Required		,
	CONTINUE ON KSC FORM 23-192 IF REQUIR UMENTATION	RED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE S-1C HYDRAULIC ACTUATOR VISUAL INSPECTION AND ELECTROMECHANICAL STATIC TEST. PAGE 1 OF 2 2. KSC TEST NO. V-23013-SIC2 3. STAGE, VEHICLE OR GSE AS-502 (Test)

4. TEST OBJECTIVES

TO VERIFY VISUALLY THAT THE S-1C HYDRAULIC ACTUATORS HAVE NOT BEEN DAMAGED IN SHIP-MENT OF THE STAGE, AND TO VERIFY THE RESISTANCE, CONTINUITY, AND NULL OF THE MEASURING POTENTIOMETER.

5. TEST DESCRIPTION/EQUIPMENT STATUS

TEST DESCRIPTION:

- A. THE S-1C ACTUATORS WILL BE VISUALLY INSPECTED FOR DAMAGE, LEAKAGE, AND PROPER INSTALLATION. THE POTENTIOMETER WILL BE TESTED FOR CORRECT RESISTANCE AND CONTINUITY. THE POTENTIOMETER AND ACTUATOR POSITION INDICATOR WILL BE TESTED FOR NULL WITH THE MID-STROKE LOCKS INSTALLED.
- B. THIS TEST IS TO BE PERFORMED FOLLOWING THE S-1C FLIGHT CONTROL TEST PREPARATIONS, PRIOR TO THE S-1C ACTUATOR MEASURING CALIBRATION TEST.

STATUS:

- A. EQUIPMENT REQUIRED:
 - 1. ACTUATOR BREAKOUT BOX
 - 2. LEADS & NORTHRUP WHEATSTONE BRIDGE
 - 3. HEWLETT PACKARD 3440 A DIGITAL VOLTMETER
 - 4. HEWLETT PACKARD 721A POWER SUPPLY 0-30 VDC
- B. MANPOWER REQUIRED:
 - 1. FOUR (4) ENGINEERS
 - 2. TWO (2) EQUIPMENT SPECIALISTS

10)

(COI	NTINUE ON KSC FORM 23-192 IF REQUIRED)	
Syun Stelle	V. a. Elentri #	June 13, 1966
7. ORGANIZATION (Boeing S-1C Stage	9. ORGANIZATION LV0244 NASA-Flight Control	AS _ 502

TEST TITLE		2. KSC TEST NO.
S-IC Hydraulic Actuator Visual Inspection		V-23013-SIC2
and Elec	tro-Mechanical Static Test	AS - 502
. WHERE TEST PERFORMED VAB	13. COMPUTER/ACE PROG.	
. TEST CONFIGURATION Componen	t Test	
	CHECKLIST (Check appropriate boxes and add any ad	dditional)
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
U POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	□ ccF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	☐ MCC-C
MEDICAL	SEARCH LIGHTS	 мсс-н
		FOOD SERVICE
-		
OTHERS:		
	(CONTINUE ON KSC FORM 23-192 IF I	REQUIRED)

APOLLO/SATURN TEST CATALOG PAGE 1 OF 2 1. TEST TITLE S-1C HYDRAULIC ACTUATOR MEASURING CALIBRATION CHECK PAGE 1 OF 2 2. KSC TEST NO. V-23014-SIC2 3. STAGE, VEHICLE OR GSE AS-502 (Test)

4. TEST OBJECTIVES

TO VERIFY ASSOCIATED VEHICLE AND ESE INTERFACE DESIGN TO MONITOR S-1C ENGINE POSITION.

5. TEST DESCRIPTION/EQUIPMENT STATUS

TEST DESCRIPTION:

PART I:

EXTEND AND RETRACT EACH ACTUATOR WHILE MONITORING BOTH THE ENGINE DEFLECTION PANEL IN THE LCC AND THE PISTON POSITION INDICATOR SIMULTANEOUSLY FOR COMPATIBILITY OF INDICATION. TM TO COMPARE WITH PREDETERMINED CURVES.

PART II:

ACTUATOR "NOT ZERO" LIGHTS CALIBRATION.

STATUS:

PROCEDURE SET-UP AND CONDITIONS:

THIS TEST IS TO BE PERFORMED FOLLOWING THE S-1C HYDRAULIC ACTUATOR VISUAL INSPECTION AND ELECTRO-MECHANICAL STATIC TEST, BUT PRIOR TO THE S-1C I.U. INTERFACE TESTS.

