



AUTHORIZATION

UCN	PCN	ECP / ECR	CCBD	MOD
13684		2586	305-71-0164	M-2027

SCHEDULE IMPACT

WORK LOCATION	IBM-HVL
SUB KITS REQUIRED FOR MOD	None
ESTIMATED MANHOURS REQUIRED	16
SCHEDULED CHANGE PERIODS	Prior to KSC Shipment

MODIFICATION DESCRIPTION

	N/A	SHEET	PAGE
PURPOSE		2	1
MOD KIT PROOFED (HARDWARE INSTALLATION) ☐ YES ☒ NO	X		
INSTALLATION SEQUENCE	X		
RELATED ICD CHANGE (INTERFACE CONTROL DOCUMENT)	X		
SPARES AFFECTED ☒ YES ☐ NO		2	2
MANUALS AFFECTED ☐ YES ☒ NO			
SAFETY CONSIDERATION (SPECIAL)	X		
EFFECTIVITY 514			
PARTS/MATERIALS		2	3
DOCUMENTATION REQUIRED		2	1
VALIDATION REQUIREMENTS To be accomplished at IBM-CKF			
INSTRUCTIONS FOR ACCOMPLISHING MODIFICATION See Routing			
NAMEPLATE DATA See Routing			
DISPOSITION OF REMOVED PARTS	X		
MISCELLANEOUS	X		

REVISIONS

SYM.	DESCRIPTION	APPROVED/DATE	N/A	SHEET	PAGE
ASSESSMENT COPY					

PREPARED BY <i>J. H. Wynn</i>	DATE 3/5/74	TITLE Rework and install Flight Control Computer S/N 112V, 50Z35300-017
M.E. APPROVAL <i>J. H. Wynn</i>	DATE 03-05-74	
O.E. APPROVAL <i>B. J. Bishop</i>	DATE 3/6/74	CONTRACT NAS 8 - 14000
		MI NO. 514-13684-F
		SHEET 1 OF 2

MODIFICATION INSTRUCTIONS CONTINUATION

1. PURPOSE

This mod kit will rework FCC S/N 112V from P/N 50Z35300-005 to P/N 50Z35300-017 per documentation listed in para 4 and will satisfy the intent of ECP 2176R2, Mod 2031, UCN 11915.

2. SPARES AFFECTED

A spare FCC, 50Z35300-017 will be supplied to IBM-CKF, Dept. 922.

3. PARTS/MATERIALS

<u>Part Number</u>	<u>Description</u>	<u>Quantity</u>
50Z35300-017	Flight Control Computer	01*
7911581-001	Nameplate	01*

4. DOCUMENTATION REQUIREMENTS

EN 66301JP
 EN 66169SH (Ref)
 EO 1435-10Z22501-1
 *IP 1-4-100
 *IP 1-4-478
 Routing for 514-11915-F1/514-13684-F
 Statement of Work 70011R1
 INC Part I for M/K 514-11915-F1
 INC Part I for M/K 514-13684-F
 DWG 50Z35300-017
 Mod 2031 and 2027

*To be supplied by department performing rework.

CONTRACTOR NAME IBM		INSTALLATION NOTICE CARD MASTER		PROGRAM CONTROL NO. N/A	
PART II - MOD. KIT VALIDATION					
CEI NO. SIU500A		CEI S/N 514		ECP NO. 2586	
NEW CEI PART NO. (IF CHANGED) N/A				MOD. KIT NO. 514-13684-F	
TEST LOCATION IBM-KSC				TEST IDENTIFICATION	
REMARKS: SAT V FCC Common Mode ORIGINATOR: H. R. Wynn, 22-965 837-4000, Ext. 2293 (M-2027)					
TESTED BY - ORGANIZATION & DATE				INSPECTED BY - ORGANIZATION & DATE	
RECORDED BY - ORGANIZATION & DATE				GOVERNMENT INSPECTION - ORGANIZATION & DATE	
DISTRIBUTION	WHITE	GREEN	YELLOW	PINK	BLUE
	EQUIP. HISTORICAL RECORD	CEI PROVISIONING CONTRACTOR	TESTING CONTRACTOR	MSFC PROGRAM CMB	NASA SITE REP.

