USA Ground Operations CIL Sheet SEP 5 2000

Critical Item: Swing gearbox assembly
NASA Part No: None
Mfg/Part No: Bronto Skylift / 84030140
System: Bronto Skylift S180 HDT 2000 Aerial Platform

Criticality Category: 2
Total Quantity: 1

Find No.	Qty	Area	PMN	Baseline	Drawing / Sheet
735T3	1	KSC	K61-4577	323.60	B041924 / 1

Function:

Transfers torque from the hydraulic motor to the turret assembly.

Failure Mode No. Failure Mode	Failure Cause Failure Effect	Detection Method Time to Effect	Crit Cat
09FT01-018.001 Gear disengagement	Structural failure of the gears. Torque for stopping horizontal rotation will be lost. Boom will continue to swing until the weight of the load or an object stops it. Possible loss (damage) of a vehicle system	Visual Immediate	2

ACCEPTANCE RATIONALE

Design:

- The gears are designed in accordance with ISO 6336 standards.
- The pinion gear has an HRC hardness of 0.97.
- The Pinion gear is machined to the main shaft of the gearbox and has no key.
- The ring gear has a Brinell hardness of 260 to 290.

Test:

- Operational check of the turret rotation is performed before use per "Pre-Operational Maintenance Mobile Equipment Checklist" KSC form 28-528 or Startup procedures as outlined in the Vendors Operators Manual.

- OMRSD File VI requires an annual operational test of turret rotation.

Inspection:

- OMRSD File VI requires an annual inspection of the ring and pinion gear.

- Gearbox is visually inspected during Pre-Op checkout.

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 the following data was found on this component in the critical failure mode.
- One problem report, PV-6-177113, was written against aerial manlift HE-907-287 (Condor 68) for swing gearbox failure (broken teeth) The failure was caused by operator error when the turret was rotated while the boom was restrained. No problems have occured since this incident.

Operational Use:

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