SAA29AF13-005

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S050234HM
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Critical Item:	Gear Reducer
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:**	H77-1605 112.5 Ton Mobile Gantry Crane
Mfg/ Part No:	Fairfield Mfg. Co., Inc. 83A-B Drive	**Drawing/ Sheet No:**	Plate M6442 1

Function: Transmit power from the hoist motor and reduce rotational speed to the drum shaft drive.

Critical Failure Mode/Failure Mode No: Gear Disengagement / 29AF13-005.001

Failure Cause: Structural failure.

Failure Effect: One hoist drive train gear reducer 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:

- All gearing design complies with the American Gear Manufacturers Association (AGMA) standards.
- Gearing is captured on shafts by interference fits, keys, and shoulders which would require structural failure for disengagement.
- 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.

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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.
- OMRS 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 B6269.001.

Inspection:

- Weekly visual inspection for leaks and cracks is performed per OMI B6402.
- Annual change of gear oil 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:

- Corrective Action:

  There is no action which can be taken to mitigate the failure effect.

- Timeframe:

  Since no corrective action is available, timeframe does not apply.