USA Ground Operations CIL Sheet

Critical Item: Hoist Gearbox Assembly
NASA Part No: None
Mfg/Part No: Mannesmann Dematic Corp / DKUN5-500KV1 2/1 F4
System: SSME Turbopump Hoist

Criticality Category: 2
Total Quantity: 1

Find No.	Qty	Area	PMN	Baseline	Drawing / Sheet
None	1	SSMEPF	H70-1530	036.00	79K34081 / 42

Function:

Transmit power from the Main Motor to the hoist chain.

Failure Mode No. Failure Mode	Failure Cause Failure Effect	Detection Method Time to Effect	Crit Cat
09FT03-007.001	Structural Failure	Visual	2
Gears Disengage	Loss of torque to hold the load. Uncontrolled descent of the load could result in damage to a vehicle system.	Immediate	

ACCEPTANCE RATIONALE

Design:

• The hoist is an off-the-shelf item manufactured by Mannesmann Dematic Corp. It complies to ANSI/ASME HST-1M.

• Load bearing members such as the gear case and shafts, have been designed so that the calculated static stress, based on the rated load, does not exceed 20% of the average ultimate strength of the material, i.e. 5:1 factor of safety.

• The hoist is rated by the manufacturer for lifting 1 metric ton (approx. 2200 lb) but has been derated for use to 1500 lb. resulting in a safety factor of 7.5 to 1. The heaviest load will be the Fuel Pump which weighs 1100 lb.

Test:

• OMRSD File VI requires annual performance of a rated load test.
• An annual independent brake test is performed on both brakes per OMI Q6343.
• An annual funtional test of the slip clutch is performed per OMI Q6343

Inspection:

• Hook and chain inspection performed monthly by OMI Q6343.
• Periodic maintenance includes semi-annual inspection of hoist system for worn, cracked or damaged components or missing hardware and operational check.

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 data was found on this component in the critical failure mode.

Operational Use:

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