

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-528/94-29
50-529/94-29
50-530/94-29

Licenses: NPF-41
NPF-51
NPF-74

Licensee: Arizona Public Service Company
P.O. Box 53999
Phoenix, Arizona

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

Inspection At: Palo Verde Site, Wintersburg, Az.

Inspection Conducted: August 8-11, 1994

Inspector: Phillip Qualls, Reactor Inspector, Plant Support Branch,
Division of Reactor Safety

Approved: *John* *for* William P. Ang, Chief, Plant Support Branch
Division of Reactor Safety

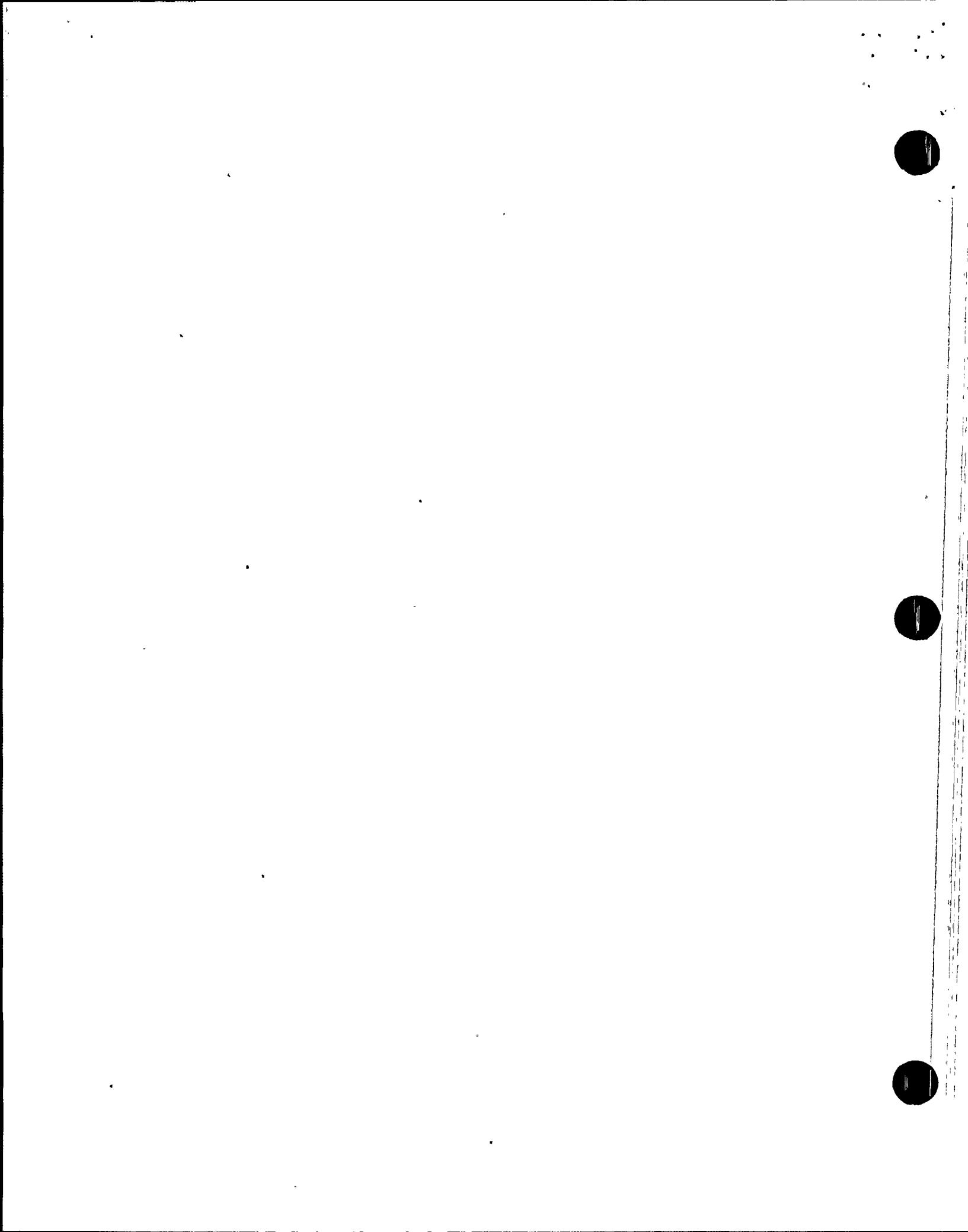
9/1/94
Date

Inspection Summary:

Areas Inspected (Units 1, 2, and 3): Routine, announced inspection of the implementation of the licensee's fire protection program. Inspection Procedure 64704 was used.

