

OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ADDITIONAL INFORMATION

REGARDING AMENDMENT FOR A POSSESSION-ONLY LICENSE

FACILITY OPERATING LICENSE NO. R-98

AEROTEST OPERATIONS, INC.

AEROTEST RADIOGRAPHY AND RESEARCH REACTOR

DOCKET NO. 50-228

The U.S. Nuclear Regulatory Commission (NRC, the Commission) staff is continuing its review of the Aerotest Operations, Inc. (Aerotest, the licensee) license amendment request (LAR), provided by letter dated March 21, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19084A051), as supplemented, to modify Facility Operating License No. R-98 and its supporting technical specifications (TSs) to a possession-only license (POL) in support of the licensee's decision to permanently cease operation of the Aerotest Radiography and Research Reactor (ARRR). These requests for additional information (RAI) have been developed based on the following requirements and guidance applicable to the LAR:

- Title 10 of the *Code of Federal Regulations* (10 CFR) 50.9, "Completeness and accuracy of information," require that information provided to the Commission by a licensee be complete and accurate in all material respects.
- The regulations in 10 CFR 50.36, "Technical specifications," provides requirements for the content of technical specifications.
- The regulations in 10 CFR 50.51, "Continuation of license," paragraph (b), provide requirements for facilities that have permanently ceased operations.
- The regulations in 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," provide requirements for the licensing of receipt, possession, and use of special nuclear material (SNM).
- The regulations in 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," provide requirements for licensing byproduct material.
- The regulations in 10 CFR Part 20, "Standards for Protection Against Radiation," provides requirements for protecting workers and members of the public against radiation.
- NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors, Format and Content," Chapter 17, "Decommissioning and Possession-Only License Amendments," Section 17.2.1.2, "Technical Specifications," and Chapter 14, "Technical Specifications,"

Enclosure

Appendix 14.1, "Format and Content of Technical Specifications for Non-Power Reactors," dated February 1996 (ADAMS Accession No. ML042430055) and NUREG-1537, Part 2, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors, Standard Review Plan and Acceptance Criteria," Chapter 17, "Decommissioning and Possession-Only License Amendments," Section 17.2.1.2, "Technical Specifications," dated February 1996 (ADAMS Accession No. ML042430048), provide guidance for the content of TSs, and state that the NRC staff will review the proposed TSs to ensure that they are complete and comprehensive.

- American National Standards Institute/American Nuclear Society (ANSI/ANS)-15.1-2007 (Reaffirmed (R) 2013), "The Development of Technical Specifications for Research Reactors," Section 6, "Administrative controls," provides guidance used by the NRC staff, including definitions, parameters, and operating characteristics of a research reactor that should be included in the TSs.
- Aerojet-General Nucleonics Industrial Reactor Hazards Summary Report, dated September 1964 (ADAMS Accession No. ML19192A162).

As a result of the licensee's request to amend its license and TSs, the NRC staff performed a comprehensive review of the proposed license conditions (LCs) and TSs using the guidance in NUREG-1537, Part 2 and identified the following followup RAIs.

The NRC staff's review of Aerotest's RAI response letters dated April 28, 2021 (ADAMS Accession No. ML21126A150), and May 19, 2021 (ADAMS Accession No. ML21147A060), identified that the following RAIs were lacking a complete or adequate response. The RAI numbering in this enclosure remains the same as in the NRC staff's RAI letter dated March 30, 2021 (ADAMS Accession No. ML21047A468) (i.e., RAIs 1 through 22) with added clarifying information or discussion of why Aerotest's responses appear to be incomplete or inadequate. The NRC staff is also including new RAIs based on its review of additional TS changes proposed in the RAI response letters. The new RAIs are numbered 30 through 33. Some other RAIs (e.g., RAI 15) also include some new questions (e.g., RAI 15.6) based on additional TS changes proposed in the RAI response letters; all new questions are marked as such.

Note: The licensee-provided LCs and TSs reproduced below are taken from Aerotest's RAI response letter dated April 28, 2021, and are identified by italic text. Any NRC staff suggested changes to the language of the LCs and TSs do not indicate NRC approval of the changed language; LC and TS language is only approved by an approved and issued license amendment.

