

September 2, 2004

Mr. Ray Tsukimura, President
Aerotest Operations, Inc.
3455 Fostoria Way
San Ramon, CA 94583

SUBJECT: NRC INSPECTION REPORT NO. 50-228/2004-201

Dear Mr. Tsukimura:

This letter refers to the inspection conducted on August 16-19, 2004, at your Aerotest Radiography and Research Reactor facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. Based on the results of this inspection, no safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>.

Should you have any questions concerning this inspection, please contact Craig Bassett at (404) 562-4712.

Sincerely,

/RA/

Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-228
License No. R-98

Enclosure: NRC Inspection Report

cc w/encl: Please see next page

Aerotest Operations, Inc.

Docket No. 50-228

cc w/encl:

Director, Energy Facilities Siting Division
Energy Resources Conservation & Development Commission
1516 9th Street
Sacramento, CA 95814

California Department of Health
ATTN: Chief, Environmental Radiation Control Unit
Radiologic Health Section
714 P Street, Room 498
Sacramento, CA 95814

Mr. Fred Meren, Reactor Supervisor
Aerotest Operations, Inc.
3455 Fostoria Way
San Ramon, CA 94583

Test, Research and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No: 50-228

License No: R-98

Report No: 50-228/2004-201

Licensee: Aerotest Operations, Inc.

Facility: Aerotest Radiography and Research Reactor Facility

Location: 3455 Fostoria Way
San Ramon, CA 94583

Dates: August 16-19, 2004

Inspector: Craig Bassett

Approved by: Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Aerotest Operations, Inc.
Aerotest Radiography and Research Reactor (ARRR)
Report No: 50-228/2004-201

The primary focus of this routine, announced inspection was the on-site review of selected aspects of the licensee's Class II research reactor safety programs including: organizational structure and staffing, review and audit and design change functions, procedures, radiation protection, environmental protection, and shipment of radioactive material since the last NRC inspection of this facility. The licensee's programs were acceptably directed toward the protection of public health and safety. No violations or deviations were noted.

Organizational Structure and Staffing

- The ARRR organization and staffing met the requirements specified in the Technical Specifications.

Review and Audit and Design Change Functions

- The Reactor Safeguards Committee conducted audits in compliance with the requirements specified in the Technical Specifications.
- No changes had been made at the facility since the last NRC inspection but the 50.59 process for design change at the facility was in place and would be followed as required if changes were initiated.

Procedures

- Facility procedures were acceptable, the licensee satisfied Technical Specifications requirements for revision, and they were reviewed and approved by the Reactor Safeguards Committee as required.

Radiation Protection Program

- Surveys and analyses were completed and documented acceptably to permit evaluation of the radiological conditions present in the facility.
- Radiation monitoring equipment was maintained and calibrated as required.
- Notices and postings at entrances to work areas met the regulatory requirements.
- Personnel dosimetry was worn as required and doses were within the licensee's procedural action levels and the NRC's regulatory limits.
- Training was provided as required covering the topics outlined in 10 CFR 19.12.
- The Radiation Protection and ALARA Programs satisfied regulatory requirements.

Environmental Monitoring

- Effluent monitoring satisfied license and regulatory requirements, and releases were within the specified regulatory and Technical Specifications limits

Transportation of Radioactive Materials

- The program for transportation of radioactive materials satisfied NRC requirements.

REPORT DETAILS

Summary of Plant Status

The Aerotest two hundred and fifty kilowatt (250 kW) TRIGA research reactor continued to be operated in support of neutron radiography, surveillance, and reactor operator training. During this inspection, the reactor was started up and operated several hours per day at 132 kW to complete neutron radiographic operations. Although the maximum authorized power level was 250 kW, the licensee opted to reduce the operating power of the reactor to achieve several goals including the reduction of personnel radiation exposures.