Results (Units 1, 2, and 3):

- The inspector concluded that within the area inspected, the licensee's fire protection program effectively implemented NRC requirements.
- The inspector noted that the licensee's fire protection organization was sufficiently staffed with engineers and fire fighters. The engineers appeared to be knowledgeable, well qualified and appeared to have good working relationships with the plant staff.
- The licensee did not demonstrate that the rated fire barriers made of Thermo-Lag 330-1 material, which were manufactured on site during construction, were manufactured similarly to the tested panels manufactured and tested by Thermal Science, Inc.; therefore, it was not apparent if the panels would perform similarly during a fire (Section 2.5).



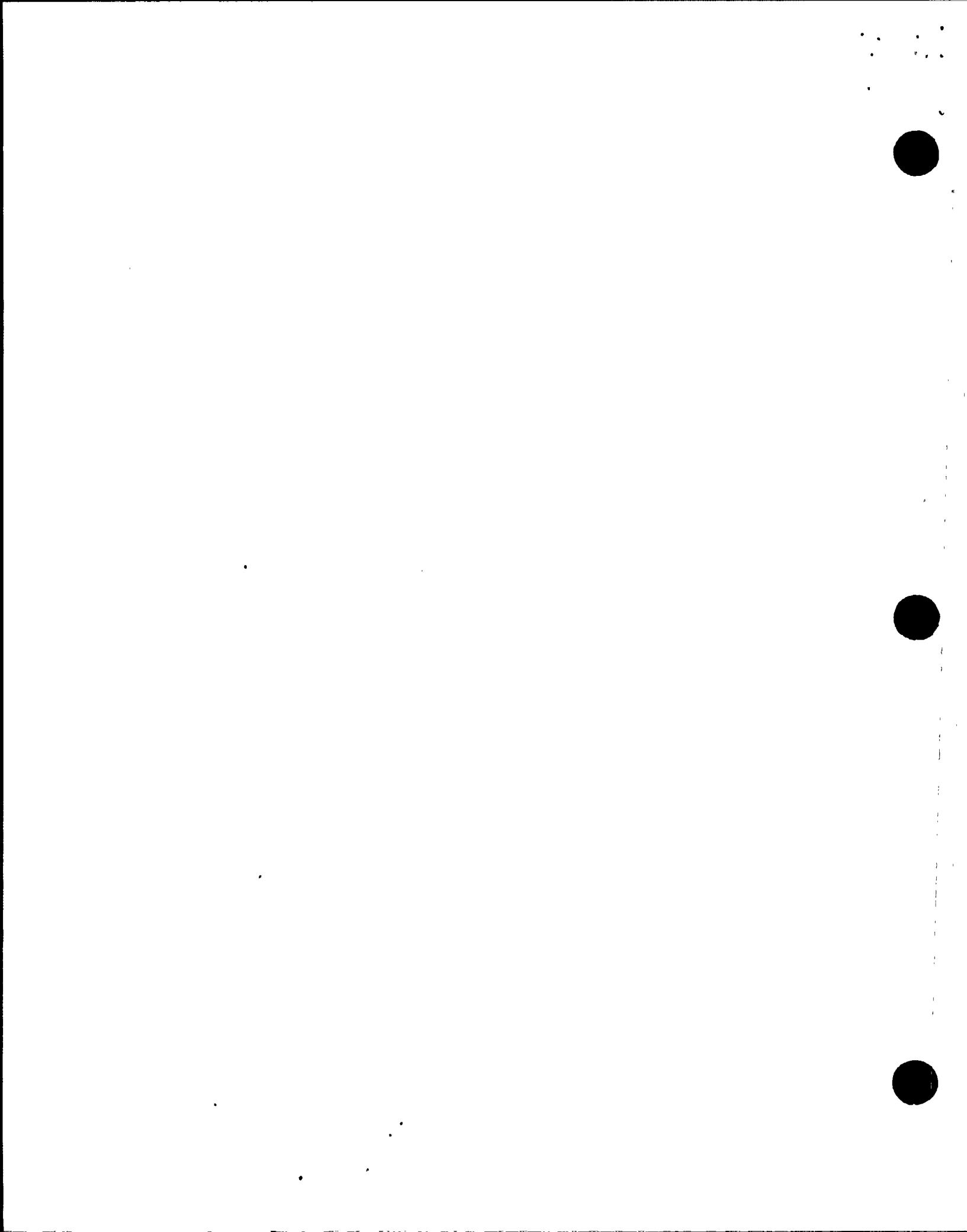
- The licensee performed a good QA audit of the fire protection program in 1993. The audit resulted in meaningful findings including a the use of long term fire watches in lieu of operable equipment.

