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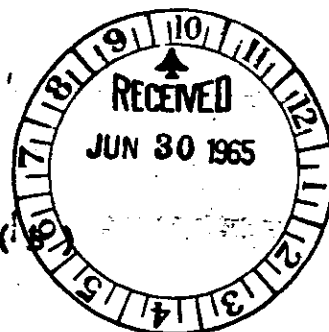
FLIGHT PAYLOAD SYSTEM
ENGINEERING AUDIT

J-22

FTV-1617

INSTRUMENTS

168 and 169



SRV 664(A) and 658

typed 10 June, 196

Declassified and Released by the NRO

In Accordance with E. O. 12958

on NOV 26 1997

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J-22 CONFIGURATION

BASIC CONFIGURATION:

T22-300 ELECTRICAL BLOCK DIAGRAM
T22-500 INSTALLATION SUMMARY DRAWING

NUMBER*

TITLE

ADA-038** 8 AMPERE-HOUR BATTERY ON SRV "A"

** This is a G.E. Retrofit document.

* These major changes are those which make J-22 different from J-21

typed 28 April, 1965

J-22 TEST HISTORY

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[REDACTED]

PRE-CHAMBER TESTS:

- 1/27/65 COMPLETED Mode 1 Interface Resistance Measurements
- 1/29 Main Instrument rail measurements out of Spec.
- 2/9 Main Instrument rails fixed, now in Spec.
- 2/10 T.P. J-0602XX, Command System Test, COMPLETED
- 2/17 T.P. J-0603XX, Pyro Continuity Check, COMPLETED
- 2/26 T.P. J-0604XX, Instrumentation System Test, COMPLETED.
- PHASE VI Testing COMPLETE.
- 3/15 PHASE VII Testing COMPLETE.
- 3/18 Vibration Testing COMPLETED

CHAMBER TEST:

- 3/19 to 3/27 TASC Chamber Test

POST CHAMBER TESTS:

- 3/31 Thrust Cone test jumper bad, caused distortion of AP11 information.
- 3/31 Theodolite and Resolution Test (results not satisfactory)
- 4/6 Theodolite and Resolution Tests re-run, results O.K.
- 4/13 Light-Leak Test. Several leaks found at "teardrops".
- 4/22 Light-Leak Test re-run, results satisfactory.
- 4/27 Begin Pre-Ship Functional Tests

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[REDACTED]
[REDACTED]

typed 28 April, 1965

J22 - STI LIST

J-2201 REVALIDATION OF J22 COMPONENTS
J-2201-1 ADDENDUM TO J-2201
J-2202 RELAY RESET CURRENT TEST
J-2203 REPLACEMENT OF FOREBODIES
J-2204 LIGHT LEAK VERIFICATION
J-2205 SYSTEM FAIL SAFE RESET
J-2206 SPLICE SUSCEPTIBILITY TEST
J-2207 RELAY PULL-IN VERIFICATION
J-2208 REPLACE 'A' T/M TRAY

J22 - LEO LIST

T22-603 CHANGE 'B' STELLAR BAFFLE
T22-824 PAINT PATTERN THERMAL CONTROL
198R315 FOREBODY TEMP SENSOR REMOVAL

I ASSOCIATE CONTRACTOR EQUIPMENT

ITEM	PART NUMBER	SERIAL NUMBER	NOMENCLATURE
1	42600	188	Master Instrument
2	42600	189	Slave Instrument
3	5400	D65/77/70	Double Frame Camera
4	5400	D24/24/24	Double Frame Camera
5	T22-731	664	A Re-entry Vehicle
6	T22-732	658	B Re-entry Vehicle
7	56545	BC33	Supply Cassette

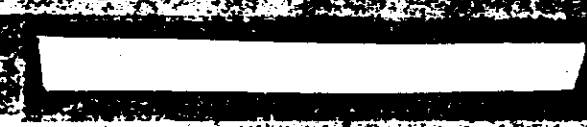
II A/P MANUFACTURED EQUIPMENT

8	T22-3028-501	122	Lamp Sensor Box
9	T22-3013-501	122	...
10	T22-3015-501	122	...
11	T22-3018-501	122	...
12	T22-3020-501	122	...
13	T22-3022-501	122	Transfer Box
14	T22-3024-501	122	FWD Pyro J-Box
15	T22-3026-501	122	Transfer Box
16	T22-738	1010	Pressure Measurement Device
17	T44-861	A 607 & 608 B 260-2 & 261-2	Water Seal

