

CRITICAL ITEMS LIST

PROJECT: SRMS

SYSTEM: PAYLOAD GRAPPLE FIXTURE

ASS'Y NOMENCLATURE: RIGIDIZE SENSING G.P.

ASS'Y P/N: 51574F1-1B3

SHEET: 1

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RDR / FDR / 2/2 CRITICALITY	RATIONALE FOR ACCEPTANCE
10050	0	GRAPPLE SHAFT RETURN SPRING. QTY: 1 SPAR 51573D110	MODE: SHAFT FAILS TO RETRACT AFTER EE DERIGIDIZATION. CAUSE(S): BROKEN SPRING.	LOSS OF PAYLOAD ACTUATION/ DEACTUATION DEVICE. WORST CASE ----- LOSS OF MISSION. REDUNDANT PATHS REMAINING ----- N/A	DESIGN FEATURES -----	THE COMPRESSION SPRING P/N 51404D109 IS A BOUGHT OUT ITEM. MANUFACTURED FROM SAE 6150 STEEL IN ACCORDANCE WITH ASTM 232 SPECIFICATION. HEAT TREATMENT PER MIL-A-6875, SHOT PEENING PER MIL-F 13165 AND MAGNAFLUX INSPECTION TO MIL-I-6869 ARE OTHER CERTIFICATIONS UNDER WHICH THE SPRING IS PROCURED.

PREPARED BY: MFWG

SUPERSEDING DATE: 11 SEP 85

APPROVED BY:

DATE:

9P-22

CRITICAL ITEMS LIST

PROJECT: SSMS

ASS'Y NOMENCLATURE: RIGIDIZE SENSING G.F.

SYSTEM: PAYLOAD GRAPPLE FIXTURE

ASS'Y P/N: 51574F1-123

SHEET: 2

PNEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOUR / FUNC. 272 CRITICALITY	RATIONALE FOR ACCEPTANCE
10060	0	GRAPPLE SHAFT RETURN SPRING. QTY-1 SPAR 515730110	MODE: SHAFT FAILS TO RETRACT AFTER EE DERIGIDIZATION. CAUSE(S): BROKEN SPRING.	LOSS OF PAYLOAD ACTUATION/ DEACTUATION DEVICE. WORST CASE LOSS OF MISSION. REDUNDANT PATHS REMAINING N/A		<p>ACCEPTANCE TESTS</p> <p>PRIOR TO ITS INSTALLATION TO THE GRAPPLE FIXTURE, EACH SHAFT RETURN SPRING IS SUBJECTED TO THE FOLLOWING WORK-IN TESTS UNDER AMBIENT CONDITIONS: 200 COMPRESSION CYCLES AT MAX OPERATION LOADS OF 675 LBF. FOLLOWING INSTALLATION OF THE SHAFT RETURN SPRING INTO THE GRAPPLE FIXTURE, THE FOLLOWING OPERATIONAL ACCEPTANCE TESTING IS CONDUCTED ON THE GRAPPLE FIXTURE.</p> <p>THE RSGF IS SUBJECTED TO THE FOLLOWING ACCEPTANCE TESTS (REF. SPAR ATP. 1004)</p> <p>O WORK-IN AND INSTALLATION OF THE COMPRESSION SPRING</p> <p>O VISUAL INSPECTION AND DIMENSIONAL VERIFICATION</p> <p>O PREPROOF LOAD INSPECTION</p> <p>O AMBIENT FUNCTIONAL</p> <p>O PROOF LOAD TEST: AMBIENT CONDITIONS. BENDING MOMENT = 1200 FT.LBF. CORRESPONDING AXIAL LOAD = 2215 LBF. TORSIONAL LOAD = 450 FT.LBF.</p> <p>O VISUAL INSPECTION AND DIMENSIONAL VERIFICATION (POST PROOF LOAD)</p> <p>O THERMAL ADEQUACY: THERMAL +93 DEGREE C (200 DEGREE F) TO -80 DEGREE C (-112 DEGREE F). TWO CYCLES AMBIENT PRESSURE.</p> <p>OPERATIONAL TESTS ARE CONDUCTED AT THE EXTREMITIES OF THE ABOVE ENVIRONMENT AT THE FOLLOWING OPERATIONAL LOAD. AXIAL GRAPPLE SHAFT LOAD = 700 LBF, MAX.</p> <p>O FUNCTIONAL EVA RELEASE TEST</p> <p>MINIFICATION TESTS</p> <p>QUALIFICATION OF THE RSGF IS BY ANALYSIS SEE ANALYSIS REPORT SPAR-WMS-R 624</p> <p>OPERATIONAL TESTS</p> <p>FLIGHT CHECKOUT</p>

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PROJECT: SRMS

SYSTEM: PAYLOAD GRAPPLE FIXTURE

ASS'Y NOMENCLATURE: RIGIDIZE SENSING G.P.

