

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/92011, 50-529/92011, 50-530/92011

License Nos. NPF-41, NPF-51, NPF-74

Licensee: Arizona Public Service Company
P. O. Box 53999, Sta. 9012
Phoenix, Arizona 85072-3999

Facility Name: Palo Verde Nuclear Generating Station Units 1, 2, and 3

Inspection at: Wintersburg, Arizona

Inspection Conducted: March 16-20, 1992

Inspected by: G.P. Yunas, Jr. _____ 4/15/92
J. C. Jang, Sr. Radiation Specialist
NRC Region I Date Signed

G.P. Yunas, Jr. _____ 4/15/92
R. Bocanegra, Radiation Specialist
Date Signed

Approved by: G.P. Yunas _____ 4/15/92
G. P. Yunas, Chief
Reactor Radiological Protection Branch Date Signed

Summary:

Areas Inspected: Routine, unannounced inspection of inspection follow-up items and the licensee's gaseous effluent control program, radiological environmental monitoring and meteorological monitoring programs, including: management controls, audits, implementation of the Offsite Dose Calculation Manual (ODCM), calibration of effluent radiation monitoring systems (RMS), air cleaning systems, and implementation of the above programs. Inspection Procedures 92701 and 84750 were used.

Results: Within the areas inspected, the licensee implemented effective programs. In particular, the environmental TLD program, meteorological monitoring, and air cleaning systems tests were found to be excellent. A weakness was noted in the length of the effluent RMS calibration procedures.

DETAILS

1. Persons Contacted

Licensee

T. Braddish, Manager, Compliance
P. Coffin, Compliance Engineer
R. Flood, Plant Manager, Unit 2
R. Fullner, Manager, Quality Assurance and Monitoring
C. Gray, RMS Supervisor, Unit 3 Chemistry
S. Grier, P.E. Manager, SNE&C
A. Haugen, Auditor, Quality Assurance Audits
M. Lantz, Manager, Radiation Protection Technical Services
G. Mobbs, Technical Specialist III, Quality Assurance and Monitoring
G. Overbeck, Director, Site Technical Support
J. Scott, General Manager, Site Chemistry
M. Shea, RP Manager, Unit 2
R. Sorenson, Manager, Chemistry RMS/Effluents
W. Wattson, System Engineer, OCS
H. Wright, Auditor, Quality Assurance Audits