1. Organizational Structure and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69001)

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Sections 10.0 and 12.1 of Technical Specifications (TS), Change No. 8, dated October 22, 1974, were met:

- Aerotest Operations, Inc. organizational structure and staffing
- management and staff responsibilities
- staffing for safe operation of the Reactor Facility
- Annual Summary of Changes, Tests, and Experiments at Aerotest Radiography and Research Reactor (ARRR) for the periods from July 1, 2002 to June 30, 2003, and from July 1, 2003 to June 30, 2004

b. Observations and Findings

Through discussions with licensee representatives the inspector determined that management responsibilities and the organization at the facility have not changed since the previous NRC inspection in May 2003 (Inspection Report Number [IR No.] 50-228/2003-201). The inspector determined that the Reactor Supervisor retained direct control and overall responsibility for management of the facility as specified in the TS. The Reactor Supervisor reported to the President, Aerotest Operations, Inc.

Through review of records and logs, as well as discussions with licensee personnel, the inspector determined that the current staffing at the facility was acceptable to support the workload and ongoing activities. The staffing also met the requirements of the TS for effective reactor operations.

c. Conclusions

The licensee's organization and staffing met the requirements specified in the TS.

2. Review and Audit Functions

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews stipulated in the requirements of TS Section 12.1.3, and the design change functions, also outlined in that Section, were completed:

- Reactor Safeguards Committee meeting minutes for the past three years
- Reactor Safeguards Committee (RSC) Charter dated March 17, 1978
- TS defined duties of the RSC including the review and audit functions
- Operations Request Forms file
- Section I of the ARRR Procedures Manual entitled, "Administrative Procedures," Procedure Change Notice (PCN) Number (No.) 2, dated June 28, 1990, and last reviewed May 17, 2004

b. Observations and Findings

(1) Review and Audit Functions

The inspector determined that the Reactor Safeguards Committee membership satisfied the TS requirements and the Charter stipulations. The inspector reviewed the RSC's meeting minutes from November 2001 through present. The minutes showed that the RSC met annually as required and considered the types of topics outlined by the TS, including ALARA challenges faced by the facility.

The inspector noted that various committee personnel, including the RSC Chairman, had completed audits of different aspects of the reactor facility operations and programs as stipulated in the TS. The audits and the resulting findings were appropriate and the licensee's response and corrective actions were acceptable. The inspector also noted that no audit had been completed during 2002 to date but determined that the licensee was in the process of arranging for the Chairman of the RSC or another assigned individual to conduct an audit as required.

(2) Design Changes

Through review of applicable records, which included the latest Operations Request Forms, and interviews with licensee personnel, the inspector determined that no changes had been initiated and/or completed at the facility since the last NRC operations inspection. However, the inspector verified that changes or modifications to the facility would be analyzed by the staff and the results of the analysis would be presented to and reviewed by the RSC, and approved as required if the changes were determined to be acceptable.

c. Conclusions

Audits and reviews were being conducted acceptably by the RSC according to the requirements specified in the TS. No changes had been made at the facility since the last inspection but the process was in place so that changes or modifications would be reviewed and approved by the RSC as required.

3. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the requirements of TS Section 12.2 were met concerning written procedures:

- Procedure Change Notice forms
- Procedure Approval Sheets
- the process used to review, revise, and approve all facility procedures contained in Section I of the ARRR Procedures Manual entitled, "Administrative Procedures," PCN No. 2, dated June 28, 1990, and last reviewed May 17, 2004
- Section II of the ARRR Procedures Manual entitled, "Operating Procedures," PCN No. 2, dated June 28, 1990, and last reviewed May 17, 2004
- Section III of the ARRR Procedures Manual entitled, "General Emergency Procedures," PCN No. 3, dated August 9, 1999, and last reviewed May 17, 2004
- Section VI of the ARRR Procedures Manual entitled, "Radiological Safety Procedures," PCN No. 3, dated April 29, 1996, and last reviewed May 17, 2004

b. Observations and Findings

The inspector verified that procedures had been developed and were implemented for reactor operations and radiation safety. Procedures were being reviewed biennially and revised as needed. Procedure Approval Sheets were maintained and PCN forms were completed when changes were made as required. The inspector also noted that revisions were presented to the RSC for review and approval. The procedures were acceptable and in accordance with 10 CFR Part 20 and the TS. No problems were noted.

c. Conclusions

Facility procedures were acceptable, the licensee satisfied TS requirements for revision, and they were reviewed and approved by the RSC.