CONTRACTOR NAME IBM		INSTALLATION NOTICE CARD MASTER		PROGRAM CONTROL NO.	
PART I - MOD. KIT INSTALLATION					
CEI NO. SIU500A		CEI S/N 514		ECP NO. 2586	
NEW CEI PART NO. (IF CHANGED) N/A				MOD. KIT NO. 514-13684-F	
WORK LOCATION IBM-HVL				WORK ORDER NO.	
VALIDATION ACCOMPLISHED ☐ YES ☒ NO (IF NO - USING SITE MUST COMPLETE PART II)					
REMARKS: Rework and Install FCC (FCC Common Mode) P/N 50Z35300-017 EO 1435-10Z22501-1 Ref EN 66301JP ORIGINATOR: H. R. Wynn, 22-965 837-4000, Ext. 2293 (M-2027)					
INSTALLED BY - ORGANIZATION & DATE				INSPECTED BY - ORGANIZATION & DATE	
RECORDED BY - ORGANIZATION & DATE				GOVERNMENT INSPECTION - ORGANIZATION & DATE	
DISTRIBUTION	WHITE	GREEN	YELLOW	PINK	BLUE
	EQUIP. HISTORICAL RECORD	CEI PROVISIONING CONTRACTOR	INSTALLING CONTRACTOR	MSFC PROGRAM CMB	NASA SITE REP.

CONTRACTOR NAME IBM		INSTALLATION NOTICE CARD		PROGRAM CONTROL NO. IU-06043	
PART I - MOD. KIT INSTALLATION					
CEI NO. SIU500A		CEI S/N 514		ECP NO. 2176R2	
NEW CEI PART NO. (IF CHANGED) N/A			MOD. KIT NO. 514-11915-F1		
WORK LOCATION IBM-HVL			WORK ORDER NO.		
			VALIDATION ACCOMPLISHED ☐ YES ☒ NO (IF NO - USING SITE MUST COMPLETE PART II)		
REMARKS: Rework FCC, S/N 112V EN 66169SH (SOW 70011R1) (M-2031) ORIGINATOR: H. R. Wynn, 22-965 837-4000, Ext. 2293					
INSTALLED BY-ORGANIZATION & DATE			INSPECTED BY-ORGANIZATION & DATE		
RECORDED BY-ORGANIZATION & DATE			GOVERNMENT INSPECTION-ORGANIZATION & DATE		
DISTRIBUTION	WHITE	GREEN	YELLOW	PINK	BUFF
	EQUIP. HISTORICAL RECORD	CEI PROVISIONING CONTRACTOR	INSTALLING CONTRACTOR	MSFC PROGRAM CMB	NASA SITE REP.

MSFC - Form 2490 (Rev September 1968)

ENGINEERING ORDER

13684

13684
REF NO. 14-35-107-22501-1

FED MFR IDENT CODE 20234

PAGE 1 OF 1

ORIGINATOR J. HARRIS		DATE WRITTEN 2-28-74		DEPT. NO. K82		PHONE 2004		CONTRACT NO. NA\$8-14000		CONTRACT CHANGE AUTH. M-2027		CLOSURE YES ☒ NO ☐		ECR NO. 2586		CLASS II	
CHG IDENT SYM	ASSY/PIECE PART NO.			MI CODE	EFFECTIVITY		USED ON ASSY NO.		STK DISP	REASONS - NOTES - REMARKS					ENGR ORDER NO.		
I	10722501-1			CD	514				4	ADD (-17) FCC					237-1435		

N-9

I. - CANCEL EO 237-1383/10722501-1 (IU-514).

I. - REVISE EPL AS SHOWN BELOW.

REF: EN66301JP (2-28-74).

CLOSURE: MOD WAS CLOSED BY MEMO DATED 8-17-72.
RE-OPEN FOR THIS CHANGE AND THEN RE-CLOSE.

I	17 002	50735300-1		SUB	1															
I	17 003	50735300-3		SUB	1															
I	17	50735300-1		SUB	1															
I	17	50735300-17		ADD	1															
CHG IDENT SYM	FIND NO.	PART NO.		ACTION		ZONE	STOCK DISPOSITION	1 NO PARTS AFFECTED	NAME		DEPT		NAME		DEPT					
				FROM QTY	TO QTY															
							3 IF PART AFFECTED OPERATION, USE AS IS, OTHERWISE WORK TO CHANGE	4 IF PART AFFECTED OPERATION, REWORK TO CHANGE, OTHER- WISE WORK TO CHANGE	5 IF PART AFFECTED OPERATION, SCRAP, OTHERWISE WORK TO CHANGE	6 SCRAP	8 SEE NOTES	9 CALIBRATE								
APPROVALS	ENGINEERING R. L. Tarte 2/28/74 DATE						CHANGE CONTROL BOARD R. L. Tarte 2-28-74 DATE						RELEASE AND CHANGE ANALYST		DATE		ENGR RECORDS		DATE	
	SPECIFICATIONS & STANDARDS D. Hammond 2-28-74 DATE																			

