

SAA09FY12-006
REV. BB/L: 389.00
SYS: 175-TON
BRIDGE
CRANE, VAB

AUG 20 1993

Critical Item: Relay, Auxiliary Hoist
Find Number: K9
Criticality Category: 2

SAA No: 09FY12-006	System/Area: 175-Ton Bridge Crane/VAB
NASA Part No: NA	PMN/ Name: K60-052B/ 175-Ton Bridge Crane/VAB
Mfg/ Part No: Potter-Brumfield/ KHP 17411	Drawing/ Sheet No: 67-K-L-11348/ 19

Function: Energized when hoist motors are drawing less than 20 amps. Contacts are closed to allow the console ammeter to display actual current. De-energized and contacts opened when current reaches 20 amps to scale the current reading on the console ammeter by a factor of 10.

Critical Failure Mode/Failure Mode No:

- Coil fails open/09FY12-006.061
- N.O. contact fail open/09FY12-006.062

Failure Cause:

- Corrosion, fatigue
- Corrosion, binding mechanism

Failure Effect: (For both failures) The current reading on the console ammeter will be scaled without indication from console light PL34. This could lead to an operator giving an erroneous input during float operations resulting in an inadvertent movement of the load. Possible damage to a vehicle system. Time to effect: seconds.

ACCEPTANCE RATIONALE**Design:**

- Coil Rating: 240 volts
- Coil Actual: 120 volts
- Contact material: Silver
- Expected mechanical life of 10 million operations.

- This relay was off-the-shelf hardware selected by the crane manufacturer for this application.

Test:

- OMRSD file VI requires verification of proper performance of hoist operational test annually.
- OMRSD file VI requires verification of proper performance of console ammeter switch-over point (main hoist-60A, aux hoist-20A) annually.
- OMI Q3008, Operating Instructions, requires all crane systems be operated briefly in all speeds to verify satisfactory operation before lifting operations.

Inspection:

- OMI Q6003, Maintenance Instructions requires annual inspection of relay contacts and contact members for burning, pitting, proper alignment and discoloration caused by overheating. Visually check closing coils for deteriorated insulation and evidence of overheating or burning.

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:
 - 1) The failure can be recognized via a Selsyn (inadvertent movement) that is in view of both operators.
 - 2) Operator can stop all crane operations, when the failure indication is noticed, by returning the master control switch to neutral, by releasing the brake switch or pressing the E-Stop button.
 - 3) Operators are trained and certified to operate these cranes and know and understand what to do if a failure indication is present.
 - 4) During all critical lifts, there is at least one Emergency Stop (E-Stop) operator remote from the operator's cab observing the load lift, and can stop the crane if a failure indication is noticed.
- Timeframe:
 - Estimated operator reaction time is 3 to 10 seconds.