III SUB-CONTRACTOR EQUIPMENT

18	1089-B1	516	DRGG (Clock)
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FEDR/CARD SUMMARY
PAYLOAD J 22 VEHICLE
FEDR AGAINST MAJOR PAYLOAD EQUIPMENT

Sheet

JOY IUP. S/N	PART OR ASSEMBLY	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
c. Bbl. 2-647 V 803- 25	I. R. Assy. 63280	IR - 26	1963	1/11/5 Rec. Insp.	Receiving Inspection. One of the commutator rollers did not roll freely, also the remaining rollers had some vibration.	1/20/5:- Rotation of rollers are sufficient. 1) Use I. R. Assy. as is. (Per Grant Ross).	
E 664 2A	Forebody 198R301	195	2005	1/18/5 D. R. C.	Forebody cable installation per 198R315. Connector W5J2 cannot be routed thru guide as per 198R315.	1/20/5:- The rivets on the guides are restricting passage of the cable. Re-route harness around ejection guides rather than thru them. Adel clamp is not needed.	
d. Bbl. 2-604 V 467-	Master Instrument 42600	168	1726	1/15/5 Sys. Test	Format width is 2.203 with "B" slts. S/B: Format width of 2.187 + .005.	1) Replace all 4 slits (A-B-C-D) with proper size when received from Boston 2) Scrap all over size slits (4).	3/1/5:- 1726-1 - After slits were replaced, verification by fog test format showed the dim. now be 2.190
	Master Instr'mt. 42600	168	1948	2/5/5 Sys. Test	Distance between top of P/L lift rollers and top of rail is "Inboard" .005; "Outboard" .002. S/B: .012 + .007.	2/10/5:- The main plate became warped after instr. mt. bolts were torqued. 1) Shim permanently as req'd. to obtain desired T. I. R. & payload lift. 2) Make another I. I. R. & P/L lift reading after installing shims & torquing bolts.	

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**FEDR/CARD SUPPLY
PAYLOAD J 22 VEHICLE
FEEDS AGAINST MAJOR PAYLOAD EQUIPMENT**

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AJCK QUIP. S/N	PART OR ASSEMBLY	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
2800 /N 168	Roller Brk D42675G5	N/A	1725	2/9/65 Sys. Test	Roller T.I.R. is .004. S/B .001 per print C-3460. "G5" roller surface is irregular.	1) Roller observed during tracking & judged usable as is.	
C. Bbl. 411. 2-647	Payload Chute Assy T22-671	10/10	1722	3/4/5 Sys. Test	Foam seal around chute exit not adhering to metal.	3/3/4: Because this partic- ular item receives consid- erable handling, the adhesiv- e used appears to be inade- quate. Apply plisbond to affected areas on DG-51 chute. Request evaluation of adhesive and/or applica- tion techniques utilized to cement light seal to chute.	Rev. "A" req'd. In ECN 31142 specify ial & adhesive commencing with Boston F. R. ... with mat'l. to chutes on hand chutes issued change.
2-800	Payload Assy. Comp T22-800	N/A	3266	4/1/5 Sys. Test	Command brush not home brush #2 by	4/7/5: Stepper switch SI in Command Box T22 3012 does not function properly. Clean & adjust switch SI and retest.	
2-800	Payload Assy. Comp T22-800	169	3499	5/7/5	Payload pulled out of mount.	5/7/5: EK splice thistles was .0075 S/B .007 + .002 1) Prior to going to pad, the security of the "B" bucket spool status indexing during the "A" operation S/B checked 2) The "B" bucket spool hub re-spacing should be checked & recorded. S/B .007 + .002.	

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FEDR/CARD
 PAYLOAD J 22
 FEED'S A JOR
 EQUIPMENT
 (DISCREPANCY PART REMOVED FROM SYSTEM)