385

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY

8. NASA-KSC APPROVAL

10. APPROVAL DATE

7. ORGANIZATION

9. ORGANIZATION

LW244

11. VEHICLE EFFECTIVITY

NASA-Flight Control

NASA-Flight Control

. WHERE TEST PERFORMED VAB TO THE TEST CONFIGURATION ACTUATORS discontinuous discontinuo di discontinuo discontinuo discontinuo discontinuo discontinuo d	r Measuring Calibration Check 13. COMPUTER/ACE PROG. IDE N/A	2. KSC TEST NO. V-23014-SIC 2 11. VEHICLE EFFECTIVITY AS - 502 ENT. (IF APPLICABLE) 14. EST. TEST TIME
. WHERE TEST PERFORMED VAB TEST CONFIGURATION ACTUATORS disc	13. COMPUTER/ACE PROG. IDE	AS - 502
VAB . TEST CONFIGURATION ACTUATORS disc	The state of the s	
VAB . TEST CONFIGURATION ACTUATORS disc	The state of the s	
Actuators disc		8 Hours
	connected from Stage end	
. SOLLOW! WEADING WELLING CHECKELS	T (Check appropriate boxes and add any addit	tional)
XX GROUND POWER	XX LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	XX LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	XX GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	XX GSE MEASURING (INS)	ALDS
XX IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	XX DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G-ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	MCC-C
MEDICAL	SEARCH LIGHTS	□мсс-н
XX S-IC MECHANICAL		FOOD SERVICE
		- 1/X(-
OTHERS:		
(CONTINUE ON KSC FORM 23-192 IF REQUIRED) 17. OTHER APPLICABLE REFERENCE DOCUMENTATION		

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE Visual Inspection and Functional Test of Spare S-II Hydraulic Actuator in Laboratory. Rev. A PAGE 1 OF 2 2. KSC TEST NO. V-23015-SII2 3. STAGE, VEHICLE OR GSE S-II

4. TEST OBJECTIVES

- 1. To inspect spare actuator for physical damage prior to installation on stage.
- To verify operation of measuring potentiometer of actuator in laboratory.

5. TEST DESCRIPTION/EQUIPMENT STATUS

The actuator and associated electrical connectors will be visually inspected for damage. The resistance of the potentiometer will be measured.

Equipment status:

- (1) Voltage Supply
- (2) Voltmeter
- (3) Wheatstone Bridge
- (4) Oscilloscope

(CON	TINUE ON KSC FORM 23-192 IF REQUIRED)	
6. PREPARED BY Hit transfort should be	Nasa-KSC APPROVAL Nancenta. Clentre	June 13, 1966
7. ORGANIZATION	9. ORGANIZATION LVO - 249	11. VEHICLE EFFECTIVITY
Floatrical & Flight Control	NASA - Flight Control	DOP-CXX-F001

APOLLO/SATURN TEST CATALOG (Continuation Sheet) TEST TITLE Visual Inspection and Functional Test of Spare S-II Hydraulic Actuator in Laboratory.		PAGE 2 OF 2
		re V-23015-SII2
		11. VEHICLE EFFECTIVITY
WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. ID	AS -502
F/C Laboratory	No. of the control of	4 Hrs.
TEST CONFIGURATION N/S		
SUPPORT REQUIREMENTS CHECKL	IST (Check appropriate boxes and add any add	ditional)
GROUND POWER	CC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G-ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	mcc-c
MEDICAL	SEARCH LIGHTS	™сс- н
		FOOD SERVICE
- Control of the Cont		
OTHERS:		1
		ì
	(CONTINUE ON KSC FORM 23-192 IF RI	EQUIRED)

REV. A PAGE 1 OF 2 1. TEST TITLE S-II Hydraulic Actuator Length Set-Up in Laboratory. Rev. A PAGE 1 OF 2 2. KSC TEST NO. V-23016-SII2 3. STAGE, VEHICLE OR GSE S-II

4. TEST OBJECTIVES

To adjust spare actuator to proper length prior to installation on stage.

5. TEST DESCRIPTION/EQUIPMENT STATUS

Replacement actuator length is adjusted to required length as specified by appropriate engine and/or stage data package.

