UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE CONTAINMENT HIGH-RANGE RADIATION MONITOR

CALIBRATION METHODOLODY

ARIZONA PUBLIC SERVICE COMPANY, ET AL.

PALO VERDE NUCLEAR GENERATING STATION, UNIT NOS. 1, 2, AND 3

DOCKET NOS. STN 50-528, STN 50-529, AND STN 50-530

1.0 INTRODUCTION

By letter dated March 29, 1994, Arizona Public Service Company (the licensee) submitted a technical justification for a deviation from the calibration requirements of NUREG-0737 for the containment high-range radiation monitor.

The licensee submitted the technical justification in response to a Notice of Deviation in Inspection Report No. 50-528/93-03 and a conference call with the NRC staff on November 10, 1993 concerning the adequacy of the licensee's calibration methodology to meet the requirements in Table II.F.1-3 of NUREG-0737. In the conference call, the staff informed the licensee that, although the staff agreed in principle with the licensee's calibration methodology, the alternate method was considered a deviation from the calibration methodology described in NUREG-0737 and would require NRC staff review and approval.

2.0 EVALUATION

The licensee submitted technical information and data to justify the use of an in situ transfer calibration methodology which uses a radiation source internal to the detector in lieu of a calibrated external radiation source.

The licensee's technical basis for the calibration methodology discussed three areas:

(1) the differences between (a) primary and transfer in situ calibrations and (b) the ability of the transfer calibration source to serve as a "calibrated radiation source;"

(2) the dual role of the internally mounted Am-241 source and the Palo Verde station procedural requirements that allow the source to effectively be used as a transfer calibration standard; and

(3) the principles of ion chamber operation that effectively allow the use of an alpha emitter (Am-241) mounted inside the detector to demonstrate the accuracy and functionality of an ion chamber to measure the

radiation levels (beta and gamma) required by NUREG-0737, Table II.F.1-3.

In addition to the technical justification, the licensee also submitted copies of data sheets supplied by the manufacturer (Kaman) for the detectors installed at Palo Verde Nuclear Station. The data sheets contain both the keep-alive source reading at the time of calibration and the data collected when the detector was placed in a calibrated radiation field. The licensee has incorporated this data in Palo Verde surveillance test procedure 4ST-9SQ23, "Radiation Monitoring Calibration Test for New Scope Monitors."

3.0 CONCLUSION

The licensee has provided an adequate technical basis and justification to support the use of an alternate in situ transfer calibration methodology using the Am-241 source mounted inside the detector. The staff concludes that the use of an internal radiation source is technically equivalent to using an external radiation source when performing transfer calibrations and meets the intent of the in situ calibration requirements contained in Table II.F.1-3 of NUREG-0737.

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