4. Radiation Protection Program

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Part 20 and the requirements in TS Sections 6.2, 7.0, and 12.1.2:

- radiation protection and reactor surveillance and survey data recorded on Aerotest Operations, Inc. Monthly Radiation Survey forms, Swipe Count Sheet forms, Air Filter Paper Counting Sheet forms, ARRR Pool Water Analysis forms, and Aerotest Operations, Inc. Quarterly Maintenance Check List forms from 2000 to the present
- calibration and periodic check of records for portable and fixed radiation monitoring instruments
- radiological signs and posting at the entrances and barriers for restricted areas
- dosimetry records for facility personnel for the past two years
- Training Log records documenting radiological safety training for facility personnel from 2000 to the present
- the Radiation Protection and ALARA Programs
- Special Work Permits - Numbers 2000-1 through 2002-1
- Section VI of the ARRR Procedures Manual entitled, "Radiological Safety Procedures," PCN No. 3, dated April 29, 1996, and last reviewed May 17, 2004
- Section VIII of the ARRR Procedures Manual entitled, "Maintenance Procedures," PCN No. 2, dated January 14, 1993, and last reviewed May 17, 2004

The inspector also observed the use of dosimetry and radiation monitoring equipment during tours of the facility and conducted a radiation survey of various offices, support areas, and the High Bay with an NRC instrument.

b. Observations and Findings

(1) Surveys

Quarterly radiation and contamination survey results indicated that licensed activities were being conducted without the spread of contamination and in accordance with operating procedures. The results were documented on the applicable forms and were evaluated as required. No readings or results were noted that exceeded set action levels.

(2) Postings and Notices

Copies of the current NRC Form 3, "Notice to Employees," were posted in accordance with 10 CFR 19.11. Caution signs, postings, and controls established for radiation areas and other restricted areas within the facility were as required in 10 CFR 20, Subpart J. Those licensee personnel observed working in the facility controlled areas were noted to be adhering to the precautions established for access to the restricted areas.

(3) Dosimetry

The licensee used dosimetry that was supplied by a National Voluntary Laboratory Accreditation Program accredited vendor, Radiation Detection Company. The licensee was also using dosimetry supplied by Landauer. The dosimetry was used to measure whole body and extremity exposures of facility personnel. Through direct observation, the inspector determined that dosimetry was acceptably used by facility personnel.

An examination of the records for the past three years, through May of 2004, showed that all whole body exposures were within NRC limits and within licensee action levels. Extremity monitoring, accomplished through the use of finger ring thermoluminescent dosimeters (TLDs), also showed doses to the hands of staff members which were within the established limits. The highest annual whole body exposure received by a single individual for 2002 was 2,930 millirem (mrem) deep dose equivalent (DDE). The highest annual extremity exposure for 2002 was 10,940 mrem shallow dose equivalent (SDE). The highest annual whole body exposure received by a single individual for 2003 was 4,271 mrem DDE and the highest annual extremity exposure for 2003 was 14,730 mrem SDE.

(4) Radiation Monitoring Equipment

Examination of selected survey meters indicated that the instruments had the acceptable up-to-date calibration sticker attached. The instrument calibration records indicated calibration of portable survey meters was typically completed by licensee personnel and/or a contractor. The inspector verified that portable instruments were being checked and calibrated quarterly as required by procedure. Calibration records were being maintained as required.