(CONT	INUE ON KSC FORM 23-192 IF REQUIRED)	
S. T. fran M. Sw. H.	8. NASA-KSC APPROVAL Vincent a. Elentr	June 13, 1966
7. ORGANIZATION	9. ORGANIZATION LVO-244	11. VEHICLE EFFECTIVITY
Electrical & Flight Control	NASA-Flight Control	DOP-CXX-F002

APOLLO/SATURN TEST CATALOG (Continuation Sheet) TEST TITLE S-II Hydraulic Actuator Length Set-Up in Laboratory.		PAGE 2 OF 2
		V-23016-SII2 11. VEHICLE EFFECTIVITY AS = 502
WHERE TEST PERFORMED F/C Laboratory		G. IDENT. (IF APPLICABLE) 14. EST. TEST TIME 4 Hrs.
TEST CONFIGURATION		
SUPPORT REQUIREMENTS CHECKL	ST (Check appropriate boxes and add any	v additional)
GROUND POWER	CC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G. ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	☐ MCC-C
MEDICAL	SEARCH LIGHTS	<u></u> мсс-н
		FOOD SERVICE
OTHERS:		190
	(CONTINUE ON KSC FORM 23-192 I	(F REQUIRED)
7. OTHER APPLICABLE REFERENCE		

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE S-II Hydraulic Actuator Visual Inspection and Electro-Mechanical Static Test. Rev. A PAGE 1 OF 2 2. KSC TEST NO. V-23017-SII2 3. STAGE, VEHICLE OR GSE S-II

4. TEST OBJECTIVES

- 1. To verify pistons are undamaged and will move freely.
- To determine static null.

5. TEST DESCRIPTION/EQUIPMENT STATUS

Measure position potentiometer with actuator locks on. Remove the locks and move piston to full extension and retraction to verify freedom of movement and inspect piston for damage.

Test to be performed on eight (8) actuators.

Equipment Required:

Breakout Box Power Supply Voltmeter

2011

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)			
6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE	
A. F. Crawford	Vincent a. Elentri	June 13, 1966	
7. ORGANIZATION	9. ORGANIZATION LVO-294	11. VEHICLE EFFECTIVITY	
Electrical & Flight Control	NASA-Flight Control	DOP-CXX-F003	

	TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2
S-II Hydraulic Actuator Visual Inspection and Electro-Mechanical Static Test.		2. KSC TEST NO. V-23017-SII2
		11. VEHICLE EFFECTIVITY
WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. ID	AS -502 DENT. (IF APPLICABLE) 14. EST. TEST TIME
VAB Hi-Bay	N/A	4 Hrs.
Actuators in Hol	lding Fixtures and Position I	ndicator Installed.
	T (Check appropriate boxes and add any add	
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TH RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	REIMONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□ wcc-c
MEDICAL	SEARCH LIGHTS	_ мсс-н
X SII Mechanical		FOOD SERVICE
		- 4/1/2
OTHERS:		100
		C
		*
		EQUIRED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLÉ S-II Hydraulic Actuator Measuring Calibration Check Rev. A PAGE 1 OF 2 2. KSC TEST NO. V-23018-SII2 3. STAGE, VEHICLE OR GSE S-II

4. TEST OBJECTIVES

- 1. To verify correct measuring potentiometer output versus actuator position.
- 2. To calibrate deflection meters and recorders versus actuator position.

5. TEST DESCRIPTION/EQUIPMENT STATUS

- 1. Move actuator piston to various positions. Read position indicator and position potentiometer output.
- 2. Calibrate control recorders, measuring recorders, and deflection panel meters versus piston position.

Perform test for eight (8) actuators.

STATUS:

- A. Actuator midstroke locks installed for zero only, then removed.
- B. Actuators may be moved manually or with hydraulic power, using Portable Substitute Control Computer.

49

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)			
6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE	
H. F. Crawford	Ulment a. Elentri	June 13, 1966	
7. ORGANIZATION	9. ORGANIZATION LVO-244	11. VEHICLE EFFECTIVITY 502	
Elect. & Flight Control	NASA-Flight Control	AS- DOP-CXX-F004	