Summary of Inspection Findings:

- Unresolved Item 528/9429-01 was opened (Section 2.5).

Attachment:

- Attachment - Persons Contacted and Exit Meeting



DETAILS

1 INTRODUCTION

A routine, announced, periodic inspection was conducted to inspect the licensee's fire protection program.

2 FIRE PROTECTION/PREVENTION PROGRAM (64704)

2.1 Palo Verde Fire Protection Requirements

Operating Licenses NPF-41, NPF-51, and NPF-74 for Palo Verde Units 1, 2 and 3, respectively, require, in part, that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the final safety analysis report for the facility. Section 9.5.1 of the Palo Verde final safety analysis report contains the licensee's commitments for the Palo Verde fire protection systems and fire protection program.

2.2 Inspector Review of Compliance with Fire Protection Requirements

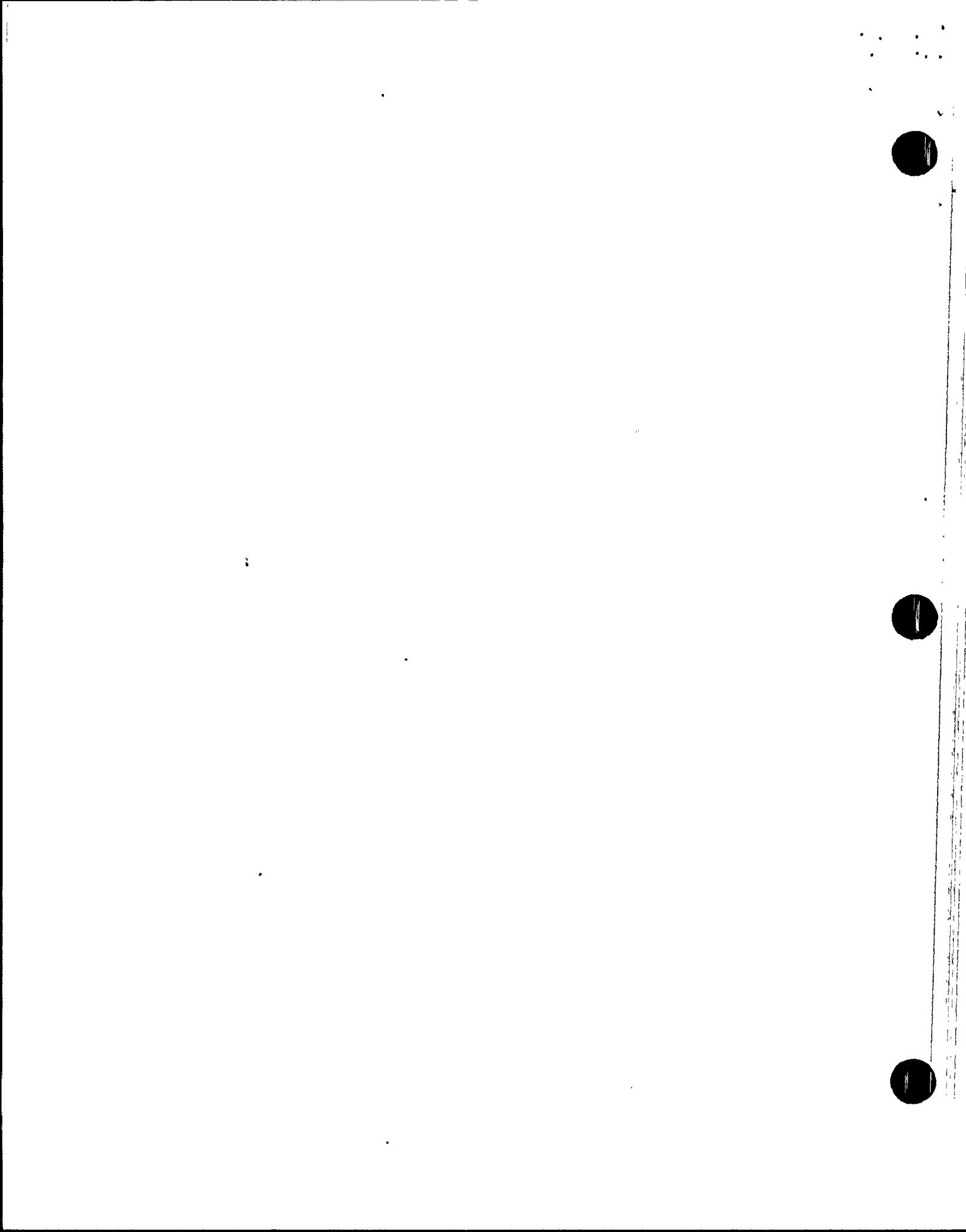
The inspector reviewed the licensee's approved program as defined in the final safety analysis report for the facility. The inspector reviewed the following fire protection program implementing procedures:

- 14AC-OFP03, Revision 3, "Control of Transient Combustibles";
- 14AC-OFP04, Revision 5, "Firewatch Duties";
- 14AC-OFP06, Revision 5, "Hot Work Permit";
- 14DP-OFP02, Revision 1.02, "Fire System Impairments and Notification";
- 14AC-9FP02, Revision 1.03, "Fire Rated Assembly Removal and Reinstallation"; and
- 14AC-OFP01, Revision 4, "Fire System Impairment."

The inspector review of procedures determined that the procedures adequately implemented the approved fire protection program.

2.3 Housekeeping

The inspector visually inspected various areas of Palo Verde, Unit 2, and found that housekeeping was being maintained, and no buildup of transient combustible materials was noted. The inspector noted that fire protection equipment, such as hose reels, hoses, detectors, and fire extinguishers were in good material condition. The inspector discussed with the licensee the procedure used by the licensee for controlling transient combustibles during the inspection. The licensee stated that members of the fire protection



department toured each unit daily and performed a more detailed inspection of each building on a weekly basis for fire protection deficiencies. The inspector noted that fire sprinkler systems and deluge stations appeared to be operable and well maintained. By observing discussions regarding the program between the fire protection personnel and various other site organizations during the visual inspection performed, the inspector noted that licensee fire protection personnel had a very good working relationship with other on site organizations. The inspector noted some Thermo-Lag 330-1 fire barriers in the Unit 2 motor driven auxiliary feedwater pump room that appeared to be degrading. The licensee demonstrated that they had already identified these problems and were tracking them for future correction. The licensee provided the inspector with a copy of open Material Nonconformance Report 90-FI-0020 that identified the noted condition. The nonconformance report was being tracked as part of the resolution for the total site Thermo-Lag 330-1 generic question.

