

CRITICAL ITEMS LIST

PROJECT: SRMS

SYSTEM: PAYLOAD GRAPPLE FIXTURE

ASS'Y NOMENCLATURE: FLIGHT RELEASABLE

ASS'Y P/N: 51450F1-1

SHEET: 1

P/N REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10020	0	RELEASE ROD DIY-1 SPAR 51450D125-3	MODE: UNABLE TO BACK OFF RELEASE ROD. CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE SHAFT CANNOT BE RELEASED WHEN REQUIRED ON EVA. WORST CASE UNABLE TO RELEASE PAYLOAD. REDUNDANT PATHS REMAINING N/A	DESIGN FEATURES	DURING ASSEMBLY OF THE RELEASE ROD INTO THE EVA RELEASE MECHANISM ALL FAYING PARTS ARE LUBRICATED WITH BRAYCOTE 601 GREASE (FORMERLY 3L-30RP) WHICH HAS A PERFLUORINATED POLYETHER OIL BASE WHICH IS VERY STABLE UNDER VACUUM ENVIRONMENT. THE COATING OF BRAYCOTE 601 PROVIDES: A: LUBRICATION OF PARTS TO PREVENT BINDING DURING OPERATION OF THE MECHANISM AND: B: A RELEASE AGENT COATING TO PREVENT COLD WELDING OF FAYING PARTS.

PREPARED BY: MFVG

SUPERSEDING DATE: 11 SEP 86

APPROVED BY: _____

DATE: _____

GF-6

CRITICAL ITEMS LIST

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SYSTEM: PAYLOAD GRAPPLE FIXTURE
 ASS'Y P/N: 51450FT-1

SHEET: 2

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RDR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10020	0	RELEASE ROD QTY-1 SPAR 514500125-3	MODE: UNABLE TO BACK OFF RELEASE ROD. CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE SHAFT CANNOT BE RELEASED WHEN REQUIRED ON EVA. WORST CASE UNABLE TO RELEASE PAYLOAD. REDUNDANT PATHS REMAINING N/A	1/1 CRITICALITY	ACCEPTANCE TESTS ----- THE FRGF IS SUBJECTED TO THE FOLLOWING ACCEPTANCE TESTS. (REF. SPAR-ATP 1058) O VISUAL INSPECTION AND DIMENSIONAL VERIFICATION O PROOF LOAD TEST: THE FOLLOWING ACCEPTANCE LOAD TEST IS CONDUCTED ON ALL FLIGHT UNITS UNDER AMBIENT CONDITIONS. THIS TEST VERIFIES THE INTEGRITY OF THE GRAPPLE TIP ASSEMBLY, RETAINING SCREW AT DESIGN LIMIT LOAD. GRAPPLE SHAFT AXIAL LOAD = 2275 LBF. (RESULTING FROM 1200 FT.LBF. BENDING MOMENT. O DIMENSIONAL VERIFICATION (POST PROOF LOAD) O FULL FUNCTION TEST (AMBIENT) O DIMENSIONAL VERIFICATION (POST LOAD/FUNCTIONAL) O GROUND VERIFICATION TEST QUALIFICATION TESTS ----- THE FRGF IS SUBJECTED TO THE FOLLOWING QUALIFICATION TEST ENVIRONMENTS (REF SPAR QTP. 902) O VIBRATION: LEVEL AND DURATION- REFERENCE TABLE 15 O SHOCK: 20G/11 MS (3 AXES <6 DIRECTIONS) O THERMAL OPERATIONAL: + 80 DEGREE C TO - 87 DEGREES C (2 CYCLES) O STRUCTURAL ADEQUACY TESTS : ----- LOAD CASE A: (LOADS APPLIED SIMULTANEOUSLY) BENDING MOMENT = 1680 FT.LBF (1.4 X DESIGN LIMIT) CORRESPONDING GRAPPLE SHAFT RADIAL LOAD = 3101 LBF. TORSIONAL LOAD = 630 LBF. LOAD CASE B: (LOADS APPLIED SIMULTANEOUSLY) BENDING MOMENT = 1260 FT.LBF. CORRESPONDING GRAPPLE SHAFT AXIAL LOAD = 2325 LBF. TORSIONAL LOAD = 900 LBF. AMBIENT OPERATIONAL TESTS ----- FLIGHT CHECKOUT -----

PREPARED BY: MEWG

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PROJECT: SRMS
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SYSTEM: PAYLOAD GRAPPLE FIXTURE
 ASS'Y P/N: 51450125-1

