

JUL 1 1996

B/L: 380.00
 SYS: 30-TON
 BRIDGE
 CRANES
 OPF HB-3

Critical Item: Travel Interface Module, Bridge/Trolley
 (4 Items Total, 2 per Crane)

Find Number: BTIM, TTIM

Criticality Category: 2

SAA No: 09FY091-007

System/Area: 30-Ton Bridge Cranes/
 OPF HB-3

NASA

PMN/

H70-1379-01/

Part No: NA

Name:

30-Ton Bridge Crane

Mfg/ Ederer Inc.

Drawing/

Ederer EB-2286/

Part No: EC-1890

Sheet No:

13, 16

Function: Provides an interface between travel drive controls, tachometer, and travel motor controller.

Critical Failure Mode/Failure Mode No: Fails Open/09FY091-007.013 (Bridge)
 09FY091-007.016 (Trolley)

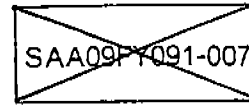
Failure Cause: Component failure

Failure Effect: Loss of tachometer feedback voltage to Travel Interface Module. Motor controller will compensate by increasing armature current to increase motor speed and tachometer feedback voltage. Once enabled, the motor controller will cause an uncontrolled acceleration to 10-33% of maximum speed before the motor controller senses an armature overvoltage and shuts down the drive. The shutdown will occur within 1 second of loss of tach feedback voltage. Possible damage to flight hardware if load is within 3 inches of obstruction (trolley) or within 1 1/2 inches (bridge) when failure occurs.

ACCEPTANCE RATIONALE

Design:

- Single board electronic module designed and built by the crane manufacturer (Ederer) using off-the-shelf components.
- The RC4136 active op-amp characteristics include a high common-mode input voltage range and absence of latch-up, making it ideal for its use in a voltage-follower circuit.



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RATED

ACTUAL

RC4136 OP AMP (TEXAS INSTRUMENTS)

Supply Voltage	+/- 18V	+/- 15V
Differential Input Voltage	+/- 30V	+/- 8V

RN55C RESISTORS (DALE)

Max. Working Voltage	200V	< 1V
Power	125mW	< 1mW

1N4004 DIODES

Max. Working Voltage	600V	23V
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CAPACITORS (THOMPSON)

Max. Working Voltage	63V	8V
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Test:

- Pre-operational set up (positioning sling/hook over the load) to support lifting operations in OMI Q3516 verifies proper operation of crane components and all functions.
- A full operational test of the crane is performed monthly (no load) in accordance with OMI Q6331.
- An operational check of the crane is performed under full rated load as part of the annual load test in accordance with OMI Q6331.

Inspection:

- The Bridge and Trolley electrical wiring is visually inspected annually for cracking, damage, or loose screws on terminal strips in accordance with OMI Q3516.

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.