2.4 Fire Barriers

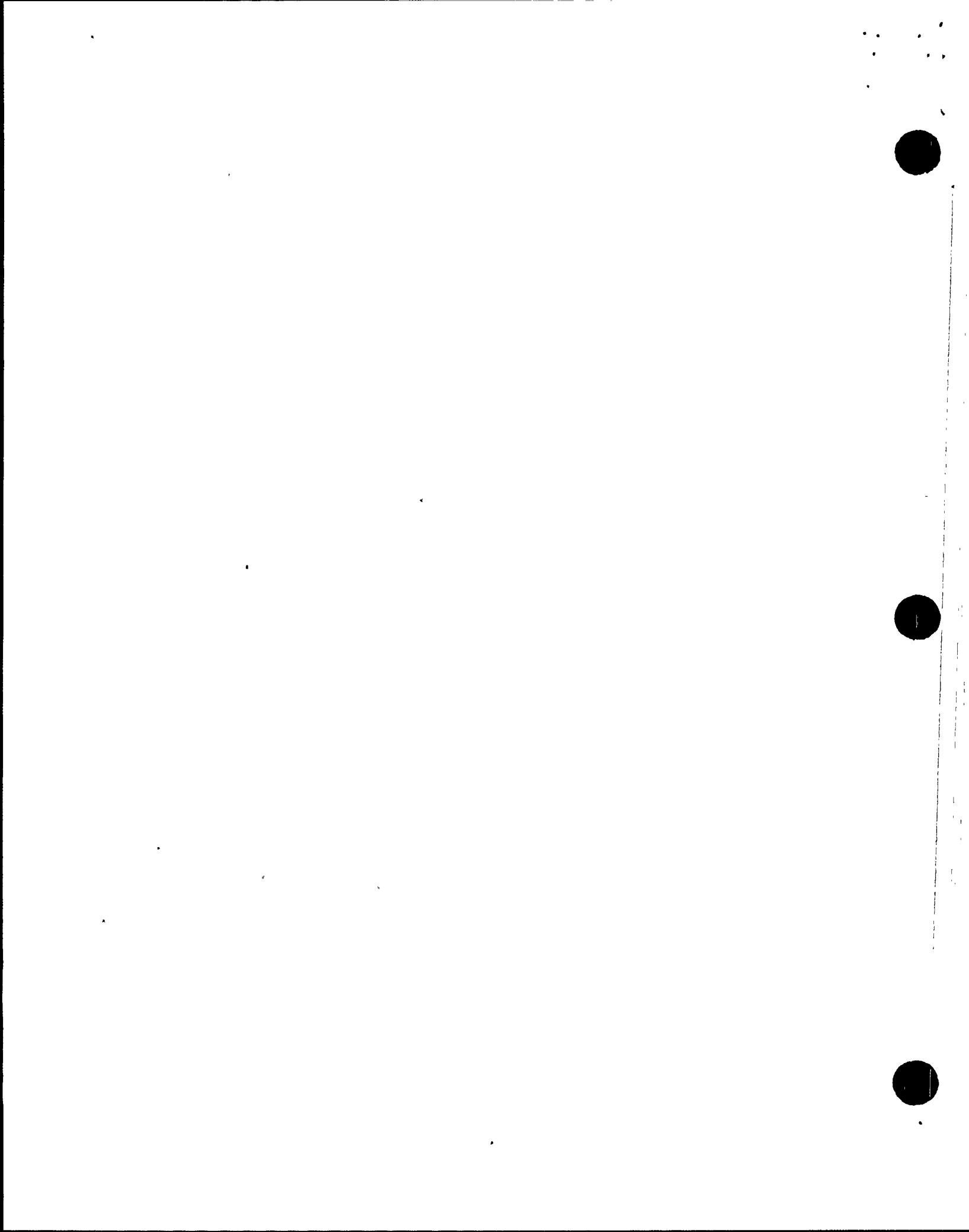
During the visual inspections noted in Section 2.3 above, the inspector also performed a visual inspection to identify deficiencies in fire area barriers due to degraded fire seals, inoperable fire doors, or inoperable ventilation duct dampers. No deficiencies were identified.

The licensee discussed with the inspector the fire barrier seal program, which had been ongoing for 4 years. Licensee personnel stated that approximately 24,000 fire barrier seals were inspected as part of the program. As a result of the seal inspection, approximately 8,000 were found which, by the licensee's criteria, needed some remedial action. The licensee stated that only a few hundred of these fire barrier seals have not had the remedial actions completed. The remaining remedial actions were scheduled to be completed by January 1, 1995. Applicable compensatory actions, roving firewatches, were implemented for the fire barrier seals that still required completion of corrective actions.

