



AEROTEST OPERATIONS, INC.

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November 1, 2013

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Re: Response to Apparent Violation in NRC Inspection Report No. 50-228/2012-201; EA-13-108

References:

1. Letter from Mr. Lawrence E. Kokajko (USNRC) to Ms. Sandra Warren, dated October 4, 2013, Aerotest Operations, Inc. – Requesting Response to an Unresolved Item Identified in NRC Inspection Report No. 50-228/2012 (ADAMS Accession No. ML13254A074).
2. Letter from Sandra L. Warren to Mr. Spyros Traiforos (USNRC) dated August 15, 2013 (ADAMS Accession No. ML13247A668).
3. Letter from Sandra L. Warren to Mr. Spyros Traiforos (USNRC), dated January 11, 2012 (ADAMS Accession No. ML12018A336).
4. Letter from Johnny H. Eads (USNRC) to Ms. Sandra Warren, dated February 7, 2012, Aerotest Operations, Inc. – NRC Non-Routine Inspection Report No. 50-228/2012 (ADAMS Accession No. ML120310173).

Dear Mr. Kokajko:

The purpose of this letter is to provide Aerotest Operations, Inc.'s (Aerotest) response to the apparent violation described in the NRC's October 4, 2013 letter (Reference 1). In Reference 1, the NRC offered Aerotest the opportunity to respond to this apparent violation in writing before the NRC makes its enforcement decision and indicated that this response is due within 30 days of the date of Reference 1. Reference 1 also states that if Aerotest chooses to provide a written response, it should include (1) the reason for the apparent violation or, if contested, the basis for disputing the apparent violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved. The following sections provide the requested information.

Aerotest accepts the apparent violation and has taken prompt corrective action to return to compliance. Aerotest believes the apparent violation was of low significance and should be assessed as a Severity Level IV violation. Further, Aerotest believes the circumstances

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surrounding the apparent violation meet the criteria for a non-cited violation (NCV) and should be disposed of as such. Section V of this letter provides the basis for Aerotest's request as to significance and severity level.

However, as discussed in Section VI below, should the NRC assess the apparent violation's significance as greater than a Severity Level IV and issue a Notice of Violation (NOV), Aerotest believes that no civil penalty should be assessed.

I. REASON FOR THE APPARENT VIOLATION

In December 2011 during annual fuel inspections, Aerotest identified non-displaced cracks in the cladding of four aluminum fuel elements. Aerotest promptly reported this circumstance to the NRC via telephone and documented this conversation in a follow-up letter to the NRC.¹ On January 17 and 18, 2012, the NRC carried out a non-routine inspection of selected activities and identified an Unresolved Item associated with the cracks in the cladding. Aerotest Technical Specification 10.2 provides that "the reactor shall not be operated whenever there are significant defects in fuel elements, control rods or control circuitry." Because it could not be determined when the cracks in the cladding occurred, the NRC Staff concluded that it was possible that the reactor had been in violation of Technical Specification 10.2.

Aerotest fuel inspection procedures require that 20 percent of the fuel be inspected every year and that 100 percent of the fuel be inspected after every fifth repositioning of the fuel elements. The December 2011 inspection was a 100 percent fuel inspection. To monitor for any possible changes in the fuel, Aerotest carried out another 100 percent fuel inspection in 2012. In the 2012 inspection, Aerotest identified an additional 17 fuel elements with cracked cladding. In 2013, Aerotest inspected all non-canned aluminum fuel elements and identified two additional assemblies with cracked cladding.

Most of the fuel elements with cracked cladding were last inspected in 2006, the last time, prior to 2011, that a 100 percent fuel inspection was performed. Inspections prior to 2011 did not identify the cladding cracks, and thus, the cracks likely developed sometime between 2006 and 2011. From 2006 through October 15, 2010, the reactor had been operated to perform radiography, surveillance testing, and training. Since most of the fuel identified with cracked cladding had not been inspected since 2006, it is possible that this cracked cladding existed during the time that the reactor was in operation, which would be a violation of Technical Specification 10.2. The reason that this violation occurred is that Aerotest's fuel inspection procedures did not identify fuel cladding indications that could develop into cladding cracks during operation and prior to the next scheduled inspection. Thus, the inspection program only identified such defects after the fact.