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B

Sheet

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AJOR QUP. S/N	PART OR ASSEMBLY (REMOVED)	S/N	FEDR	DATE ASSEMBLY FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
SE 22-731 N-658	Cassette 50930H	T56- C	2011	1/28/5 D.R.C.	Both motor brake diodes CR 1401 & CR 1402 failed. resistance check upon receiving.	1/28/5:- 1) Replace diodes CR 1401 & CR 1402 with units from spares. 2)Scrap open diodes. 3)Rev. "A" CARD required from Boston (This is a 3rd noticed occurrence)	5/10/65 Diodes found to be open. Failures probably due to faulty wiring. 1)Assy. to equipment corrected. 2)More frequent inspections.
IS Assy 14-661 N 7-2	Lever Assy. N/A T44-663	N/A	2012	2/3/5	Lever Assy. Not OK for flight because dimple motor assy. cannot be installed to Lever Assy.	2/4/5:- Condition is apparently due to environmental effects incurred on previous flight. Remove T44-797 housing & submit to QA for inspection. Replace defective housing.	
str. 660 N 169	Film Clamp N/A Spring 60220	N/A	1964	12/30/4 Elect. Inspec.	Visual inspection showed cracked & deformed spring.	12/31/4:- Distortion of phosphorous bronze clamping spring was probably caused during adjustment in the field. 1)Replace spring with a like item from spares. Discard broken spring. 2)Care should be taken when installing this spring so as not to distort the shape.	



FEDR/CARD SUMMARY
 PAYLOAD J 22 VEHICLE
 EDHE AGAINST MAJOR PAYLOAD EQUIPMENT
 (DISCREPANT PART REMOVED FROM SYSTEM)

NO.

Sheet 2

JOB IDIP. S/N	PART OR ASSEMBLY (REMOVED)	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
onic ital. 2-301	Command Box Assy T22-3016	122	1962	2/25/5 Sys. Test	Special test to clear dis- crepancy #4 P/L complete section of QA log book. Brush #27 voltage very erratic. S/B constant and steady.	2/26/5: Remove & replace stepper switch #1. Send sw. to proper lab for chem. analysis of any deposits on sw. contacts.	
covery rrel. 2-603 4 803- 25	Pressure Make Up T22-738	1010	1842	2/15/5 Sys. Test	Refilling of bottle prior to TASC. Check valve leaks excessively.	3/15/5: 1) Replace check valve No. EX33910. 2) Retest per ATP J022420	
L Instl. 2-600	P/L Assy Complete T22-600	N/A	3256	4/1/5 Sys. Test	Command brush #14 still not home brush #27 properly.	Move to Section A.	
L Assy P/L. 2-605	Instrum't 42660	169	3251	4/2/5 Sys. Test	Photo Optical test evalua- tion. Review of theodolite test showed the lens inter- lock on instrum't failed to engage correctly at start of photo scan.	4/2/5: - 1) Remove lens interlock detent assy., clean & reinstall in instru. 2) Make theodolite run to check at 3 sec/cycle. Changes made in procedures from 6 sec. cycle to 3. Theodolite run is not a valid test for banding. New testing (fogging fixtures) has been proposed.	
L Assy st'l 2-604	Instrum't 42600	168	3252	4/2/5 Sys. Test	Same as above CARD 3251	Same as above.	

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FEDR/CARD SUMMARY
PAYLOAD J 22 VEHICLE 1616
FEDRS AGAINST MAJOR PAYLOAD EQUIPMENT

B
Sheet 3

(DISCREPANT PART REMOVED FROM SYSTEM)

NO.

MAJOR EQUIP. S/N	PART OR ASSEMBLY (REMOVED)	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
RV 08R358 SE 658	Blossom T/M F/M F/M 1360403	127	2035	3/29/5 DRC	Pre-pad recovery capsule T/M functional test. Out of specifications. Is: 34 KCS S/B 40 to 50 KCS.	4/8/5:-Return to Eng. Lab. for retesting. If in tolerance adjust transmitter for proper deviation. If not, scrap. 1/6/5:- Rec. Batt. developed a short circuit. Remove & replace Rec. tray assy & batt. Re-run Rec. subsys. test. Return Rec tray 2038 to GE for re-test.	Sub 1 CARD required.
capsule 98R356 SE 658	Recovery Tray Assy. 688E776G1 I6	5776- 056- 16	2038	4/6/5 DRC	Assy. has been exposed to excessive current. (Questionable for flight)	4/6/5:- Rec. Batt. develop a short circuit. Remove & replace both cables. Scrap W2B(E4) & use W2C(E7) for test purposes only. Re-run Rec. sub system test.	
str. Bbl. #1 stl. 22-604	W26/W2C Cable 111C5678- G1 & G2 Instrum't 42600	E4 & E7	2039	4/6/5 DRC	Burnt wire in harness and burnt pins in J2 plug.	4/27/5:- 1) Remove light seal from bridge around stove & drum assy. and replace felt strip with heavier felt & reinstall. 2) Conduct a light leak search & run another light leak test.	
		168	1929	4/26/5 Sys. Test	Test shows light leak on format of Instr. # 1 appears to be coming from light seal around Stove & Drum Assy.		