CONTRACT, SUBCONTRACT / P.O. NO. NAS8 - 14000	IBM UCN 11915	MSFC PCN	CCBD NUMBER 305-71-0170	EFFECTIVE DATE OF THIS DIRECTED CHANGE 8/12/71
SECTION NUMBER AND TITLE	CONTRACTS OFFICE ORIGINATOR <i>R. L. Wilcox</i> R. L. Wilcox			DATE 8/13/71
CONTRACT CHANGE NO. M-2031	MSFC LETTER AUTHORITY PM-CO-IU-131-8-4		CORRESPONDING IBM LOG NUMBER H 71-8-44	

SUBJECT: ECP 2176 R2, FCC Transistor Changes

Implement the subject ECP, as written, for effectivities AS-512 and subs.

NOTE: This modification supersedes change order modification no. 1996.
(The R2 ECP was submitted as the response to M-1996, showing a revised change implementation point).

ENG. RELEASES		EFFECTIVITY (BY IU, DATE, OR S/N)		☐ KSC ☒ HVL ☐ MOD KIT STORAGE	CHANGE PROPOSAL COORDINATOR R. L. Tarte	
DEPT.	DATE	PRODUCTION:	RETROFIT:		PROPOSAL SUBMITTAL PLAN	DATE
D70	6/1/71		512-515			
67	6/15/71	CHANGE CATEGORY: H			ENG/OPS/PROG. TECHNICAL INPUTS TO CM BY	Use M-1996 SOW and Budgets
		ENGINEERING DISTRIBUTION			ENG/OPS/PROG. BUDGETS TO CM BY	
		PRIME D70	INFO K18, D53, K27, D67, D63	CM TO PRICING & DCA BY	8/27/71	
		ASSESS			CONTRACTUAL DUE DATE TO MSFC	11/11/71

STATEMENT OF WORK FOR ECI

Number 70011R1

ECI Statement of Work 70011 is hereby canceled and superceded by the following:

ECI is hereby directed to select the S2N2920 transistor used in the Q12 location of the 50 MA Servo Amplifier to have a base-emitter breakdown of 10.0 volts minimum.

The following groundrules shall be used:

Future Build Modules

The S2N2920 drawing (50Z32554) shall be revised to include a -005 part that has a minimum base-emitter breakdown of 10.0 volts. The breakdown shall be measured on a tester that utilizes a pulse testing technique and the reverse current shall be limited to 5.0 microamperes maximum.

The 50 MA Servo Amplifier drawing (50Z34855-003) shall be revised to require the use of the -005 S2N2920 part in the Q12 location on future build modules.

Completed Modules Not in FCC's

These modules shall be subjected to a base-emitter breakdown voltage test consisting of probing the junction of Q12B. If the breakdown exceeds 10.0 volts, the transistor shall remain on the board. If the breakdown is less than 10.0 volts, the transistor shall be replaced with a -005 part. The test technique used shall adhere to the requirements stated above.

Modules in Completed FCC's

These modules shall be subjected to a no-load test. The test shall consist of applying + 27 volts to the simulate inputs with the Servo Amplifier unloaded. If the telemetry output voltage changes when the input signal is transferred from + 27 volts to - 27 volts, the Q12 transistor shall be replaced with a -005 part.

The effectivity of this change is FCC Serial Numbers 0108-V, 0110-V, 0111-V, 0112-V, 0113-V, 0115-V and the AS-510/511 Spare (presently S/N 0114-V).

The top assembly part number for the above serial numbered FCC's shall become 50Z35300-013.