II. THE CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND THE RESULTS ACHIEVED

Aerotest developed a project plan and procedures to address the affected fuel assemblies. As described in Reference 1, Aerotest took prompt corrective action upon identifying the cracked

¹ See Reference 3.

fuel assemblies, including (1) placing all the undamaged fuel into proper storage locations inside the reactor tank, (2) fabricating specially designed canisters to contain the damaged fuel elements, (3) placing each fuel element with cracked cladding (with the exception of two recently identified damaged fuel elements²) into one of the specially design canisters, and (4) conditioning the fuel with helium gas, sealing the canisters, and placing each of the canisters in a specially designed and fabricated storage rack.³

Aerotest also revised its Critical Assembly and Power Calibration procedure to discontinue the requirement to perform quarterly and semi-annual tests that required raising control rods while the reactor is in shutdown mode.

III. THE CORRECTIVE STEPS THAT WILL BE TAKEN

No further action is required. The Aerotest reactor has been shut down since October 15, 2010. The core is defueled and all fuel is in the storage racks. The control rods and drives are removed. As long as Aerotest remains shutdown, there is no further potential to operate with significant fuel defects in violation of Technical Specification 10.2.

IV. THE DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Aerotest is in full compliance.

V. THE VIOLATION WAS OF LOW SIGNIFICANCE AND SHOULD BE ASSESSED AS A LEVEL IV NON-CITED VIOLATION

Through its Enforcement Policy,⁴ the NRC seeks to deter noncompliance with its regulations and to encourage prompt identification and prompt, comprehensive correction of violations of NRC requirements.⁵ Application of the Enforcement Policy ensures that enforcement actions reflect the safety or security significance of a violation.⁶

The first step in the enforcement process is assessing the violations severity or significance level.⁷ The severity levels range from I (highest) to IV (lowest).⁸ The NRC evaluates four criteria in determining a violation's significance: (1) were there actual safety consequences; (2) were there potential safety consequences; (3) did the violation impact the regulatory process; and

² As described in Reference 2, Aerotest has not canned the two fuel elements identified with cracked cladding in the 2013 inspections. Aerotest intends to observe these elements over the next year to gather information about clad cracking in aluminum elements.

³ Reference 1 at 2.

⁴ General Statement of Policy and Procedure for NRC Enforcement Actions, *available at* <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html> (last visited October. 22, 2013) (Enforcement Policy).

⁵ *Id.* at 5.

⁶ *Id.*

⁷ *Id.* at 8.

⁸ *Id.* at 10-11.

(4) was the violation willful.⁹ The enforcement policy defines Severity Level IV violations as violations that “are less serious, but are more than minor concern, that resulted in no or relatively inappreciable safety or security consequences.”¹⁰

After assessing a violation's significance, NRC will determine how to disposition the violation. Violations can be dispositioned as NCVs, cited in NOVs, or issued with civil penalties and orders.¹¹ For example, a Level IV violation at a facility without a corrective action program, such as Aerotest, can be dispositioned as an NCV if it meets four criteria: (1) the licensee identified the violation; (2) the licensee corrected or committed to correct the violation within a reasonable amount of time committed to by the end of inspection, including immediate corrective action and comprehensive action to prevent recurrence; (3) the violation is not repetitive as a result of inadequate corrective action; and (4) the violation is not willful.¹²

Based on these criteria for evaluating the significance and disposition of violations, Aerotest believes the apparent violation of Technical Specification 10.2 should be assessed as a Severity Level IV violation and disposed of as an NCV.

A. NRC should assess the violation's significance as Level IV.

Aerotest believes this incident should be assessed as a Severity Level IV violation on the NRC's significance scale.