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FEDR/CARD SUPPORT
PAYLOAD J 22 VEHICLE
AGAINST MAJOR PAYLOAD EQUIPMENT

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1C

(WORKMANSHIP DEFECTS)

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Sheet 1

MAJOR QIP. S/N	PART OR ASSEMBLY	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
Conic 66532 N MT 1B	Fairing 1353029	MT 30	2668	11/5/4 Mfg.	Plating Inspection. 1) There are several areas of corrosion. internal & external. 2) Forward ring is thread gouged (2 places) 3) External skin has scratch on fwd. end.	11/6/4:- Replace doubler. Scrap affected area on skin to remove corrosion. Smooth surface, cover with VT Cote (2coats)	Supp. 11/11/4:- Item 1 & 1B are acceptable. Depth of corrosion is no great enough to affect the strength of the material
	Weldment Assy. T22-227	1101	2670	11/7/4 Mfg.	1.00 x 2.88" slot, 8 places is mislocated approx. .75" off.	11/9/4:- Scrap - part is not repairable to correct condition.	
	After Bbl. 135-3044	MT 35	2673	11/10/4 Mfg.	Mating of shop jig for installation of transition bracket. Flatness on face interface is .155, S/B .105	11/10/4:- Rework per sketch of CARD 2673. Touch up mach. surface with DOW 19.	
	Conic 136-6532	MT 41B	2674	11/10/4 Mfg.	1) Holes mark "O", bolt won't bottom. 2) Holes marked "X", gouged and damaged. 3) Holes marked "A", .38" dim is .395 4) All holes are scored internally.	11/16/4:- Handwork with paper or scraper until bolt will seat properly. If the .315 dia. hole is enlarged beyond .322 dia. A supp. CARD will be prepared to bush these holes.	

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FEDR/CARD SUMMARY
PAYLOAD J 22 VEHICLE
FEDRS AGAINST MAJOR PAYLOAD EQUIPMENT

NO.

(WORKMANSHIP DEFECTS)

MAJOR EQUIP. & S/N	PART OR ASSEMBLY	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
wd. Bbl. 22-610 /N 467- J27	Main Door T44-680	487 J27	2675	11/10/4 Mfg.	T4-216 Roller not to .190 dim. 6 places. Vary from .120 to .150.	11/12/4:- Acceptable: will not affect operation of door, as all roller C/L's are in position past this point of the ramp.	
	Conic 135-3044 Aft. Bbl. 136-6532	MT 41B MT 35	2681	11/18/4 Mfg.	Mating Inspection. 5 gaps as shown on FEDR 2681	11/19/4:- Dress down hi points usually found around mating holes	
	Fwd Bbl. 135-4467	467 J27	2682	11/18/4 Mfg.	Mating Rec. Bbl. to Fwd. Bbl. Skin on Fwd. Bbl. overhangs .050 on to Rec. Bbl.	11/19/4:- Remove mat'l from skin to fair. in overlap as shown on sketch on CARD 2682. Dim. "D" to be held to .010 max.	
	Fwd. Bbl. 135-4467 Aft. Bbl. 135-3044	467 J27 MT 35	2683	11/18/4 Mfg.	Mating Inspection. Gap in excess of .003". The overlap is in excess of .010". S/B no gap or overlap.	11/19/4:- Remove mat'l from fwd. ring of aft. bbl. to close gap. Gap not to exceed .005 when remated. Remove mat'l to fair in overlap as per sketch on CARD 2683.	
	Fairing 135-3029 Rec. Bbl 135-3803	MT 30 803 J25	2686	11/21/4 Mfg.	Mating Fairing to Rec. Bbl. Gap of these units exceeds tol. per Q.A.I. #14 (.030)	11/23/4:- Condition is acceptable. New dwg. will be released.	