During the inspection the inspector observed a demonstration of the calibration range maintained by the licensee. The calibration range appeared to be adequate. Proper precautions were used to maintain doses ALARA.

(5) Training

Training records showed that personnel were acceptably trained in radiation protection practices. Annual refresher training was provided to all staff members by the facility Radiological Safety Officer. The most recent refresher training was completed February 19, 2004.

(6) Documentation of the Radiation Protection and ALARA Programs

The Radiation Protection Program was established and described in the ARRR Procedures Manual, Section VI, entitled "Radiological Safety Procedures," and in the ARRR Reactor Operator Training Manual, Volume 5, entitled "Radiological Safety." The program had not changed since the last inspection. The licensee reviewed the radiation protection program at least annually in accordance with 10 CFR 20.1101(c). The last review, which was completed August 14, 2004, included all areas of the program and no weaknesses were reported. The ALARA Program was outlined in a licensee document entitled, "ALARA Program for Aerotest Operations, Inc.," which was last reviewed August 14, 2004.

The licensee did not have or require a respiratory protection program or planned special exposure program.

(7) Radiation Work Permit Program

Special Work Permits (SWPs) were required to be prepared for special operations typically performed by outside contractors. The inspector verified that SWPs were being prepared and used in accordance with the requirements specified in the licensee's "Radiological Safety Procedures." The controls and safety precautions specified were appropriate for the work conducted under the SWPs.

(8) Facility Tours

As noted above, during a tour of the facility the inspector conducted a radiation survey of various offices, support areas, and the High Bay and mezzanine area and compared the readings noted with those found by the licensee. The results detected by the inspector were comparable to those found by the licensee. No anomalies or discrepancies were noted.

c. Conclusions

The inspector determined that the Radiation Protection and ALARA Programs, as implemented by the licensee, satisfied regulatory requirements because: 1) surveys and associated checks were completed and documented acceptably to permit evaluation of the radiation hazards present; 2) postings met regulatory requirements; 3) personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits; 4) radiation survey and monitoring equipment was being

maintained and calibrated as required; and 5) radiation protection training was being conducted for facility personnel.

5. Effluent and Environmental Monitoring

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.1, 7.2, and 7.3:

- selected ARRR Operations Log Sheets for the past two years
- environmental dosimetry records for the past two years
- Radioactive Liquid Waste Holding Tank release records
- Section VI of the ARRR Procedures Manual entitled, "Radiological Safety Procedures," PCN No. 3, dated April 29, 1996, and last reviewed May 17, 2004, outlining the licensee's environmental monitoring program

b. Observation and Findings

The inspector reviewed the calibration records of the area, water, and stack monitoring systems. These systems had been calibrated semiannually in accordance with procedure. The inspector also reviewed the records documenting liquid and airborne releases to the environment for the past two years. Gaseous releases were monitored as required by TS. The results indicated that the releases were within Appendix B, Table 2 concentrations, and TS limits. To demonstrate compliance with the annual dose constraints of 10 CFR 20.1101(d), the licensee used the COMPLY computer code. The highest dose calculated that could be received by a member of the public as a result of gaseous emissions from reactor operations was 1.1 E-3 millirem per year (mr/yr) for 2002 and 1.7 E-3 mr/yr for 2003. These doses were well below the limit set in 10 CFR 20.1101(d) of 10 mr/yr.

The licensee had released liquid from the Radioactive Liquid Waste Holding Tank during the past two years in accordance with procedure. The Radiological Safety Officer reviewed and approved the release after analyses, which were reviewed and verified by the State of California, proved that the release met regulatory requirements for discharge into the sanitary sewer.

On-site and off-site gamma radiation monitoring was completed using environmental TLDs in accordance with the applicable procedures. The data indicated that there were no measurable doses above any regulatory limits. Through observation of the facility, the inspector did not identify any new potential release paths.

c. Conclusion

Effluent monitoring satisfied license and regulatory requirements and releases were within the specified regulatory and TS limits.