RAIs – License Conditions

1. (Adapted question) The regulations in 10 CFR Part 70 provide for the licensing of receipt, possession, and use of SNM.

In its letter dated April 28, 2021, the licensee proposed language for LC 2.B.(2) that differed from the proposed LC 2.B.(2) with the NRC staff's suggested changes in RAI 1. Specifically, in its letter dated April 28, 2021, the licensee proposed to revise LC 2.B.(2) to read:

Pursuant to the Act and 10 CFR Part 70, "Special Nuclear Material," to possess up to 5.0 kilograms of contained uranium 235, and limit actions involving special nuclear material to those related to fuel storage and decommissioning.

The NRC staff reviewed the proposed LC 2.B.(2) and notes that it appears to continue to require changes for clarity and accuracy, because it does not appear to clearly and appropriately indicate activities that are permitted and those that are not permitted, under the proposed POL, and because it does not appear to include all SNM that Aerotest currently possesses. To resolve these issues, among other changes, the NRC staff continues to suggest adding the language "but not receive or separate" such that the LC would clearly indicate that these activities, which the NRC staff notes should not be applicable for a POL, are not permitted for uranium-235 or other SNM. The NRC staff also continues to suggest adding language to allow the possession of SNM produced by past operation of the ARRR and of SNM in irradiated Training, Research, Isotopes, General Atomics (TRIGA) fuel elements transferred to the ARRR from other reactor facilities, to make the LC more comprehensive, since Aerotest currently possesses these materials (e.g., in its proposed ARRR restart plan previously submitted by letter dated April 3, 2018 (ADAMS Accession No. ML18096A689), the licensee stated that some of its aluminum-clad fuel elements were previously irradiated when received). The proposed LC 2.B.(2) with the NRC staff's suggested changes, would read:

Pursuant to the Act and 10 CFR Part 70, "Special Nuclear Material," to possess, but not receive or separate, (1) up to 5.0 kilograms of contained uranium-235, (2) such special nuclear material as may have been produced by previous operation of the reactor, and (3) such special nuclear material (in TRIGA fuel elements) produced by operation of other reactors as may have been previously transferred to Facility Operating License No. R-98, provided actions involving special nuclear material are limited to those related to fuel storage and decommissioning; and

Confirm that the proposed LC 2.B.(2), including the NRC staff's suggested changes, is correct and appropriately reflects the status of the ARRR, and that Aerotest agrees with the suggested changes. Alternatively, propose and justify alternate language for LC 2.B.(2), or justify why no additional information is required.

2. (Adapted question) The regulations in 10 CFR Part 30 provide for the licensing of receipt, possession, and use of byproduct material.

In its letter dated April 28, 2021, the licensee proposed language for LC 2.B.(3) that differed from the proposed LC 2.B.(3) with the NRC staff's suggested changes in RAI 2. Specifically, the licensee proposed to revise LC 2.B.(3) to read:

Pursuant to the Act and 10 CFR Part 30, "Licensing of Byproduct Material," (1) to possess, and [sic] 2 curie americium-beryllium neutron startup source, and (2) to possess, but not to separate, such byproduct material and limit actions involving byproduct material to those related to fuel storage and decommissioning.

The NRC staff reviewed the proposed LC 2.B.(3) and notes that it appears to continue to require changes for clarity and accuracy, because it does not appear to clearly and appropriately indicate activities that are permitted and those that are not permitted, under the proposed POL, and because it does not appear to include all byproduct material that Aerotest currently possesses. To resolve these issues, among other changes, the NRC staff continues to suggest adding the language “but not receive” such that the LC would clearly indicate that this activity is not permitted for the americium-beryllium source or the byproduct material produced by previous operation of the ARRR (e.g., fission products in fuel, and activation products in reactor structural materials). The NRC staff also continues to suggest adding language clarifying that “such byproduct material” in item (2) of LC 2.B.(3) refers to byproduct material produced by previous operation of the ARRR. Additionally, the NRC staff continues to suggest adding language to allow the possession of byproduct material in irradiated TRIGA fuel elements transferred to the ARRR from other reactor facilities, to make the LC more comprehensive, since Aerotest currently possesses these materials. The NRC staff also continues to suggest correcting apparent typographical errors in the proposed LC. The proposed LC 2.B.(3), with the NRC staff’s suggested changes, would read:

Pursuant to the Act and 10 CFR Part 30, “Licensing of Byproduct Material,” (1) to possess, but not receive, a 2 curie americium-beryllium neutron startup source, (2) to possess, but not receive or separate, such byproduct material as may have been produced by previous operation of the reactor, and (3) to possess, but not receive or separate, such byproduct material (in TRIGA fuel elements) produced by operation of other reactors as may have been previously transferred to Facility Operating License No. R-98, provided actions involving byproduct material are limited to those related to fuel storage and decommissioning.

Confirm that the proposed LC 2.B.(3), including the NRC staff’s suggested changes, is correct and appropriately reflects the status of the ARRR, and that Aerotest agrees with the suggested changes. Alternatively, propose and justify alternate language for LC 2.B.(3), or justify why no additional information is required.

5. (Adapted question) The regulations in 10 CFR 50.51, “Continuation of license,” paragraph (b), state, in part, that “[e]ach license for a facility that has permanently ceased operations, continues in effect beyond the expiration date to authorize ownership and possession of the production or utilization facility, until the Commission notifies the licensee in writing that the license is terminated.”

In its letter dated April 28, 2021, the licensee proposed to revise current LC 2.F, which states, in part, that the ARRR license expires at midnight on April 16, 2005, to read:

This amended license is effective as of the date of issuance and shall follow requirements outlined in 10 CFR 50.51 (b).

The NRC staff notes that while the proposed LC 2.F references 10 CFR 50.51(b), it does not explicitly state when the license will expire or be terminated. Therefore, the proposed LC 2.F appears to require changes to clearly and unambiguously indicate when the license will expire or be terminated. Although the guidance in NUREG-1537, Part 1, Section 17.2.1.1, states that POL amendments should not change the expiration date of the license, the NRC staff recommends that, to resolve this issue, if Aerotest desires to remove the expiration date, the license should be revised to contain language similar to that in other

possession-only 10 CFR Part 50 licenses in which the expiration date has been removed (see, for example, licenses for Indian Point Unit 2 (ADAMS Accession No. ML20297A341) and Three Mile Island Unit 2 (ADAMS Accession No. ML20352A381)), to clearly indicate that the license is effective until the Commission notifies the licensee in writing that the license is terminated. Therefore, the NRC staff suggests changes to the proposed LC 2.F for clarity. The proposed LC 2.F, with the NRC staff's suggested changes, would read:

This amended license is effective as of the date of issuance and until the Commission notifies the licensee in writing that the license is terminated.

Confirm that the proposed LC 2.F, including the NRC staff's suggested changes, is correct and appropriately reflects the status of the ARRR, and that Aerotest agrees with the suggested changes. Alternatively, propose and justify alternate language for LC 2.F, or justify why no additional information is required.

RAIs – Technical Specifications

6. By letter dated April 28, 2021, the licensee proposed to revise TS 2.3 to read:

The principal activity carried on within the exclusion area shall be associated with fuel storage and decommissioning of the ARRR; however, it does not exclude other activities from being performed using unimpacted facility areas i.e., machine shop, electrical shop, chemistry laboratory, etc.

However, the information requested by the following RAIs (from the NRC staff's March 30, 2021 letter) does not appear to have been provided. Additional information and/or TS changes appear to continue to be required because some information or language in the TS remains unclear, and because some changes proposed to the TS still do not appear to have a clear, acceptable basis. In some cases, the NRC staff has suggested TS changes which may help resolve these issues. Provide the requested information or justify why no additional information is needed.

6.3 (Original question) The NRC staff suggests adding the word "the" prior to "machine shop," "electrical shop," and "chemistry laboratory" to improve clarity.

6.4 (Original question) The NRC staff notes that it is not clear as to what specific activities are described by the statement "principal activities ... associated with the decommissioning of the ARRR..." Provide a description, within TS 2.3, of those activities associated with the decommissioning of the ARRR and a justification for performing those activities, or justify why no changes are needed.