APOLLO/SATURN TEST CATALOG (Continuation Sheet)		PAGE 2 OF 2
S-II Hydraulic Actuator Measuring		2. KSC TEST NO. V-23018-SII2
Calibration Ch		11. VEHICLE EFFECTIVITY
. WHERE TEST PERFORMED	13. COMPUTER/ACE PROG. ID	AS -502
VAB High Bay		8 Hrs.
Actuators in Holding	Fixtures	
	ST (Check appropriate boxes and add any add	litional)
CROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
X S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
X IU POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	₹ DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-Ģ ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	X FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□ MCC-C
MEDICAL	SEARCH LIGHTS	мсс-н
IU Measuring		FOOD SERVICE
X SII Mechanical		
		= 394
OTHERS:		- (Y
		1
17. OTHER APPLICABLE REFERENCE	(CONTINUE ON KSC FORM 23-192 IF RE	EQUIRED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG 1. TEST TITLE VISUAL INSPECTION AND FUNCTIONAL TEST OF SPARE S-IVB ACTUATOR IN LABORATORY KSC OPERATIONS 2. KSC TEST NO. V-23019-SIVB2 3. STAGE, VEHICLE OR GSE AS-502, SIVB

4. TEST OBJECTIVES

VERIFY THAT SPARE S-IVB ACTUATOR HAS NOT BEEN DAMAGED IN SHIPMENT.

VERIFY THAT ACTUATOR IS FUNCTIONAL ELECTRICALLY.

5. TEST DESCRIPTION/EQUIPMENT STATUS

VISUAL INSPECTION OF ALL SURFACES AND ELECTRICAL PINS OF ACTUATOR.

BETA POTENTIOMETER IS CHECKED FOR NULL POSITION WITH MID-STROKE LOCKS INSTALLED.

SERVO VALVE RESISTANCE MEASUREMENTS ARE MADE.

- A. TEST WILL BE PERFORMED IN LABORATORY ON CLEAN WORK BENCH.
- B. TEST EQUIPMENT REQUIRED:

5604318 RATIO BOX AND ASSOCIATED CABLES. OHMMETER

C. REQUIREMENT SHALL EXIST FOR AN ACTUATOR REPLACEMENT ON VEHICLE BEFORE THIS TEST IS PERFORMED.

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)

6. PREPARED BY

8. NASA-KSC APPROVAL

10. APPROVAL DATE

1. C. Elentsi

7. ORGANIZATION

9. ORGANIZATION

DOUGLAS AIRCRAFT COMPANY, INC.

11. VEHICLE EFFECTIVITY

AS - 502

APOLLO/SATURN	TEST CATALOG (Continuation Sheet)	PAGE 2 OF 2
. TEST TITLE VISUAL INSPECTION AND FUNCTIONAL TEST OF SPARE S-IVB ACTUATOR IN LABORATORY 2. KSC TEST NO. V-23019-SIVB2 11. VEHICLE EFFECTIVITY AS-502, S-IVB		
VAB/HYDRAULIC LABOR	13, COMPUTER/ACE PROG. ID	DENT. (IF APPLICABLE) 14. EST. TEST TIME
15. TEST CONFIGURATION	ATORI	
16 SUPPORT REQUIREMENTS CHECKL	IST (Check appropriate boxes and add any add	litional
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	Mcc-c
MEDICAL	SEARCH LIGHTS	MCC-H
		FOOD SERVICE
	, 🗆	
· 🗆 '		
		· . 🗖
OTHERS:		
		140
	(CONTINUE ON KSC FORM 23-192 IF RE	QUIRED)

	KSC OPERATIONS APOLLO/SATURN TEST CATALOG	PAGE 1 OF 🌦
1. TEST TITLE S-IVB	HYDRAULIC ACTUATOR LENGTH SETUP IN LABORATORY	2. KSC TEST NO. V-23020-SIVB2
		AS-502, SIVB

SET S-IVB ACTUATOR LENGTH FOR A PARTICULAR REPLACEMENT ON VEHICLE.

5. TEST DESCRIPTION/EQUIPMENT STATUS

USING ACTUATOR ADJUSTMENT KIT, ACTUATOR LENGTH IS SET FOR REPLACEMENT ON VEHICLE, USING DATA RECORDED IN J-2 ENGINE LOG BOOK.

REQUIREMENT SHALL EXIST FOR AN ACTUATOR REPLACEMENT ON VEHICLE BEFORE THIS TEST IS PERFORMED.

SETUP WILL BE PERFORMED IN LABORATORY ON CLEAN WORK BENCH.

EQUIPMENT REQUIRED:

1A67441-1 FIXTURE, ENGINE ACTUATOR ADJUSTMENT KIT.