ASS'Y P/N: 51574F1-183

SHEET: 3

TMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FUNC. 2/2 CRITICALITY	RATIONALE FOR ACCEPTANCE
10060	0	GRAPPLE SHAFT RETURN SPRING. QTY-1 SPAR 51573011D	MODE: SHAFT FAILS TO RETRACT AFTER BE DERIGIDIZATION. CAUSE(S): BROKEN SPRING.	LOSS OF PAYLOAD ACTUATION/ DEACTUATION DEVICE. WORST CASE ----- LOSS OF MISSION. REDUNDANT PATHS REMAINING ----- N/A	QA/INSPECTIONS -----	<p>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 EVOKED ON THE SUBCONTRACTOR AT VARIOUS LEVELS OF ASSEMBLY AND TESTING.</p> <p>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.</p> <p>PARTS ARE INSPECTED THROUGHOUT MANUFACTURE, ASSEMBLY AND TEST AS APPROPRIATE TO THE MANUFACTURING STAGE COMPLETED. THESE INSPECTIONS INCLUDE:</p> <p>INSPECTION VERIFIES THAT KITTED PARTS ARE CORRECT PRIOR TO ASSEMBLY AND TRACEABILITY INFORMATION RECORDED.</p> <p>VISUAL INSPECTION AND CRITICAL DIMENSIONAL VERIFICATION IS PERFORMED TO SPAR INSPECTION TEST PROCEDURE SPAR-RMS-ITP 306 WHICH INCLUDES GROUNDING VERIFICATION, WORKMANSHIP, DIMENSIONAL, WEIGHT, (SPAR/GOVERNMENT REP.-MANDATORY INSPECTION POINT)</p> <p>ACCEPTANCE TESTING (ATP) INCLUDES DIMENSIONAL CHECKS, BREAKOUT AND RUNNING TORQUES, WITHDRAWAL AND INSERTION LOADS, PROOF LOADING, FUNCTIONAL TESTING AND GROUNDING TEST. (SPAR/GOVERNMENT REP.- MANDATORY INSPECTION POINT).</p>

PREPARED BY: MEWG

SUPERSEDING DATE: 13 SEP 86

APPROVED BY:

DATE:

CIF-24

CRITICAL ITEMS LIST

PROJECT: SMS
 ASS'Y NOMENCLATURE: RIGIDIZE SENSING G.F.

SYSTEM: PAYLOAD GRAPPLE FIXTURE
 ASS'Y P/N: 51574F1-183

P/N REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOUR / FUNC. 2/2 CRITICALITY	RATIONALE FOR ACCEPTANCE
10060	0	GRAPPLE SHAFT RETURN SPRING. QTY-1 SPAR 515730-110	MODE: SHAFT FALLS TO RETRACT AFTER EE DERIGIDIZA- TION. CAUSE(S): BROKEN SPRING.	LOSS OF PAYLOAD ACTUATION/ DEACTUATION DEVICE. WORST CASE LOSS OF MISSION. REDUNDANT PATHS REMAINING ----- N/A	FAILURE HISTORY ----- NONE	

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SHEET: 5

FMEA REF.	REV.	NAME, QTY & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW / FUNC. 2/2 CRITICALITY	RATIONALE FOR ACCEPTANCE
10060	0	GRAPPLE SHAFT RETURN SPRING. QTY: 1 SPAR 51573D110	MODE: SHAFT FAILS TO RETRACT AFTER EE DEREGISTRATION. CAUSE(S): BROKEN SPRING.	LOSS OF PAYLOAD ACTUATION/DEACTUATION DEVICE. WORST CASE ----- LOSS OF MISSION. REDUNDANT PATHS REMAINING ----- N/A	OPERATIONAL EFFECTS ----- LOSS OF ABILITY TO ACTIVATE/DEACTIVATE PAYLOAD THROUGH THE RIGIDIZING SENSING GRAPPLE FIXTURE. CREW ACTION ----- NONE CREW TRAINING ----- NONE MISSION CONSTRAINT ----- NONE SCREEN FAILURES ----- N/A	

PREPARED BY: MFG

SUPERSEDING DATE: 11 SEP 86

APPROVED BY:

DATE:

SP 25