2.5 Thermo-Lag 330-1 Fire Barriers

The inspector discussed with the licensee the actions that the licensee is taking to resolve Thermo-Lag 330-1 fire barrier issues which are generic to the industry. Thermo-Lag 330-1 is a fire barrier material manufactured by Thermal Science Inc. The licensee is evaluating the plant safe shutdown program and determining if all installed Thermo-Lag 330-1 fire barriers are necessary to meet license conditions. The licensee was developing a plan of action to address the Thermo-Lag qualification issue for Palo Verde. In addition, the licensee also appeared to be awaiting the results of industry testing to complete their analysis and remedial actions.

The inspector reviewed the licensee's method of construction and maintenance of Thermo-Lag 330-1 fire barriers. The inspector noted that many of the fire protection barriers were fabricated on site using panels of Thermo-Lag 330-1 material.



The inspector questioned the qualifications of the Thermo-Lag panels that were manufactured on site. Specifically, the inspector requested the licensee to provide the procedure used for the manufacture and inspection of the panels. The licensee provided the inspector with the installation instructions used by the Thermo-Lag 330-1 installer, Insulation Services, Inc., Production Work Instruction 501 P. V., Revision 0. The licensee also produced a copy of a Bechtel quality assurance surveillance report for Thermo-Lag application dated November 21, 1983, to demonstrate the quality control checks performed on the panels. The report documented inspection for 1/2-inch thickness of the panels. However, the quality assurance surveillance report did not require or confirm inspection of weight or density of the panels. Furthermore, no procedure could be provided that confirmed that the panel manufacturing process was in accordance with the Thermal Science Inc. manufacturing process. The inspector questioned that the Thermal Science Inc. test data was applicable for the panels manufactured and installed at Palo Verde. The inspector noted that the licensee already had in place compensatory action, roving firewatches, for all Thermo-Lag applications. The licensee was requested to confirm the adequacy of the Thermo-Lag panels manufactured on site and to specifically address testing of the panels. Pending completion of licensee action to address the qualifications of Thermo-Lag panels manufactured on site and subsequent NRC review of the results of the licensee's actions, the adequacy of the qualifications was identified as an unresolved item (528/9429-01).

