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TOBAR

TOBAR, INC.
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March 17, 1986

Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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Per 10CFR21, Reporting of Defects and Noncompliance, the following report is submitted.

1. Report by: J. H. Murphy
Manager, Product Integrity
Tobar, Inc.
1441 West Alameda Drive
Tempe, Arizona 85282

2. Identification of Component

Tobar pressure and differential pressure transmitters, Models 32DP2, 32PA2 and 32PG2.

Electronic amplifier assembly 5505D10G01 is common to all above transmitters.

3. Component Supplier

Tobar, Inc.
1441 West Alameda Drive
Tempe, Arizona 85282

4. a) Nature of Defect

Three amplifiers, part number 5505D10G01, which were subjected at the behest of Public Service Electric & Gas to gamma radiation testing at Southwest Research Institute, failed at radiation levels as low as 6×10^5 rads T.I.D. The three failures, identical in nature, caused the transmitter output signal to go below the "zero" value and the output would not change with applied pressure. All failures were confirmed as being caused by an operational amplifier, TL061. The defect has further been traced to a change in the TL061 device. This change was then traced to the affected amplifier assemblies. Only those amplifiers manufactured after August 1, 1983, could be affected.

4. b) Nature of Safety Hazard

The transmitters identified in item 2. are advertised by

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Tobar as being qualified for gamma radiation exposure of 10 megarads T.I.D. The results of the tests referred to in item 4.a) indicate that the safe limit of radiation on the units tested should be stated as 1×10^5 rads. This limit is arrived at via the test details. Monitoring of transmitter output was intermittent, resulting in data showing all units operable at 2×10^5 rads and one unit failed at 6×10^5 rads. A safety hazard could exist if a transmitter with a suspect amplifier (built after 8/1/83) were installed in a 1-E safety application in a plant location where the accumulated radiation dose can be expected to exceed 1×10^5 rads.

5. Information Date

Descriptions of the radiation testing and test results indicating the nature of the defect was received via telephone from the test lab in the afternoon of Thursday, March 13, 1986. Initial notification of the possible defect was made via telephone to Dennis Allyson, Chief of Events Analysis, the afternoon of Friday, March 14, 1986.

6. Quantity and Location of Components

Because of detail presented in items 4.a) and 4.b), it is necessary only to identify those transmitters which meet both of the following requirements.

- a) Amplifier built after August 1983.
- b) Application specification of radiation greater than 1×10^5 rads.

There have been 123 such transmitters shipped to the PSE&G Hope Creek station. PSE&G personnel have already filed a 10CFR50.55E report on this subject and, we have been told, are taking corrective action.

No other transmitters which meet the above criteria have been shipped and Tobar has no current open orders for such transmitters.

7. Corrective Action

a) Tobar has supplied to PSE&G Hope Creek a listing of Model 32 transmitters (serial number and tag number) which meet the criteria for use at the original 10 megarad radiation specification. Tobar does not know at this time what corrective action is contemplated by PSE&G.

b) Tobar will pursue a "fix" to the affected amplifiers in order to restore their 10 megarad qualification. This will most likely entail replacement of the suspect TL061 integrated circuit packages

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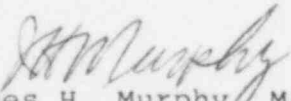
with TL061 devices of a non-suspect date code. Further definition of the "fix" will be generated by Tobar in approximately 30 days.

c) Tobar will pursue corroboration of the failure mode via radiation testing of TL061 devices at an independent test lab. This effort should be completed in approximately 60 days.

8. Advice to Purchasers

a) PSE&G Hope Creek has been fully informed of our identification of the defect and the resulting listing of transmitters not affected.

b) Tobar will advise all customers who have received the affected transmitters (item 4.a) of the restriction on use to applications requiring radiation less than 1×10^5 rads. This notification will go to these customers even though their technical specifications indicated NON-1E, SEISMIC ONLY, or RADIATION LESS THAN 1×10^5 rads.


James H. Murphy, Manager
Product Integrity

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