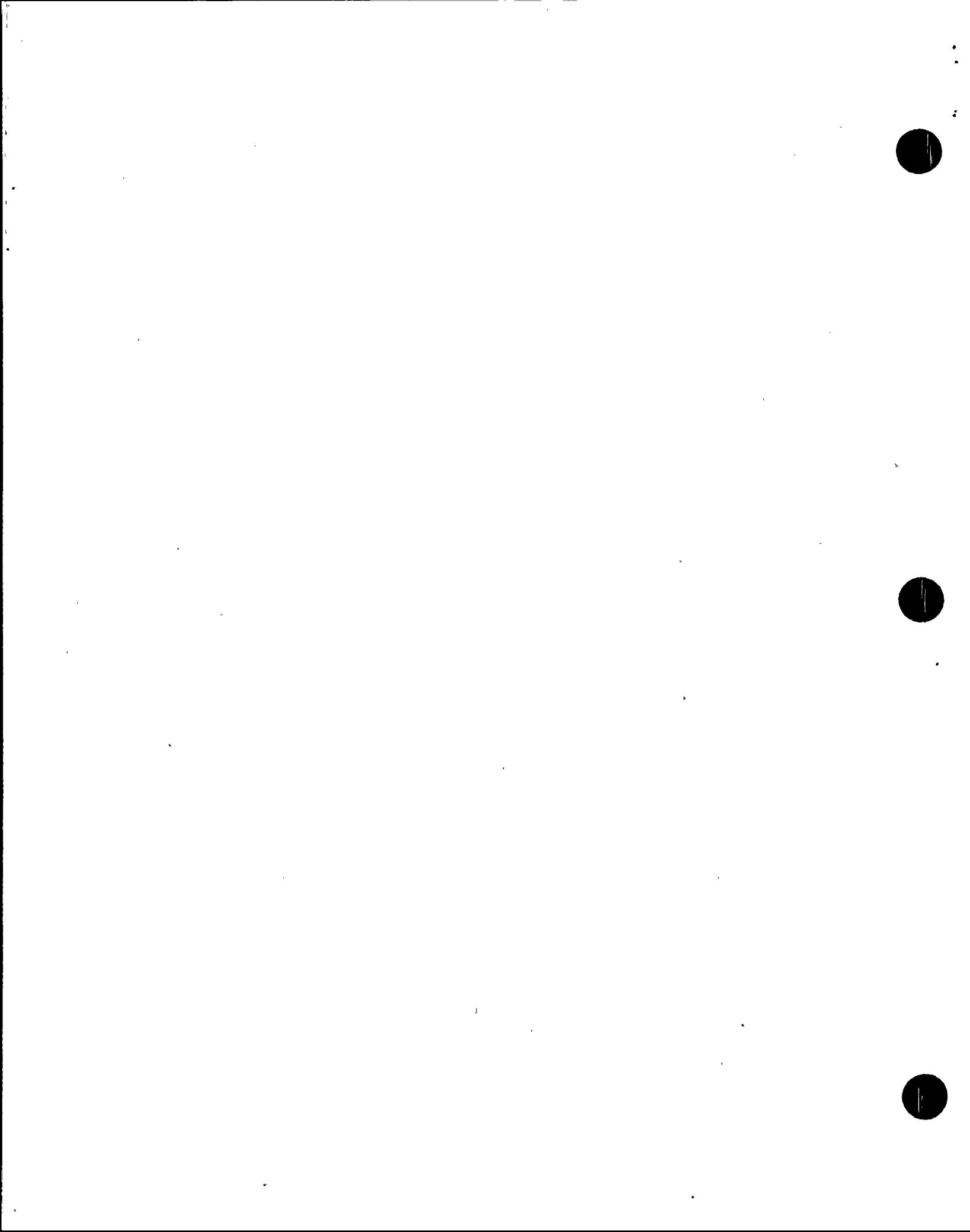
Nuclear Regulatory Commission

D. Coe, Senior Resident Inspector

The individuals listed above attended the exit meeting held March 20, 1992. The inspectors also held discussions with other personnel during the inspection.

2. Follow-up (IP 92701)

- a. (Closed) LER No. 528/92002: "Missed Technical Specification (TS) Action While Radiation Monitor Was Inoperable" - On January 17, 1992, the containment building atmosphere radiation monitor, RU-1, was taken out-of-service and isolated for corrective maintenance. The licensee discovered that a containment air grab sample was not taken within the 12 hour TS allowed time limit while the monitor was inoperable. The actual sample interval was 12 hours 51 minutes. The cause of this event appears to be poor communication between an assistant control room supervisor and the radiation monitoring system (RMS) technician taking the sample. The control room supervisor did not clearly communicate to the technician the isolation boundaries involved in taking RU-1 out-of-service. Consequently, the technician took a grab sample while the RU-1 containment isolation valves were closed. The inadequate sample was not discovered in time to prevent exceeding the 12 hour time limit. The licensee took adequate corrective actions including discussing the event with the departments involved and revising the sampling procedure. Based on the LER review and discussions held with licensee personnel, the inspectors had no further questions on this matter. This item is closed.



- b. Condition Report/Disposition Request (CRDR) No. 2-2-0045: This CRDR involved an allegation that an individual from Unit 2 Mechanical Maintenance was observed in a posted high radiation area without the proper dosimetry. The inspectors independently reviewed the circumstances surrounding the incident and confirmed the licensee's conclusion that the worker had inadvertently crossed into a posted area while he was working in the Unit 2 radwaste building. A radiation survey of the area entered by the worker showed that actual radiation levels were less than 2 mR/hour. The worker was disciplined under the licensee's Positive Discipline Program. The inspectors concluded that the corrective actions taken were appropriate. This item is closed.

