

704L ITEMS LIST

PROJECT: CARGO ELEMENT INTERFACE
ASSEMBLY ELECTRICAL FLIGHT GRAPPLE
FITURE

SYSTEM:
PAYLOAD GRAPPLE FITURE
ASSEMBLY NUMBER:
5187E100-1

A DEF	REV	NAME, QTY & DRAWING REF. DESIGNATION	FUNCTION	FAILURE MODE & CAUSE	MISSION PHASE	FAILURE EFFECT ON CMB ITEM	HARDWARE FUNCTION CRITICALITY	RATIONALE FOR ACCEPTANCE
10	B	ELECTRICAL CONNECTOR HOUSING, QTY-1 P/N SPAR 3187D100-1 ELECTRICAL CONNECTOR GUIDE QTY-1 P/N SPAR 4187E100-1	PROVIDES ELECTRICAL CONNECTOR MOUNTING/RESTRAINT.	MODE: HOUSING SEIZING IN CONNECTOR GUIDE CAUSE(S): GROSS BETWEEN SURFACES OR DEGRADED LUBRICATION.	ORBIT	DEGRADED CONNECTOR MOTION ELECTRICAL CONNECTOR MAY NOT MATE/DEMATE FROM SE CONNECTOR. DAMAGE TO ELECTRICAL CONNECTOR MATE/DEMATE DEVICE. WHENEVER OR DELAYED CONNECTOR SEPARATION AT OR BACKOFF CAUSING UNEXPECTED PAYLOAD MOTION AT RELEASE. <u>Worst Case</u> PAYLOAD DOES NOT RELEASE CREW ACTION REQUIRED. <u>THEIR EFFECT</u> HOURS <u>REDUNDANT PATHS/REMARKS</u> JETTSOON RM9	2/F <u>REDUNDANCY</u> A - PART B - PART C - PART	<u>DESIGN FEATURES</u> THE ELECTRICAL CONNECTOR HOUSING AND GUIDE ARE MANUFACTURED FROM ALUMINUM BILDW PER QS-A-20012, TYPE 7075, TEMPER T73M. THEY ARE DRY FILM LUBRICATED WITH SANDSTRON BA PER MIL-L-46118. THE INTERFACES ARE DESIGNED TO PROVIDE A RESTRICTED PATH FOR THE INGRESS OF DEBRIS. REFERENCE DESIGN ANALYSIS REPORT SPAR-RMS-R-1188 FOR EPCF MARKING OF SAFETY. SUBSEQUENT TO INSTALLATION OF THIS PART INTO THE ERFIF, THE FOLLOWING ACCEPTANCE TESTING IS CONDUCTED ON THE GRAPPLE FITURE. THE MOVEMENT OF THE CONNECTOR HOUSING IN THE GUIDE IS EXTENSIVELY EXERCISED DURING THE COURSE OF THIS TESTING. <u>ACCEPTANCE TESTS</u> THE ELECTRICAL FLIGHT GRAPPLE FITURE (ERFIF) IS SUBJECTED TO THE FOLLOWING ACCEPTANCE TESTS (REF. SPAR-RMS-R-1187): - VISUAL INSPECTION AND CRITICAL DIMENSION VERIFICATION - AMBIENT FUNCTIONAL TESTS: A) MECHANICAL - GRAPPLE SHAFT OPERATION, ELECTRICAL CONNECTOR MATE/DEMATE, AND EVA SHAFT RELEASE OPERATION, UNDER LOAD AND NO LOAD B) ELECTRICAL - CONTINUITY, ISOLATION RESISTANCE, DIELECTRIC STRENGTH UNDER 0 AND 300 V, X AND Y AXIS SEPARATION. - VIBRATION TEST: 0.04 g ² /Hz IN EACH OF X, Y, AND Z AXES. - VISUAL INSPECTION - STRUCTURAL ADEQUACY TEST: - AXIAL LOAD = 2215 LBS. - BENDING MOMENT = 1000 FT-LBS. - TORSIONAL MOMENT = 836 FT-LBS - VISUAL INSPECTION AND CRITICAL DIMENSIONS VERIFICATION - AMBIENT FUNCTIONAL TESTING - MECHANICAL - THERMAL TEST: - + 99 DEG. C. TO - 60 C. TWO CYCLES - MECHANICAL FUNCTION TESTED AT TEMPERATURE EXTREMES. - FUNCTIONAL TESTING - MECHANICAL AND ELECTRICAL - DIMENSIONAL INSPECTION PERFORMED IN ACCORDANCE WITH SPAR-RMS-ITP-11872.

GF - 72

1. PREPARED BY

CLB

APPROVED BY

FMEA/CLL

Working group

DATE:

8 Jun 92

SUPERSEDING DATE

LOCAL ITEMS LIST

PROJECT: CR RIG ELEMENT INTERFACE
 ASSEMBLY: ELECTRICAL FLIGHT GRAPPLE
 FIXTURE

SYSTEM:
 PAYLOAD GRAPPLE FIXTURE
 ASSEMBLY NUMBER:
 515096100-1

AE4 REF.	REV	NAME, CITY & DRAWING REF. DESIGNATION	FUNCTION	FAILURE MODE & CAUSE	MISSION PHASE	FAILURE EFFECT ON MISSION	HARDWARE FUNCTION CRITICALITY	RATIONALE FOR ACCEPTANCE
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QUALIFICATION TESTS

THE EPOF QUALIFICATION CONSISTED OF PERFORMING ESSENTIALLY THE SAME TESTS AS REQUIRED FOR ACCEPTANCE TESTS WITH THEIR ASSOCIATED MECHANICAL AND ELECTRICAL FUNCTIONAL INSPECTIONS (REF. SPAR RMB-TP-1874):

