

SAA09FTA3-006
REV. A

B/L: 422.00
SYS: 2-TON
MONORAIL

Critical Item: Hoist Gearbox Assembly (2 Items Total)
Find Number: None
Criticality Category: 2

JAN 23 1995

SAA No:	09FTA3-006	System/Area:	2-Ton Monorail Hoist/Pad A, RSS Interior PCR sides 2 & 4
NASA Part No:	None	PMN/ Name:	K61-2341/Pad A & B PCR Inter- rior 2-T Monorail Hoists
Mfg/ Part No:	Yale Industries/Model PD5F67L15AL	Drawing/ Sheet No:	79K24781/1-12

Function: The hoist gearbox transmits power from the hoist motor to the wire rope drum.

Critical Failure Mode/Failure Mode No: Gear disengages/09FTA3-006.001

Failure Cause: Structural failure of gears, shafts, mechanical load brake components and the gearbox housing.

Failure Effect: Load suspended from hoist will drop. Possible loss (damage) of a vehicle (payload) system. Failure is detectable by abnormal noises and movements up to and including dropping the load. Time to effect: seconds.

ACCEPTANCE RATIONALE

Design:

- The gearbox is an off-the-shelf item manufactured by Yale Industries. Its design complies with Hoist Manufacturers Institute (HMI) Duty Class H4 and American Gear Manufacturers Association (AGMA) Standards.
- All gearing design is based upon AGMA standards 220.02, "Rating of the Strength of Spur Gear Teeth" and 210.02, "Surface Durability (pitting) of Spur Gear Teeth."
- The gears are splined to shafts or integrally machined and are retained in place by shoulders within the confines of the gearbox.
- The hoists are designed for loads up to 10,000 lbs. and derated to loads up to 4,000 lbs. providing a minimum safety factor of 12.5:1.
- These hoists are subjected to an extremely limited duty cycle compared to commercial use.

WORKSHEET 5122-012
910724saPS0035



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Test:

- Load test at 100% of rated load is performed annually by OMI Q6172 in accordance with a NSS/GO-1740.9 requirement.
- OMRSD File VI requires annual performance of the rated load test to verify system integrity.
- An annual operational check of the hoist is performed under full rated load in accordance with OMI Q6172.
- Acceptance test at 125% of the rated load was performed on initial installation.
- A full operational check of the hoist is performed monthly (no load) in accordance with OMI Q6172.

Inspection:

- A visual inspection of the hoist gearbox for signs of the following conditions is performed monthly, OMI Q6172 requirement:
 - corrosion
 - loose fasteners
 - oil level/leakage

Failure History:

- The PRACA database was researched and no failure data was found on this component in the critical failure mode.
- The GIDEP failure data interchange system 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.