4

To: JEN

From: M. G. McCollum
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VISTA

Interoffice Communication

Subject: **O_2 Monitor Conclusions and Recommendations (Revised)**

False alarms from the ambient air oxygen monitors in the inert gas generation room in P-1 has resulted in questionable safe work habits.

Recommendations
To correct the situation the following steps should be taken.

1. Schedule regular monthly recalibration of all oxygen monitors. Replace all of the cells annually. Calibration instructions are included with the attached operating procedures.

2. Retrain personnel working in affected areas to safely respond to alarms as outlined in the original oxygen monitor operating procedures.

3. Maintain specific records of cell replacements. These would include the exact sensor replaced. Exact records of cell replacements will allow future analysis of the performance of cells in different areas of the plant. Charts should be placed at each sensor to record failure, replacement, or recalibration. Monitor locations are specified in the attached class "A" design.

Discussion
Several factors may cause false alarms including incorrect fuel cell type, ambient air contaminates, and improper maintenance.

The fuel cell now in use is a class B-3 from Teledyne Instruments. The manufacturer recommends this cell for personnel protection service due to a 13 second response time and an expected life of 12 months. Halogens, lead compounds, HCl, SO_2, SO_3, and H_2S will give false readings but are not present in significant amounts in P-1.

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O_2 Monitor Conclusions and Recommendations (cont.)

Work orders from the last year indicate 5 cell replacements (resulting in costs of $793) and 3 instrument recalibrations. If these records are complete, cell life in the 3 sensors in P-1 last an average of 7.2 months. This corresponds to an estimated life of 6 months by maintenance personnel. Work orders are generally not specific enough to tell which of the sensors failed.

The fuel cell output decreases with time eventually resulting in incorrect readings. This decreasing output might be the cause of most of the false alarms. The drift is vaguely reported to be 1% of full scale over weeks, however, the manufacturer recommends recalibration of the meters every 2 to 4 weeks. The meters are currently calibrated only at sensor failure.

With the data available, my conclusion is that the cells are performing at the manufacturers specifications. However, because of drift, the meters must be routinely recalibrated to adjust for the reduced cell output.

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cc: DAM, JBA, TRM, BLT, JVU, File No. 10.21.0
Attachments