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From Meredith Brown racer@lanl.gov
Subject: Yellow Alert- Anomalous CAM Condition

Title: Yellow Alert- Unintended Electrical Pathway Causes Anomalous CAM Condition

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LESSONS LEARNED- Over time the riveted feet on the Canberra alpha continuous air monitor (CAM) 1700 can work loose, allowing the rivets to contact the circuit board inside the CAM and causing anomalous behavior. Spacers installed on the bottom of the monitor chassis and attached to the circuit board stand-off can prevent inadvertent contact between the rivets and the circuit boards.

DISCUSSION- An anomalous condition was identified on a computerized CAM Manager System at a Laboratory facility. A technician noticed that one of the CAM Manager screens was on; normally the screen saver blanks the screen. When the technician logged onto the system, he discovered that one of the three CAMS on the system was listed as being in maintenance mode. However, the green indicator light on the CAM was lit, indicating proper operation of the monitor. The CAM Manager System was placed in test mode to clear the maintenance mode indication, and then a performance test was conducted and personnel observed the system for several 15-minute cycles to ensure that it was functioning properly. Because the operability of the CAM was suspect, the CAM head was replaced. No alarms were received, and CAM filter test results indicated no airborne release had occurred. Health Physics Operations personnel at the facility tested a similar CAM system and verified that the monitor would not alarm while in maintenance mode when exposed to a check source. Therefore, the CAM was determined to have been inoperable for an unknown number of hours. Calibration and Repair personnel examined the CAM head and determined that a rivet that attaches one of the monitor's feet to the body of the CAM had come loose and bridged the gap between the circuit board and the body of the monitor. The metal-to-circuit-board contact caused the CAM head to act abnormally and may have caused the CAM head to go into maintenance mode.

RECOMMENDATIONS/ACTIONS- Two hundred and forty Canberra CAM 1700 models are in use at the Laboratory, and in six year of service this monitor is the only one to experience this type of degradation. To prevent a recurrence in the other model 1700 CAMs, metal plates will be installed using existing holes on the outside of the chassis and attached to the circuit board stand off inside each monitor as the CAMs are returned to the radiation instrumentation pool for calibration.

ORIGINATOR Los Alamos National Laboratory
CONTACT Shawna Eisele, 505-665-4010 or seisele@lanl.gov
AUTHORIZED DERIVATIVE CLASSIFIER Meredith Brown, 505 667 0604
REVIEWING OFFICIAL Meredith Brown, 505 667 0604
DOE FUNCTIONAL CATEGORY Instrumentation & Controls, Radiation Protection
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FOLLOW-UP ACTIONS- Information in this report is accurate to the best of our knowledge. As a means of measuring the effectiveness of this report, please contact the originator of significant action(s) taken as a result of this report or of any technical inaccuracies you find. Your feedback is appreciated.