No violations or deviations were identified.

3. Radioactive Waste Treatment, and Effluent and Environmental Monitoring (IP 84750)

a. Radiological Environmental Monitoring Program (REMP)

(1) Program Changes

The inspectors reviewed the organization responsible for administration of the REMP and discussed with the licensee changes made since the last inspection conducted in August 1991. The inspectors determined that no changes to the REMP organization occurred since the last inspection in this area.

(2) Direct Observation

The inspectors examined selected environmental monitoring stations. These stations included thermoluminescent dosimetry (TLD) stations for direct ambient radiation measurement and air sampling stations for iodines and particulates. The inspectors found that the air sampling equipment was operable and calibrated as required. TLDs were placed at the specified locations as required by the Offsite Dose Calculation Manual (ODCM).

The inspectors found the REMP program adequate to meet the safety objectives.

b. Intercomparison of Environmental TLDs Results

The U.S. Nuclear Regulatory Commission (NRC) Direct Radiation Monitoring Network is operated by NRC Region I to provide continuous measurement of the ambient radiation levels around 72 nuclear power plant sites throughout the United States. Each site is monitored by arranging two concentric rings extending to about five miles from the power plant. The monitoring results are published quarterly in NUREG-0837.

One of the purposes of this program is to serve as a basis of comparison with similar programs conducted by individual utilities

which operate nuclear power plants. Therefore, several NRC TLDs are collocated with the utilities' TLD stations.

Six (6) NRC TLDs are collocated with the Palo Verde's environmental TLD stations. During this inspection, the monitoring results (1991) of collocated TLDs were compared and the results listed in Table 1. All NRC exposures are normalized to a 90-day quarter. It should be noted that collocated TLDs may not necessarily be placed at the same exact locations; one tenth of a mile between collocated TLDs is not unusual.

Although there were some differences between the NRC's and the licensee's programs (ie., TLD location, annealing techniques, and transit dose), the TLD results comparison indicated excellent agreement.

**Table 1. Comparison of Collocated Environmental TLD Monitoring Results
(Unit = mR \pm s.d.; systematic error/std. qtr)**