(CONT	INUE ON KSC FORM 23-192 IF REQUIRED)	
6. PREPARED BY	N. a. Elenty	June 13, 1966
7. ORGANIZATION	9. ORGANIZATION LVO-Z44	11. VEHICLE EFFECTIVITY
DOUGLAS AIRCRAFT COMPANY, INC.	NASA - Flight Control	AS - 502

.TEST TITLE S-IVB HYDRAULIC ACTUATOR LENGTH SETUP IN LABORATORY		2. KSC TEST NO. V-23020-SIVB2 11. VEHICLE EFFECTIVITY AS-502, SIVB
VAB-HYDRAULIC LABOR	RATORY	DENT. (IF APPLICABLE) 14. EST. TEST TIME
CHOOSE SECURE HENTS CHECKI	107 (C) - 1	7 N
GROUND POWER	LIST (Check appropriate boxes and add any add	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
IU POWER	CC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	□ wcc-c
MEDICAL	SEARCH LIGHTS	мсс-н
		FOOD SERVICE
OTHERS:		200
7. OTHER APPLICABLE REFERENCE	(CONTINUE ON KSC FORM 23-192 IF RE	(QUIRED)

KSC OPERATIONS APOLLO/SATURN TEST CATALOG

PAGE 1 OF 2

1. TEST TITLE

CONTROL RELAY PACKAGE UNIT TEST

2. KSC TEST NO.

V-23021-STVB2

S. STAGE, VEHICLE OR GSE

AS-502, SIVB

4. TEST OBJECTIVES

- A. THIS TEST, WHICH WILL BE PERFORMED IN THE FLIGHT CONTROL LABORATORY, WILL VERIFY THE PROPER OPERATION OF THE SPARE CONTROL RELAY PACKAGE.
- B. THE FOLLOWING DATA WILL BE OBTAINED FROM THIS TEST:
 - 1. VERIFICATION OF TEST PLUG OUTPUTS
 - 2. VERIFICATION OF J-2 OUTPUT PLUG CONNECTIONS.

5. TEST DESCRIPTION/EQUIPMENT STATUS

INPUTS TO THE CONTROL RELAY PACKAGE WILL BE SUPPLIED BY THE APS TEST SET. THE RELAY OPERATION WILL BE MONITORED BY THE APS TEST SET THROUGH THE TEST CONNECTOR.

A VISUAL INSPECTION OF THE CONTROL RELAY PACKAGE WILL BE MADE PRIOR TO CONNECTING THE TEST EQUIPMENT.

A BREAKOUT BOX WILL BE USED TO MONITOR THE J2 OUTPUT PLUG AND 28 VOLTS ON THE CORRECT PINS WILL BE MEASURED TO INDICATE THE RELAYS ARE PROPERLY ROUTED TO THE CONNECTOR.

THE FOLLOWING TEST EQUIPMENT WILL BE USED:

- A. 28 VOLT POWER SUPPLY (15 AMP MINIMUM)
- B. APS TEST SET AND CABLES
- C. APS LOAD BOX AND CABLES
- D. VOLTMETER
- E. CONTROL RELAY BREAKOUT BOXES AND CABLES.

399

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)			
6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE	
J. K. Keller	V.a. Elentri	June 13, 1966	
7. ORGANIZATION	9. ORGANIZATION LVO-244	11. VEHICLE EFFECTIVITY	
DOUGLAS AIRCRAFT COMPANY, INC.	NASA-Flight Control	AS- 502	

APOLLO/SATURN TEST CATALOG (Continuation Sheet)		PAGE 2 OF 2
1. TEST TITLE		2. KSC TEST NO. V-23021-SIVB2
CONTROL RELAY PACKAGE UNIT TEST		11. VEHICLE EFFECTIVITY
	· · · · · · · · · · · · · · · · · · ·	AS - 502, SIVB
VAB-FLIGHT CONTROL	LABORATORY	DENT. (IF APPLICABLE) 14. EST. TEST TIME
. TEST CONFIGURATION		
S. SUPPORT REQUIREMENTS CHECKL	IST (Check appropriate boxes and add any add	ditional)
GROUND POWER	LCC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
U POWER	LCC DATA DISPLAY	LCC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TM STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TM RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	wcc-c
MEDICAL	SEARCH LIGHTS	<u></u> мсс-н
		FOOD SERVICE
		·
OTHERS:		1100
		400
. OTHER APPLICABLE REFERENCE	(CONTINUE ON KSC FORM 23-192 IF RE	EQUIRED)

APOLLO/SATURN TEST CATALOG 1. TEST TITLE S-IVB HYDRAULIC ACTUATOR VISUAL INSPECTION AND ELECTROMECHANICAL STATIC TEST SSTAGE, VEHICLE OR GSE AS-502, SIVB

4. TEST OBJECTIVES

- A. TO VERIFY THE HYDRAULIC ACTUATORS ARE NOT PHYSICALLY OR ELECTRICALLY DAMAGED.
- B. TO VERIFY THE ELECTRO-MECHANICAL ALIGNMENT OF THE POSITION POTENTIOMETERS.