100111

21

100111

ENGINEERING NOTICE

ENGINEERING NOTICE NO 66162 SH

44002-11 N158-14000

MAINTENANCE *CD*

EFFE: 10/11/83 544 40,23

ORIGINATOR D.J. ANDREWS

DEPT K99

PHONE 3418

DATE: 10/13/71

☐ YES

TOOLS AFFECTED

SHEET _____ OF _____

[illegible]

IBM
150, FORT WORTH, ALABAMA
FED IDENT CODE 20234

ENGINEERING NOTICE

ENGINEERING NOTICE NO 6630151

CONTRACT NO NH58-14000MAJOR ITEM CDEFFECTIVITIES 514ORIGINATOR D.J. ANDREWSDEPT D70PHONE 2553DATE 2-27-74

H/CA

TOOLS AFFECTED

☐ YES☒ NOSHEET 1 OF 2

PART NO.	DWG SIZE	REV LVL		QUANTITY		ACTION	USED ON ASSEMBLY	REASON-NOTES-REMARKS	CLASS OF CHG	CONTRACT AUTHORITY							
		DWG	EPL	FROM	TO					ECR/ECP NO.	UCN						
DESCRIPTION	NO OF SHEETS					STK DISP				MOD/X-DIRECTIVE	MSFC LTR. NO.						
50235300-017	E/5	D		0	1	A/C		FOR change, See	I	2426	12174 B						
FCC TOP ASSEMBLY, SAT I						8		SHT 2.	*	M-1872							
										2511 R3	13067						
								RE-OPEN ALL THREE		M-1925 S-2							
								MODS FOR INCORPORATION		2586	13684						
								OF THIS CHANGE. CLOSE		M-2027							
50235300-013	E/5	-		1	0	B		ALL THREE WITH RELEASE	I	2586	13684						
FCC TOP ASSY, SATV						8		OF THIS Change.	*	M-2027							
								DELETE 514 EFF FOR-013									
								CHANGE REQ'D TO REMOVE TWO(2) CLASS I									
								CHANGES FROM DOC. FOR SIN 0112-II, THESE									
								CHANGES WERE NOT DIRECTED FOR 112 IN THE									
								MOD BUT WERE INCORPORATED IN THE DOC. THE									
								HARDWARE WAS NOT CHANGED AND IS CORRECT AS IS.									
ACTION CODE		STOCK DISPOSITION CODE		1		3		4		5		6		8		9	
A RELEASE B RE-RELEASE C CHANGE		D OBSOLETE E EO INCORP. F REDRAW W/O CHANGE		PARTS IN STOCK AND IN PROCESS		NO PARTS AFFECTED		IF PAST AFFECTED OPERATION, USE AS IS, OTHERWISE WORK TO CHANGE		IF PAST AFFECTED OPERATION, REWORK TO CHANGE, OTHERWISE WORK TO CHANGE		IF PAST AFFECTED OPERATION, SCRAP, OTHERWISE WORK TO CHANGE		SCRAP		SEE NOTES CALIBRATE	
V. H. Johnson 2/27/74		Prof. Richardson 2/28/74		R. J. Tate 2-28-74		CHANGE CONTROL BOARD 2-28-74		R. J. Tate 2-28-74		ENG RECORDS		ADDITIONAL DISTRIBUTION					
MANAGER		QUALITY CONTROL		MFG ENGINEERING		SPECIFICATIONS AND STANDARDS		RELEASE DATE									



ENGINEERING NOTICE

(REVISION SKETCH SHEET)

ENGINEERING NOTICE NO. 66-301-01UNIFORM CONTROL NO. SEE SH 1

FED. MFG. IDENT. CODE 20234

CONTRACT NO. NA58-14000CONTRACT CHANGE NO. SEE SH 1SHEET 2 OF 2

PARTS LIST CHANGES

CHANGE NOTES 1 AND 3 AS FOLLOWS:

FROM "-013 OR -011" TO "-013, -011 OR -007"

CHANGE NOTE 10 TABULATION AS FOLLOWS

FROM:

FIND OR ITEM NO	DRAWING/PART NUMBER	USED ON COMPUTER SERIAL NUMBER
1	7911641-011	0112 & 0113
	7911641-013	0108

TO:

ITEM OR FIND NO.	DRAWING/PART NUMBER	USED ON COMPUTER SERIAL NUMBER
1	7911641-007	0112
	7911641-011	0113
	7911641-013	0108

ENGINEERING RECORDS NOTE:
ATTACH A REPRODUCIBLE COPY OF THIS SHEET
TO THE MASTER DOCUMENT AFFECTED

TITLE

REVISIONS

SYM	ENGRG NOTICE	DESCRIPTION	DATE	CHECK	APPROVAL

SIZE	CODE IDENT NO. 20234	DWG NO.
SCALE	WEIGHT	SHEET