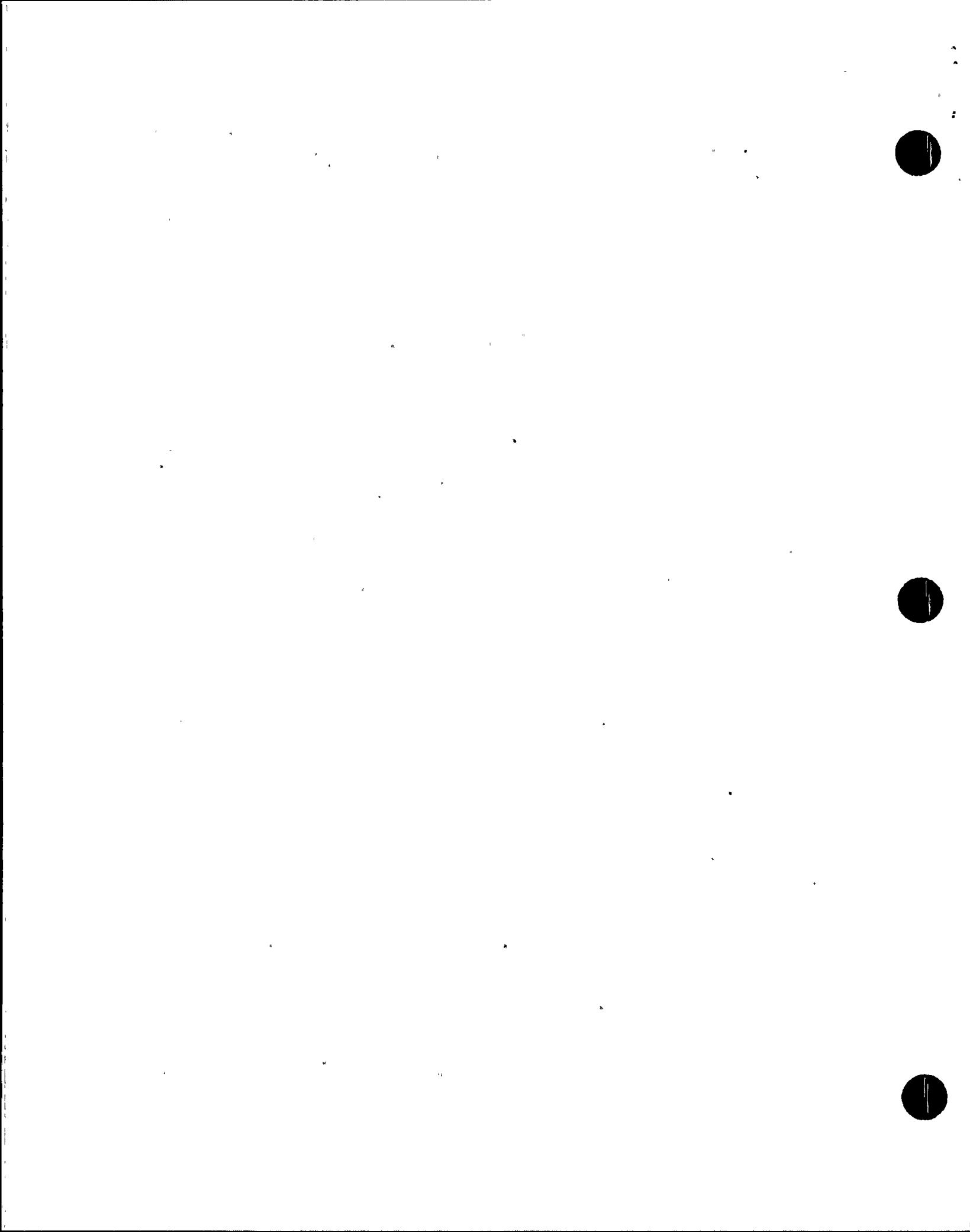
TLD STATION	1st Quarter 1992	2nd Quarter 1992	3rd Quarter 1992	* 4th Quarter 1992
NRC-3	*20.5 \pm 0.7;4.4	20.7 \pm 0.8;4.5	20.5 \pm 0.8;4.6	20.0 \pm 2.0;3.9
NRC-4	20.7 \pm 0.7;4.4	20.9 \pm 0.8;4.5	19.0 \pm 0.8;4.5	20.5 \pm 1.0;3.8
PV-4	22.2	22.7	22.9	24.4
PV-3	21.9	21.1	19.0	22.9
NRC-5	22.2 \pm 0.8;4.6	22.5 \pm 0.8;4.7	21.8 \pm 0.8;4.8	21.4 \pm 2.0;4.0
PV-7	24.2	24.6	25.1	25.5
NRC-7	22.2 \pm 0.8;4.6	22.5 \pm 0.8;4.7	21.8 \pm 0.8;4.8	21.4 \pm 2.0;4.0
PV-21	24.2	24.6	23.5	25.5
	21.5 \pm 0.8;4.5	21.3 \pm 0.8;4.6	21.1 \pm 0.8;4.7	20.7 \pm 1.9;3.9
	25.3	24.2	25.1	26.8
NRC-9	22.0 \pm 0.8;4.6	21.3 \pm 0.8;4.6	21.6 \pm 0.8;4.8	22.4 \pm 1.8;4.2
PV-22	26.1	25.3	24.4	27.4
NRC-27	TLD MISSING	26.8 \pm 0.9;5.2	25.4 \pm 0.9;5.2	24.0 \pm 2.3;4.8
PV-35.	28.7	29.2	28.5	29.4

* TLD used to measure the transit dose was lost and the net exposure rates could not be calculated. Therefore, the historical measurement results were used for comparisons for the 4th quarter.