1. Actual Safety Consequences

There were no actual safety consequences as a result of the incident. As provided in Reference 1, the actual radiological consequences were low in that “no detectable airborne releases or local or environmental contamination were identified in or around the facility.” Additionally, the amount of radionuclides identified in the fuel pool water was far below the effluent concentration limits provided in 10 C.F.R. Part 20.

2. Potential Safety Consequences

The potential safety consequences were low because the TRIGA fuel is ceramic and remains intact. Also, there is continuous air and water monitoring that would alert operators of any significant degradation of the fuel during operation or fuel movement and the pool water chemistry is monitored monthly to identify any degrading trends. Thus, water and air monitoring would have detected significant releases of fission products prior to impacting workers or the environment.

⁹ Id. at 8-9.

¹⁰ Id. at 11.

¹¹ Id. at 13-15.

¹² Id. at 14-15.

3. Impact on NRC's Regulatory Process

This incident did not adversely impact NRC's regulatory process. According to the Enforcement Policy, an adverse impact on NRC's regulatory process occurs when a violation consists of any failure to provide the NRC with required information or notice of any changes to licensed activities.¹³ This violation does not meet those criteria. Aerotest notified its assigned NRC inspector and Program Manager promptly upon discovery of the cracked cladding and provided frequent updates both verbally and in writing, including daily status updates during the 2012 inspections.

4. Willfulness

The violation was not willful. Aerotest identified the fuel cladding cracks after the reactor had been shut down for over a year and was unaware that the fuel was cracked during any periods of operation.

5. Conclusion

For the reasons stated above, this non-willful violation should be assessed as a Severity Level IV because it resulted in “no or relatively inappreciable safety or security consequences.”¹⁴

B. NRC should dispose of the violation as an NCV.

In addition to being assessed as a Severity Level IV violation, Aerotest believes the violation should be disposed of as an NCV. Severity Level IV violations are normally dispositioned as NCVs. The Enforcement Policy provides that a Severity Level IV violation will be dispositioned as an NCV if: (1) the licensee identified the violation; (2) the licensee corrected or committed to correct the violation within a reasonable period of time; (3) the violation is not repetitive as a result of inadequate corrective action; and (4) the violation is not willful.¹⁵

As already detailed in this letter, the violation does not meet any of these criteria. Aerotest identified the assemblies with cracked cladding, and that technical specifications would not allow operation with these fuel assemblies. Aerotest took prompt action to correct the situation. This apparent violation is not a repeat of a previous violation and this apparent violation was not due to inadequate corrective action associated with any previous violation. Aerotest followed its procedures for inspecting the fuel and these procedures were successful in identifying the damaged fuel assemblies. However, the procedures were not adequate to identify fuel that could develop cracked cladding during operation prior to the next inspection. The violation was not willful as Aerotest was unaware that the fuel cladding was cracked during while the reactor was being operated and became aware of the cracking only after the reactor had been shut down for over a year.

¹³ Id. at 9.

¹⁴ Id. at 11.

¹⁵ Id. at 14-15.

VI. IF THE NRC ASSESSES THE APPARENT VIOLATION AS LEVEL III, NO CIVIL PENALTY SHOULD BE ASSESSED

Should the NRC assess the significance of the apparent violation as greater than Severity Level IV, no civil penalty should be assessed. According to the Enforcement Policy, a Severity Level III violation that receives credit for both identification and corrective action will be assessed no civil penalty.¹⁶ Aerotest should receive credit in both regards. As described Aerotest identified the damaged fuel assemblies through its inspection procedures and took prompt corrective action. In Reference 1, NRC stated that Aerotest's "corrective actions were completed in a timely manner and with an appropriate focus on occupational radiation safety, and the NRC has determined that credit is warranted for [Aerotest's] corrective actions."¹⁷

Therefore, Aerotest should not be assessed a civil penalty for this violation.

If you have any questions concerning this letter or need further information please contact Sandra Warren at 925-866-1212.

Sincerely yours,



Michael Anderson
President

cc: Lawrence E. Kokajko, Director
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

¹⁶ Id. at 17.

¹⁷ Reference 1 at 2.

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