

12/08/97 12:53 P002

SEP 29 1987

SAA29AF13-005

S050234HM
Attachment
Sheet 17 of 18

Critical Item: Sprocket, Drum
 Total Quantity: 4
 Find Number: None
 Criticality Category: 2

SAA No:	SAA29AF13-005	System/Area:	112.5 Ton Mobile Gantry Crane / SRB Retrieval and Disassembly Facility
NASA Part No:	None	PMN/ Name:	H77-1505 112.5 Ton Mobile Gantry Crane
Mfg/ Part No:	Shuttlelift Inc. 854137/3	Drawing/ Sheet No:	Plate M5442 1

Function: Rotate the hoist drum.

Critical Failure Mode/Failure Mode No: Disengages / 29AF13-005.004

Failure Cause: Structural failure

Failure Effect: One hoist drum sprocket failure will cause one end of the SRB to drop, resulting in possible loss (damage) of major SRB hardware. Detection method: Visual. Time to effect: Immediate.

ACCEPTANCE RATIONALE

Design:

- Designed to ANSI requirements.
- The sprocket material is C1035 steel, which has very high resistance to stress corrosion cracking per MSFC-SPEC-522B, "Design Criteria for Controlling Stress Corrosion Cracking".
- Integrally flanged to one end of the hoist drum with continuous weld around the full circumference in the areas where water could otherwise seep in.
- Per the requirements of the Control Specification, 80K58314, the crane assembly is rated at 225,000 lbs. However, this crane assembly is an off-the-shelf unit that is commercially rated at 440,000 lbs. with a 4:1 safety factor.
- The applied load of the SRB is approximately 200,000 lbs. Based on the maximum sling angle expected, the maximum line pull is approximately 55,000 lbs. at each lower load block. This results in an operational factor of 2.0 and a resultant multiplied safety factor of 8:1.

12/08/97 12:53

P001

SEP 29 1997

SAA29AF13-005

6050234HM

Attachment

Sheet 18 of 18

Test:

- An acceptance proof load test at 125% of the rated load of 225,000 lbs. was performed in September 1997.
- An operational test is performed weekly per OMI B6402. All hoists are operated in the up and down mode at both speeds.
- OMPS File VI requires annual performance of a load test at 100% of rated load. A load test at 100% of rated load is performed annually per OMI B6289.001.

Inspection:

- A weekly inspection for corrosion, cracks, and abnormal wear patterns is performed per OMI B6402.

Failure History:

- Current data on test failures, unexplained anomalies, and other failures experienced during ground processing activities can be found in the PRACA database. The PRACA database was researched and no failure data was found on this component in the critical failure mode.
- The GIDEP failure data interchange was researched and no failure data was found on this component in the critical failure mode.

Operational Use:

- **Correcting Action:**
There is no action which can be taken to mitigate the failure effect.
- **Timeframe:**
Since no correcting action is available, timeframe does not apply.