It should be noted that the systematic error of the NRC data listed in the preceding table is the overall systematic error including transit dose error.

c. Meteorological Monitoring Program

The inspectors reviewed the most recent meteorological instrumentation calibration results for wind speed, wind direction, temperature, and delta temperature. The licensee performed these calibrations semiannually for both primary and redundant systems. All calibration results reviewed by the inspectors were within the licensee's established acceptance criteria. The inspectors also compared the meteorological parameters (wind speed, wind direction, and delta temperature) between the Emergency Operations Facility



(EOF) and the equipment house located at the base of the meteorological tower. The comparisons were in good agreement.

The inspectors noted that the individual responsible for this program had an excellent knowledge of meteorology including local meteorology around the Palo Verde site. The inspectors also noted that this individual reviewed all monitoring data and tolerance limits daily. Necessary adjustments were made when a specific meteorological parameter was outside the tolerance limits.

Based on the above reviews, the inspector determined that the licensee had an excellent meteorological monitoring program.

d. Radioactive Gaseous Effluent Control Programs

(1) Program Changes

The inspectors reviewed the organization responsible for administration of the radioactive gaseous effluent control program and discussed with the licensee any changes made since the last inspection conducted on December 30, 1991, through January 3, 1992. The inspectors determined that there were no changes in the administration of the radioactive gaseous effluent control programs.

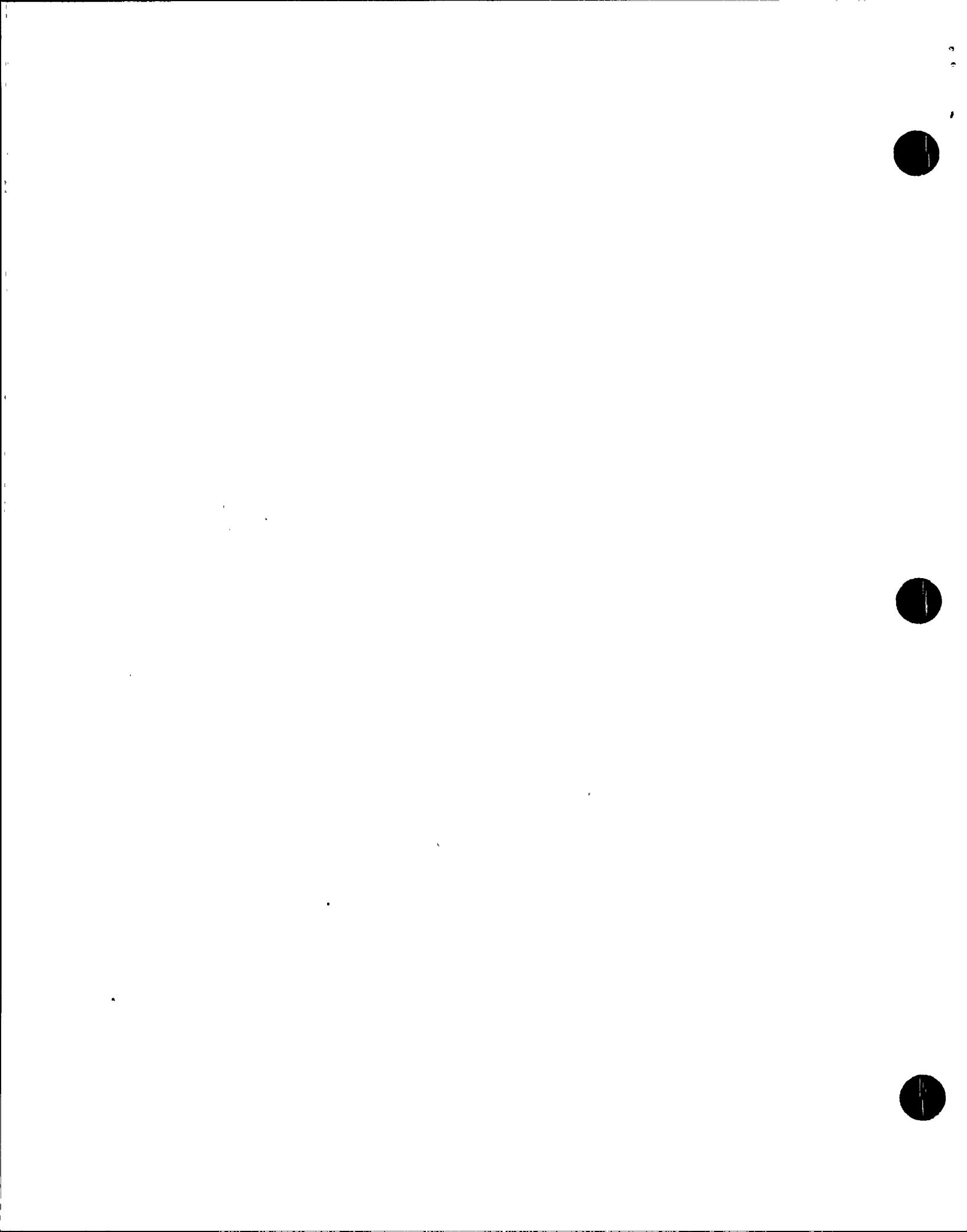
(2) Calibration of Effluent Radiation Monitoring Systems (RMS)