SHEET: 3

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FREQ. 1/1 CRITICALITY RATIONALE FOR ACCEPTANCE
10020	0	RELEASE ROD QTY: 1 SPAR 514500125-3	MODE: UNABLE TO BACK OFF RELEASE ROD. CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE SHAFT CANNOT BE RELEASED WHEN REQUIRED ON EVA. WORST CASE UNABLE TO RELEASE PAYLOAD. REDUNDANT PATHS REMAINING ----- N/A	QA/INSPECTIONS GRAPPLE FIXTURES ARE MANUFACTURED UNDER DOCUMENTED QUALITY CONTROLS BY A SPAR APPROVED SUBCONTRACTOR. THESE CONTROLS ARE EXERCISED THROUGH DESIGN PROCUREMENT, PLANNING, PROCESSING, FABRICATION, ASSEMBLY, TESTING, SHIPPING AND RECEIVING OF UNITS. SPAR/GOVERNMENT REPRESENTATIVE MANDATORY INSPECTION POINTS ARE ENVOCKED 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 MANUFACTURING STAGE COMPLETED. THESE INSPECTIONS INCLUDE: INSPECTION VERIFIES THAT KITTED PARTS ARE CORRECT PRIOR TO ASSEMBLY AND TRACEABILITY INFORMATION RECORDED. INSPECTION TO DRAWING IS CONDUCTED THROUGHOUT THE ASSEMBLY PROCESS, INCLUDING INSPECTION OF LOCKING, WITNESSING OF TORQUING AND APPLICATION OF TORQUE STRIPING. VISUAL INSPECTION AND CRITICAL DIMENSIONAL VERIFICATION IS PERFORMED TO SPAR INSPECTION TEST PROCEDURE SPAR-RMS-ITP 300 WHICH INCLUDES GRINDING VERIFICATION, WORKMANSHIP, DIMENSIONAL, WEIGHT. (SPAR/GOVERNMENT REP.-MANDATORY INSPECTION POINT) ACCEPTANCE TESTING (ATP) INCLUDES DIMENSIONAL CHECKS, BREAKOUT AND RUNNING TORQUES, WITHDRAWAL AND INSERTION LOADS, PROOF LOADING, FUNCTIONAL TESTING AND GRINDING TEST. (SPAR/GOVERNMENT REP.- MANDATORY INSPECTION POINT).

PREPARED BY: MEWG

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GP-B

CRITICAL ITEMS LIST

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SYSTEM: PAYLOAD GRAPPLE FIXTURE
 ASS'Y P/N: 51450F1-1

SHEET: 4

PMA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOUR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10020	0	RELEASE ROD QTY-1 SPAR 514500125-3	NODE: UNABLE TO BACK OFF RELEASE ROD. CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE SHAFT CANNOT BE RELEASED WHEN REQUIRED ON EVA. WORST CASE UNABLE TO RELEASE PAYLOAD. REDUNDANT PATHS REMAINING N/A	FAILURE HISTORY ----- NONE	

PREPARED BY: HILG

SUPERSEDING DATE: 11 SEP 86

APPROVED BY:

DATE:

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CRITICAL ITEMS LIST

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SYSTEM: PAYLOAD GRAPPLE FIXTURE
 ASS'Y P/N: 51450FT-1 SHEET: 5

P/N & REV.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HWK / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10020	0	RELEASE ROD QTY: 1 SPAR 51450D125-3	MODE: UNABLE TO BACK OFF RELEASE ROD. CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE SHAFT CANNOT BE RELEASED WHEN REQUIRED ON EVA. WORST CASE UNABLE TO RELEASE PAYLOAD. REDUNDANT PATHS REMAINING N/A	1/1	OPERATIONAL EFFECTS ----- EVA TECHNIQUES WILL NOT RELEASE PAYLOAD FROM ARM. IF SHARES CANNOT BE OPENED IN ANY MODE, THEN THE ARM/PAYLOAD COMBINATION MUST BE JETTISONED. CREW ACTION ----- IF SHARES CANNOT BE OPENED IN ANY MODE THE ARM/PAYLOAD COMBINATION MUST BE JETTISONED. CREW TRAINING ----- NONE MISSION CONSTRAINT ----- NONE SCREEN FAILURES ----- N/A

PREPARED BY: MING

SUPERSEDING DATE: 11 SEP 86

APPROVED BY: _____

DATE: _____

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