6. Transportation

a. Inspection Scope (IP 86740)

In order to verify compliance with the requirements of 10 CFR 71.5 for shipments of licensed material, the inspector reviewed the following:

- shipping records from 2002 through the time of the inspection
- selected operations records from 2002 through the present

The inspector also interviewed licensee personnel regarding shipments of radioactive material.

b. Observations and Findings

Staff interviews and record reviews showed that the licensee had not completed any radioactive material shipments since the last inspection. The inspector reviewed the licensee's program for transportation of radioactive material and determined that it was adequate.

c. Conclusions

The program for transportation of radioactive materials satisfied NRC requirements.

7. Follow-up on Previous Open Items

a. Inspection Scope (IP 69001)

The inspector reviewed the actions taken by the licensee following identification of Inspector Follow-up Items during a previous inspection.

b. Observations and Findings

- (1) IFI- 50-228/2001-201-01 - Follow-up on revision of the E-Plan to reflect the current situation concerning the location of the Emergency Support Center.

This issue was documented in NRC Inspection Report No. 50-228/2001-201, dated September 14, 2001. During that inspection, while reviewing the E-Plan, the inspector noted that Section VII.A.2 indicated that an alternate Emergency Support Center had been established and was available in the PG&E Offices at 3400 Crow Canyon Road in San Ramon, CA. When the inspector requested to visit that support center, the licensee stated that the facility was no longer needed nor maintained. The inspector indicated that the E-Plan needed to be revised and updated to reflect this situation.

Upon reviewing this issue during this inspection, the inspector determined that no action had been taken by the licensee to revise the Plan. The licensee reiterated that this would be done as part of the relicensing effort for the facility. The relicensing application is scheduled to be completed in 2005. This item remains open.

- (2) Unresolved Item (URI) URI - 50-228/2000-201-01 - Follow-up on concerns regarding transfer of license and foreign ownership.

The inspector discussed the issue of the apparent indirect or ultimate transfer of the license which occurred when the ownership of the Aerotest Radiography and Research Reactor was transferred in substantial part to Autoliv, Inc., through an indirect transfer. This issue is still being reviewed by both the licensee and the NRC. This item remains open.

c. Conclusions

No action had been taken by the licensee regarding the previously identified situation involving the need to revise the Emergency Plan and this issue is still open. The issue involving the potential foreign ownership of the company is still open as well.

7. Exit Interview

The inspection scope and results were summarized on August 19, 2004, with members of licensee management. The inspector described the areas inspected and discussed the inspection findings. No dissenting comments were received from the licensee. Although proprietary information was reviewed during the inspection, no such material is included in this report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

C. Bauman, Reactor Supervisor
A. Meren, Manager, Neutron Radiography
R. Tsukimura, President and Chief Operating Officer, Aerotest Operations, Inc.
S. Warren, Radiological Safety Officer and Manager, Quality Assurance

Other Personnel

P. Peterson, Chairman, Reactor Safeguards Committee

INSPECTION PROCEDURES USED

IP 69001 Class II Non-Power Reactors
IP 86740 Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

50-228/2001-201-01	IFI	Follow-up on revision of the E-Plan to reflect the current situation concerning the location of the Emergency Support Center.
50-228/2000-201-01	URI	Follow-up on concerns regarding transfer of license and foreign ownership.

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
ALARA	As low as reasonably achievable
ARRR	Aerotest Radiography and Research Reactor
CFR	Code of Federal Regulations
DDE	Deep dose equivalent
IP	Inspection Procedure
kW	kilowatt
mr/yr	Millirem per year
mrem	millirem
NRC	Nuclear Regulatory Commission
PAR	Publicly Available Records

PCN	Procedure Change Notice
PDR	Public Document Room
RSC	Reactor Safeguards Committee
SDE	Shallow dose equivalent
SWP	Special Work Permit
TLD	Thermoluminescent dosimeter
TS	Technical Specification