The inspectors reviewed the most recent calibration results for the following gaseous effluent RMS to determine the implementation of the requirements for Unit 1.

- o Plant Vent Noble Gas Monitors (RV-143/144)
- o Condenser Vacuum Pump/Gland Seal Exhaust Monitors (RU-141/142)
- o Fuel Building Vent Exhaust Noble Gas Monitors (RV 145/146)

The inspectors noted that the calibration results for the monitors were within the licensee's acceptance criteria. The inspectors noted that the licensee used the primary calibration results to evaluate 18-month calibration results, which was a good practice. The inspectors also noted that the responsible person had an outstanding knowledge on the RMS (i.e., calibration, operability and reliability tests).

The inspectors, however, noted one minor weakness in that the calibration procedures were very lengthy (about 150 pages). It might take several days to complete the calibration. The inspectors discussed the lengthy procedures with the licensee. The licensee stated that all RMS calibration procedures were being reviewed by the responsible individual to reduce unnecessary steps. The licensee also stated that the quality



of calibration techniques would not be reduced in the new procedure.

Based on the above reviews, the inspectors determined that the licensee had an adequate calibration method for the RMS monitors reviewed.

(3) Implementation of Gaseous Effluent Control Program

The inspectors reviewed selected procedures and radioactive gaseous discharge permits to determine implementation of the TS and the ODCM requirements. The radioactive gaseous discharge permits were completed and dose projections were made prior to discharge as required. The inspectors also determined that the discharge permits met the TS requirements for sampling and analyses at the frequencies and lower limits of detection established in the TS.

Based on the these reviews, the inspector determined that the licensee had conducted an effective radioactive gaseous effluent control program.

e. Air Cleaning Systems

The inspectors reviewed the licensee's most recent surveillance test results to determine the implementation of the TS for control room and fuel handling building air cleaning systems for all units. The inspectors reviewed the following licensee's inspection and test results.

- o Visual Inspections
- o Air Capacity Tests
- o Delta Pressure
- o In-Place HEPA Tests
- o In-Place Charcoal Bed Tests
- o Laboratory Test for Iodine Collection Efficiency