- STRUCTURAL ADEQUACY TEST:
- ATP REPEATED UNDER 1.2X DESIGN LOAD AND MOMENT VALUES.
- THERMAL VACUUM TEST:
- 104 DEG. C, 75 DEG. C, TEN CYCLES
- MECHANICAL FUNCTION TESTED AT TEMPERATURE EXTREMES
- VIBRATION TEST:
- RESONANCE EVALUATION AT 1.5 g
- 0.067 g² RIN EACH OF X, Y, AND Z AXIS

QA INSPECTIONS

THE EPOF IS MANUFACTURED UNDER DOCUMENTED QUALITY CONTROLS BY SPAR AND APPROVED SUBCONTRACTORS. THESE CONTROLS ARE EXERCISED THROUGH DESIGN, PROCUREMENT, PROCESSING, FABRICATION, ASSEMBLY, TESTING, SHIPPING AND RECEIVING OF UNITS. SPAR GOVERNMENT REPRESENTATIVE MANDATORY INSPECTION POINTS ARE (INVOKED ON THE SUBCONTRACTOR AT VARIOUS LEVELS OF ASSEMBLY AND TESTING).

RECEIVING INSPECTION VERIFIES THAT ALL PARTS RECEIVED ARE AS IDENTIFIED IN THE PROCUREMENT DOCUMENTS, THAT NO PHYSICAL DAMAGE TO PARTS HAS OCCURRED DURING SHIPMENT AND THAT APPROPRIATE DATA HAS BEEN RECEIVED WHICH PROVIDES ADEQUATE TRACEABILITY INFORMATION AND IDENTIFIES ACCEPTABLE PARTS.

PARTS ARE INSPECTED THROUGHOUT MANUFACTURE, ASSEMBLY AND TEST AS APPROPRIATE TO THE MANUFACTURE STAGE COMPLETED.

THESE INSPECTIONS INCLUDE:

LIQUID PENETRANT INSPECTION PER MIL STD 883B, TYPE I, METHOD B, SENSITIVITY LEVEL 2, TO CHECK THAT NO CRACKS ARE PRESENT. VERIFICATION THAT TESTED PARTS ARE CORRECT PRIOR TO ASSEMBLY AND TRACEABILITY INFORMATION RECORDED.

INSPECTION TO DRAWING THROUGHOUT THE ASSEMBLY PROCESS. VISUAL INSPECTION AND CRITICAL DIMENSIONAL VERIFICATION IS PERFORMED TO SPAR INSPECTION TEST PROCEDURE SPAR-RMB-TP-1872, WHICH INCLUDES GROUNDING VERIFICATION, WORKMANSHIP, DIMENSIONAL, WEIGHT (SPAR GOVERNMENT REP. MANDATORY INSPECTION POINT).

ACCEPTANCE TESTING (ATP) INCLUDES CRITICAL DIMENSIONAL CHECKS, FUNCTIONAL TESTING FOR GRAPPLE SHAFT OPERATION, ELECTRICAL MATE/DEMATE AND ELECTRICAL OPERATION BREAKOUT AND RUNNING TORQUES FOR SWA SHAFT WITHDRAWAL AND INSERTION UNDER LOAD, PROOF LOADING AND GROUNDING TEST (SPAR GOVERNMENT REP. MANDATORY INSPECTION POINT).

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REPAIRED BY:

KFB

APPROVED BY:

FMBA/LJL

Working group

DATE:

8 Jun 92

SUPPLEMENTARY DATE

TIICAL ITEMS LIST

PROJECT: CARDO ELEMENT INTERFACE
 ASSEMBLY: ELECTRICAL FLIGHT ORAPPLE
 RETURN

SYSTEM:
 PAYLOAD GRAPPLE RETURN
 ASSEMBLY NUMBER:
 913078 100-1

EA REF	REV	NAME, CITY & DRAWING REF. DESIGNATION	FUNCTION	FAILURE MODE & CAUSE	MISSION PHASE	FAILURE EFFECT ON END ITEM	HARDWARE JUNCTION CRITICALITY	RATIONALE FOR ACCEPTANCE
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NO
 NUMBER

CARRIER

NONE

FAILURE HISTORY

NONE

OPERATIONAL EFFECTS

NORMAL ELECTRICAL CONNECTION DEMATE IS NOT POSSIBLE.

CREW ACTION

EVA DEMATING OF ELECTRICAL CONNECTORS IS POSSIBLE.

RES JETTISON IS AVAILABLE.

CREW TRAINING

THE CREW WILL BE TRAINED TO EVA DEMATE ELECTRICAL CONNECTORS

MISSION CONSTRAINTS

OPERATE UNDER WINDSPEED RATES WITHIN 10 FT. OF STRUCTURE. THE ARM WILL NOT BE DRIVEN UNLESS THE CREW IS OBSERVING THE EXPECTED MOTION OF THE ARM/PAYLOAD STRUCTURE VIA WINDOW AND/OR CCTV VIEWS.

EE MODE SWITCH SET TO OFF POSITION IMMEDIATELY AFTER SPECIFIED COUNT TIME HAS ELAPSED.

WHEN CAPTURING OR RELEASING A FREE FLYING PAYLOAD, THE EE MUST BE FAR ENOUGH AWAY FROM STRUCTURE TO PROHIBIT CONTACT REGARDLESS OF PAYLOAD ROTATIONS

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ALB

APPROVED BY *FMEA/KIL*
Working Group DATE *8 Jun 92*

SUPERCEDING DATE: