

**CRITICAL ITEMS LIST**

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

SYSTEM: PAYLOAD GRAPPLE FIXTURE  
 ASS'Y P/N: 51574F1-183 SHEET: 1

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOW ? FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10050	2	RELEASE ROD QTY-2 SPAR 51574C105-1	MODE: UNABLE TO BACK OFF RELEASE ROD.  CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE CANNOT BE RELEASED WHEN REQUIRED ON EVA.  REDUNDANT PATHS REMAINING ----- N/A	DESIGN FEATURES -----  DURING ASSEMBLY OF THE RELEASE ROD INTO THE EVA RELEASE MECHANISM ALL FATING PARTS ARE LUBRICATED WITH BRAYCOTE 601 GREASE (FORMERLY 31-38RP) 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 FATING PARTS.	

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SHEET: 2

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	Hazard / Func. 1/1 CRITICALITY RATIONALE FOR ACCEPTANCE
10050	2	RELEASE ROD QTY-2 SPAR 51574C105-1	MODE: UNABLE TO BACK OFF RELEASE ROD.  CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE CANNOT BE RELEASED WHEN REQUIRED ON EVA.  REDUNDANT PATHS REMAINING ----- N/A	ACCEPTANCE TESTS ----- THE RSGF IS SUBJECTED TO THE FOLLOWING ACCEPTANCE TESTS (REF. SPAR ATP. 1004)  <input type="checkbox"/> WORK-IN AND INSTALLATION OF THE COMPRESSION SPRING <input type="checkbox"/> VISUAL INSPECTION AND DIMENSIONAL VERIFICATION <input type="checkbox"/> PREPROOF LOAD INSPECTION <input type="checkbox"/> AMBIENT FUNCTIONAL  <input type="checkbox"/> PROOF LOAD TEST: AMBIENT CONDITIONS. BENDING MOMENT = 1200 FT.LBF. CORRESPONDING AXIAL LOAD = 2215 LBF. TORSIONAL LOAD = 450 FT.LBF.  <input type="checkbox"/> VISUAL INSPECTION AND DIMENSIONAL VERIFICATION (POST PROOF LOAD)  <input type="checkbox"/> THERMAL ADEQUACY: THERMAL +93 DEGREE C (200 DEGREE F) TO 80 DEGREE C (-112 DEGREE F). TWO CYCLES AMBIENT PRESSURE.  OPERATIONAL TESTS ARE CONDUCTED AT THE EXTREMITIES OF THE ABOVE ENVIRONMENT AT THE FOLLOWING OPERATIONAL LOAD. AXIAL GRAPPLE SHAFT LOAD = 700 LBF. MAX.  <input type="checkbox"/> FUNCTIONAL EVA RELEASE TEST  QUALIFICATION TESTS ----- QUALIFICATION OF THE RSGF IS BY ANALYSIS SEE ANALYSIS REPORT SPAR-RNS-N 624  OPERATIONAL TESTS ----- FLIGHT CHECKOUT -----

PREPARED BY: NEWG

SUPERSEDING DATE: 14 JAN 87

APPROVED BY:

DATE:

*Revision*

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SHEET: 3

P/N REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOUR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10050	2	RELEASE ROD QTY-2 SPAR 51574C105-1	MODE: UNABLE TO BACK OFF RELEASE ROD.  CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE CANNOT BE RELEASED WHEN REQUIRED ON EVA.  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 ENVOCKED ON THE SUBCONTRACTOR AT VARIOUS LEVELS OF ASSEMBLY AND TESTING.</p> <p>THE GRAPPLE TIP RETAINING SCREW PART NO. NAS1134E2 IS A STANDARD .25 .250-2BUNF3A PAN HEAD TORQUE SCREW PROCURED TO NASA SPEC NAS-1134.</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>INSPECTION TO DRAWING IS CONDUCTED THROUGHOUT THE ASSEMBLY PROCESS, INCLUDING INSPECTION OF LOCKING, WITNESSING OF TORQUING AND APPLICATION OF TORQUE STRIPPING.</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: MMG

SUPERSEDING DATE: 14 JAN 87

APPROVED BY:

DATE:

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SHEET: 4

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RISK / FREQ. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
1005U	2	RELEASE ROD QTY-2 SPAR 51574C105-1	MODE: UNABLE TO BACK OFF RELEASE ROD.  CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE CANNOT BE RELEASED WHEN REQUIRED ON EVA.  REDUNDANT PATHS REMAINING ----- N/A	FAILURE HISTORY -----  NONE	

PREPARED BY: HFMG

SUPERSEDING DATE: 14 JAN 87

APPROVED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

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SHEET: 5

FMEA REF.	REV.	NAME, QTY, & DRAWING REF. DESIGNATION	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	HOWR / FUNC. 1/1 CRITICALITY	RATIONALE FOR ACCEPTANCE
10050	2	RELEASE ROD QTY-2 SPAR 51574C105-1	MODE: UNABLE TO BACK OFF RELEASE ROD.  CAUSE(S): SEIZED ROD.	GRAPPLE FIXTURE CANNOT BE RELEASED WHEN REQUIRED ON EVA.  REDUNDANT PATHS REMAINING ..... N/A	OPERATIONAL EFFECTS .....  EVA TECHNIQUES WILL NOT RELEASE PAYLOAD FROM ARM. IF SNARES CANNOT BE OPENED IN ANY MODE, THEN THE ARM/PAYLOAD COMBINATION MUST BE JETTISONED.  CREW ACTION .....  IF SNARES CANNOT BE OPENED IN ANY MODE THE ARM/PAYLOAD COMBINATION MUST BE JETTISONED.  CREW TRAINING .....  NONE  MISSION CONSTRAINT .....  NONE  SCREEN FAILURES .....  N/A	