

B/L: 131.80  
SYS: BALL/BAR  
LIGHTS AT SLS  
#2

OCT 20 1992

Critical Item: Fusible Safety Switch, 3PST (3 Items Total)  
Find Number: S2 (1 ea./Runway)  
Criticality Category: 1 For Night, 3 For Day Landings

SAA No:	29SL02-008	System/Area:	Visual Landing Aids at White Sands Space Harbor, New Mexico
NASA Part No:		PMN/Name:	U72-1336-03 Ball/Bar Lights
Mfg/Part No:	Square D D321RD	Drawing/Sheet No:	80K51890 3

Function: S2C contact applies power to ball light assemblies.

Critical Failure Mode/Failure Mode No: Premature Open of S2C 29SL02-008.003, 29SL02-008.016, 29SL02-008.029.

Failure Cause: Heat/Faulty Mechanism/Corrosion

Failure Effect: Loss of power to the ball lights. Loss of ability to acquire and maintain the proper inner glideslope during Orbiter landing operations. Possible loss of life/vehicle.

Time to Effect: Immediate.

**ACCEPTANCE RATIONALE**

Design:

Rated	Estimated Operating
0 to 240 volts	120 volts
30 amps	19.8 amps

- Switch is mounted in a rainproof NEMA 3R enclosure.

Switches are certified in accordance with the requirements of National Electrical Manufacturers Association (NEMA) Standard KSI-1983 for type HD switches and Underwriters Laboratories Standard UL98, "Standard for Safety, Enclosed and Dead Front Switches."

ATTACHMENT 5050239  
SHEET 2 OF 8

WORKSHEET S312-012

Test:

OCT 20 1992

Certification testing included the following with no malfunctions:

- Operational Testing:
  - 50 make and break cycles at 850 amps
- Endurance Testing:
  - 8,000 cycles with 84 amperes of current applied and
  - 7,000 cycles without current applied
- Dielectric Voltage Withstand Testing:
  - 2 times max rated voltage plus 1,000 volts at a frequency of 60 Hz for 1 minute applied:
    - a. Between live parts and the enclosure with the switch closed,
    - b. Between terminals of opposite polarity with the switch closed, and
    - c. Between the line and load terminals with the switch open.
- The OMRSD File VI and WSSH Pre-Mission Preparation Procedure requires verification of system setup and proper operation prior to each Shuttle launch and landing operation.

Inspection:

- The WSSH Preventive Maintenance Procedure requires that equipment is physically inspected and cleaned monthly.

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.
- Timeframes:
  - Since no correcting action is available, timeframe does not apply.

ATTACHMENT 505023  
SHEET 3 OF 8