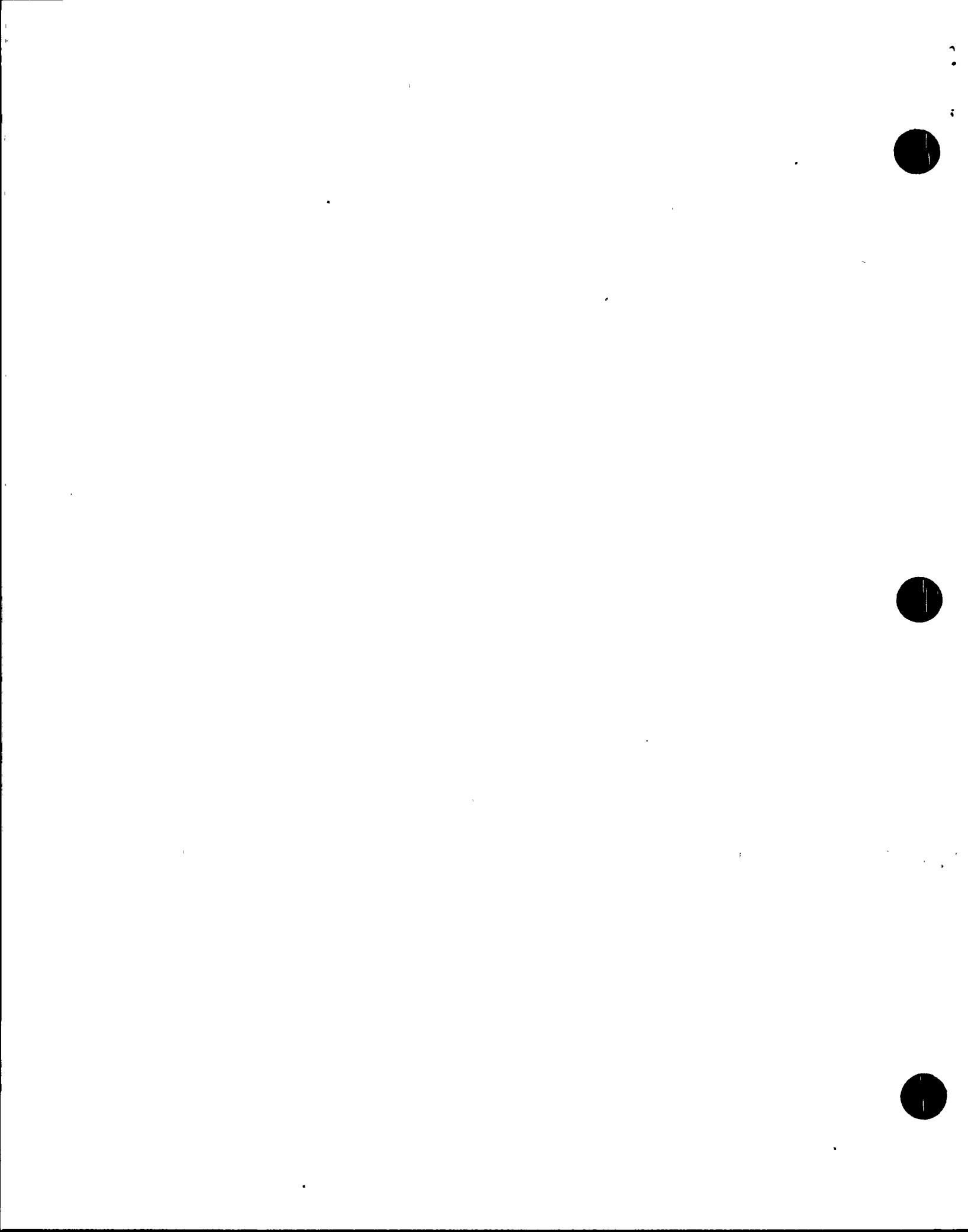
The test results reviewed by the inspectors were within the TS requirements. The inspectors noted that the licensee had an excellent knowledge of testing procedures and current industry practices.

Based on the above reviews, the inspectors concluded that the licensee had an excellent commitment to maintaining current knowledge of industry practices in this area. The air cleaning systems met their safety objective.

No violations or deviations were identified.

8. Exit Interview

The inspectors met with the individuals denoted in Section 1 at the conclusion of the inspection on March 20, 1992. The scope and findings of the inspection were summarized including observations that the



licensee Environmental TLD program, meteorological monitoring, and air cleaning systems programs were excellent. The inspectors discussed a weakness noted in the length of the effluent RMS calibration procedures. The licensee acknowledged the inspectors comments.