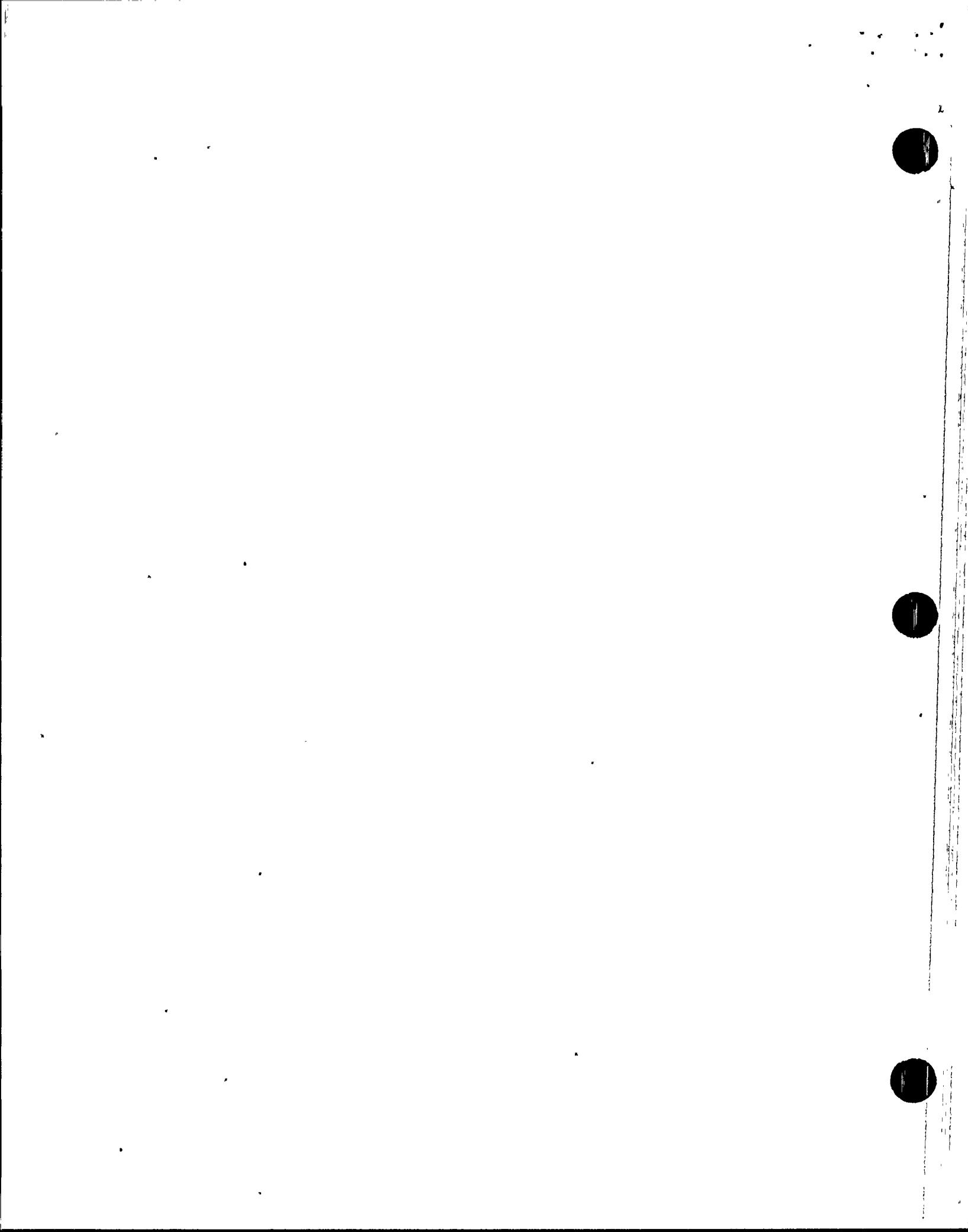
2.6 Staffing

The inspector noted that the licensee appeared to have a sufficient number of engineers associated with the fire protection program. The engineers with whom the inspector interfaced during the inspection appeared to be knowledgeable and well qualified. The licensee also maintained an onsite fire department, which was well equipped with two fire trucks, an ambulance, a hazardous materials response truck, a ventilation truck, and two command trucks. The inspector noted that the fire department was staffed with eight trained fire fighters assigned per shift, which assures a minimum continuous site coverage of five fire fighters.

2.7 Quality Assurance Audit

The inspector reviewed the licensee's quality assurance audit of the fire protection program for 1993. The audit identified areas where additional management attention was needed, including:

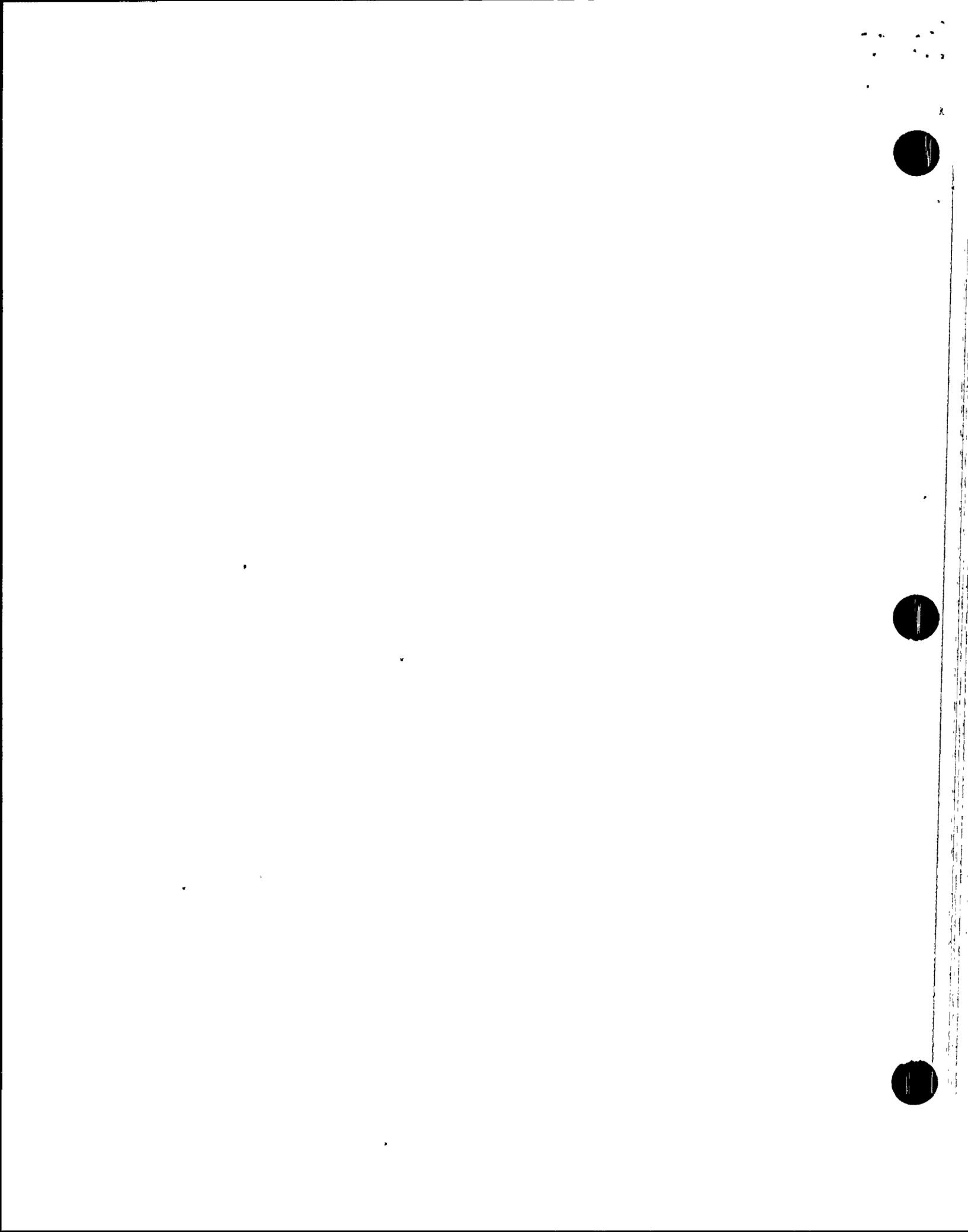
- Control of "Pink" equipment (equipment not included in Technical Specifications, but is required for safe shutdown);
- Procurement controls for 10 CFR Part 50, Appendix R, fuses; and
- The long-term use of firewatches in lieu of operable equipment.



The inspector concluded that the audit was effective and resulted in meaningful findings.

2.8 Conclusions

The inspector concluded that within the area inspected, the licensee had an effective fire protection program which was capable of meeting its fire protection commitments. However, the inspector identified an unresolved item regarding the qualifications of Thermo-Lag panels manufactured on site.



ATTACHMENT

1 PERSONS CONTACTED

1.1 Licensee Personnel

J. Auston, Senior Fire Protection Advisor
D. Crozier, Supervisor, Fire Protection
M. Czarnylas, Supervisor, Fire Protection
J. Draper, SCE, Site Representative
R. Fongemie, Section Leader, Fire Protection Engineering
F. Garrett, Department Lead, Fire Protection
D. Gouge, Department Leader, Maintenance Services
W. Ide, Director, Operations
S. Koski, Project Manager, Fire Protection Engineering
D. Neal, Fire Protection Engineer, Fire Protection Engineering
E. O'Neill, Primary Plant Investigator
E. Simpson, Vice President, Nuclear Support
J. Stout, Team Leader, Maintenance Services
D. Webb, Fire Protection Advisor

The personnel above attended the exit meeting. In addition to the personnel listed above, the inspector contacted other personnel during this inspection period.

1.2 NRC Personnel

H. Freeman, Resident Inspector

2 EXIT MEETING

An exit meeting was conducted on August 11, 1994. During this meeting, the inspector reviewed the scope and findings of this report. The licensee did not express a position on the inspection findings documented in this report. No proprietary material was reviewed during the course of this inspection. On August 24, 1994, the inspector called A. Krainik of the licensee's organization to inform the licensee of a change in the inspection results based on management review. The licensee was informed of the unresolved item discussed in Section 2.5. The licensee acknowledged being informed of the unresolved item. On August 25, 1994, the licensee fire protection department lead informed the inspector that resolution of the question regarding qualification of Thermo-Lag panels manufactured on site would be included as part of the licensee's resolution of generic questions relating to Thermo-Lag.