5. TEST DESCRIPTION/EQUIPMENT STATUS

TEST DESCRIPTION:

- A. BOTH ACTUATORS ARE EXAMINED FOR PHYSICAL DAMAGE AND THE SERVO VALVE COIL RESISTANCE IS CHECKED FOR CONTINUITY.
- B. WITH THE ACTUATOR PISTONS LOCKED IN MID-POSITION, THE ELECTRICAL CENTER OF THE POSITION POTENTIOMETERS ARE MEASURED.

EQUIPMENT STATUS:

- A. THE ACTUATORS SHALL BE DISCONNECTED FROM THE ENGINE AND SUPPORTED BY THE ACTUATOR HOLDING FIXTURES (DSV-4B-474).
- B. THE FOLLOWING EQUIPMENT IS REQUIRED:
 - (1) 5604318 RATIO TESTER WITH TEST CABLES.
 - (2) SIMPSON #260 OHMMETER (OR EQUIVALENT).

40/

(CONTINUE ON KSC FORM 23-192 IF REQUIRED)				
6. PREPARED BY	8. NASA-KSC APPROVAL	10. APPROVAL DATE		
C.M. Tawnsend	V.a. Elentri	June 13, 1966		
7. ORGANIZATION	9. ORGANIZATION LVO-244	11. VEHICLE EFFECTIVITY		
DOUGLAS AIRCRAFT COMPANY, INC.	NASA-Flight Control	AS - 502		

APOLLO/SATURN TEST CATALOG (Continuation Sheet) PAGE 2 OF 2		
1. TEST TITLE		2. KSC TEST NO.
S-IVB HYDRAULIC ACTUATOR VISUAL INSPECTION AND ELECTRO-		RO- V-23022-SIVB2
MECHANICAL STATIC TEST		AS - 502, SIVB
12. WHERE TEST PERFORMED VAB/HI BAY	13, COMPUTER/ACE PROG. IDENT.	
15. TEST CONFIGURATION		
16. SUPPORT REQUIREMENTS CHECKLIST (Check appropriate boxes and add any additional)		
GROUND POWER	CC MEASURING (LVO)	ETR/KSC RADAR
S-IB OR S-IC STAGE PWR	LCC MEASURING (INS)	ETR COMMAND XMITTER
S-II STAGE POWER	GSE MEASURING (LVO)	LOCAL COMMAND (C.L.)
S-IVB STAGE POWER	GSE MEASURING (INS)	ALDS
U POWER	LCC DATA DISPLAY	CC TM STA. (MONITOR)
LEM POWER	CIF DATA DISPLAY	LCC TM RECORDING
SM POWER	DDAS	CIF TH STA. (MONITOR)
CM POWER	DDAS TAPE RECORDING	CIF TH RECORDING
BACK-UP BATTERIES	SERVICE STRUCTURE MEAS.	CIF COMPUTER
TIMING	RCA-110A COMPUTERS	CIF DATA
COUNTDOWN CLOCK	ACE	TM RECORDS
ETR SEQUENCER	L/V W-G ECS	REAL-TIME CIF COMPUT.
ETR COUNTDOWN CLOCK	CM W-G ECS	POST-TEST CIF COMPUT.
ETR S.R.O.	FACILITY ECS (GAS)	KSC TRACKING
ETR R.S.O.	H.P. GAS	RFI MONITORING
ETR PAD SAFETY	CCF	RF READOUTS (ETR)
KSC PAD SAFETY	FACILITY TV (OTV)	RF READOUTS (KSC)
SECURITY POLICE	FACILITY COMM. (OIS)	WEATHER FORECAST
FIRE FIGHTING	FILM CAMERAS	Mcc-c
MEDICAL	SEARCH LIGHTS	мсс-н
		FOOD SERVICE
OTUEDS:	L	<u> </u>
OTHERS:		400
(CONTINUE ON KSC FORM 23-192 IF REQUIRED)		
17. OTHER APPLICABLE REFERENCE DOCUMENTATION		
*		,