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FEDR/CARD SUMMARY
PAYLOAD J 22 VEHICLE
FEDR AGAINST MAJOR PAYLOAD EQUIPMENT
(WORKMANSHIP DEFECTS)

MAJOR QUP. S/N	PART OR ASSEMBLY	S/N	FEDR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
	Recovery Barrel M35-3803	803 J25	2696	12/11/4 Mfg.	Installation of Pyro Box. Pyro box bracket holes do not line up with Mt. holes on Rec. Bbl. skin.	12/11/4:- Fabricate & install shims per CARD 1634(J21) 12/9/4. All future units are to be match drilled per T22-510.	
	Conic Adapter Installation T22-301	MT 41B	1865	12/22/4 Sys. Test	T22-490-2 stiffeners on bottom of T22-3016 command J Box Assy. interferes with elect. harness which is routed under Command J Box. Assy.	12/22/4:- Fabricate 2 shims as per dwg. on CARD 1865. Match drill with T22-480-1 & 481-1 intercostals. Install shims between Com. Box to intercostals. Ref. E.O. pre-release 500119 incorp. this change on J21 - J23 and up on Dwg. T22-3016-501.	
aylpad omp. 2-600	Fairing Assy. Comp. T22-609	029 MT 30	1840	3/3/5 Sys. Test	Hole (5/32" dia) drilled in bathtub fittings to accept GHE roll pins is mislocated. Drill .48" inside bathtub. S/B: .30" Roll pins will not mate.	3/3/5:- 1)Elongate existing holes to match GHE roll pin. 2)Apply RTV 60 to back of bathtub fitting to avoid light leak	
ypload sy. mp. 2-600	Rec. Bbl. Assy. Comp. T22-647	803 J25	3254	4/1/5: Sys. Test	Corrosion caused small pits on external skin surface approx. 1" wide x 8" long, approx. 6" aft of fwd. ring between -Z and -Y axis.	4/5/5:- To remove the pits would remove too much gold plating. The pitting will not effect the thermal properties of the bbl. Therefore use as is.	

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 FEED/CARD SUMMARY
 LOAD J 22 VEHICLE
 AGAINST MAJOR PAYLOAD EQUIPMENT

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Sheet 4

(WORKMANSHIP DEFECTS)

NO. _____

MAJOR EQUIP. S/N	PART OR ASSEMBLY	S/N	FEAR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
2-800	Payload Assy. Comp. T22-600	J22	3485	5/5/5 Sys. Test	Regulated return to skin (J22-T) reads 0. ohms (short). S/B: 1 megohm.	Short was found to be due to no isolation between "A" bucket & skin of fairing. 1) Replace guide pin on fairing. 2) File forebody lug clearance hole in thrust cone to provide lug clearance. 3) Test per J12021-P6 Item 3.11.	

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ASSOCIATE CONTRACTOR

MAJOR QUP. S/N	PART OR ASSEMBLY	S/N	TFR	DATE 'AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
2600 68	V/H Prog. D 56443	N/A	228	11/20/4 Boston	V/H Pot. shows discontinuity at 31.4 in on ramp	Removed & replaced the potentiometer. Return defective pot to vendor for repair.	
650 69	Proc Elec. Base Line	N/A	229	11/20/4 Boston	V/H Voltage limiter circuit is incorrectly set. The cycle period at V/H R. A2 is 2.14 sec/cycle. S/B 2/10	Readjusted so liner circuit now limiting rate is 2.18 sec/cycle.	
168 600	Light Seal 39546	N/A	230	11/21/4 Boston	Takeup side of photographic format is serrated & jagged.	Investigation revealed that the surface "y" of light seal was badly damaged. Removed & replaced the light seal. Damaged one was returned to Newton.	
600 58	Transistor 2N1-613. Q 110	N/A	231	11/21/4 Boston	Base of transistor open. V/H command voltage was	Short was caused by test leads on magamp not being insulated one from another at conclusion of test. The transistor was removed & replaced.	
2600 188 2650 169	Interlock Action	N/A	232	11/21/4 Boston	Faulty interlock action. Banding was apparent at both high & low speeds based on photographic test.	Readjustment of interlock & belt tension showed acceptable photographic results.	

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FEDR/CARD SUMMARY
 PAYLOAD 22 VEHICLE
 DEFENSE AGAINST MAJOR PAYLOAD EQUIPMENT

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 Sheet 2

ASSOCIATE CONTRACTOR

NO. _____

AJOK QUIP. S/N	PART OR ASSEMBLY	S/N	TFR	DATE AREA FOUND	DESCRIPTION OF DISCREPANCY	REPAIR OR REPLACEMENT DATA & CORRECTIVE ACTION	SUPPLEMENTAL ANALYSIS AND CORRECTIVE ACTION
strum't 650 69	Horizon. Optic 63065-1	Old 179G New 183C10	233	12/3/4 Boston	H. O. hung open for two cycles, smearing format.	Incorrect assy. of spacer washer in blade area was the cause. All the #2 shutters which were in any sys. have been grounded & replaced with the #1 Wallensak II D. shutter.	

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