(Additional discussion) The NRC staff notes that Aerotest revised this statement, but it is still not clear what is meant by activities "associated with fuel storage and decommissioning of the ARRR," and no justification for why such activities are appropriate under a POL appears to have been provided. Additionally, Aerotest revised "activities" (third word of TS) to "activity," but the reason for this change is unclear and it appears "activities" may be more appropriate.

- 6.5 (Original question) The NRC staff notes that it is not clear why the machine shop and the electrical shop were added to TS 2.3. Delete these facilities from TS 2.3 or provide a basis for their inclusion to justify why no changes are needed.

(Additional discussion) The NRC staff notes that Aerotest revised this portion of the TS. However, it is still unclear why the machine shop and electrical shop were added to TS 2.3. Aerotest also added an “etc.” to the end of TS 2.3 and it is not clear what this is meant to include. Additionally, Aerotest added the language “unimpacted facility areas,” which the NRC staff notes may not be appropriate because these areas are within the ARRR restricted area, and it is not clear what they are unimpacted by. It is not clear whether activities that would be conducted in the “machine shop, electrical shop, chemistry laboratory, etc.” are activities under the ARRR license, and whether these activities are appropriate for a POL. To resolve these issues, the NRC staff suggests that Aerotest either delete the portion of TS 2.3 following the semicolon (;), or revise this portion of the TS to list activities that are conducted under the ARRR license and appropriate for a POL, and justify why these activities are appropriate.

10. By letter dated April 28, 2021, the licensee proposed to revise TS 6.0 to read:

Reactor Safety Systems

Safety System Instruments listed in Table 1 shall be operable as long as fuel is present at the facility. A thirty day out of service period shall be allowed to facilitate repairs, replacements, maintenance, and/or calibration to any of the instruments listed in Table 1.

However, the information requested by the following RAIs (from the NRC staff’s March 30, 2021 letter) does not appear to be provided. Additional information and/or TS changes appear to continue to be required because some information or language in the TSs remains unclear, and because some changes proposed to the TS still do not appear to have a clear, acceptable basis. In some cases, the NRC staff has suggested TS changes that may help resolve these issues. Provide the requested information or justify why no additional information is needed. (The questions below address, in part, proposed TS 7.0. See also new RAIs 30 through 33, which address additional changes proposed to TS 7.0 in Aerotest’s April 28, 2021, letter.)

- 10.4 (Original question) The NRC staff notes that some of the safety system functions listed in Table 1 may not be consistent with the requirements in TS 7.0, “Radiation Monitoring.”

- 10.4.1 (Original question) For example, proposed TS 7.1 states, in part, “This monitor shall serve as both an area radiation monitor and a criticality alarm....”

(Additional discussion) (See also new RAI 30 relating to TS 7.1.)

- 10.4.1.1 (Original question) The NRC staff notes that a criticality alarm is not listed in Table 1. Make TS 7.1 and Table 1 consistent with respect to a criticality alarm, or justify why no change is needed.

- 10.4.1.2 (Original question) The NRC staff notes that it is not clear whether the annunciator and alarm set point for the area radiation monitor, as listed in Table 1, (i.e., ≤ 10 mr/hr), are the same value. Clarify the annunciator and alarm set points for the area radiation monitor in Table 1.
- 10.4.2 (Original question) For example, proposed TS 7.2 states, in part, "During fuel movement in reactor pool, a gas sample shall be continuously withdrawn...."
- (Additional discussion) (See also new RAI 31 relating to TS 7.2.)
- 10.4.2.1 (Original question) The NRC staff notes that it is not clear whether this is referring to the Building Gas Effluent Monitor. Clarify the gas monitor used during fuel movement in TS 7.2 and Table 1.
- 10.4.2.2 (Original question) Table 1 requires the Building Gas Effluent Monitor to be operable at all times; however, if TS 7.2 is referring to the Building Gas Effluent Monitor, it appears to only be required during fuel movement. Resolve this apparent discrepancy.
- 10.4.3 (Original question) For example, proposed TS 7.3 states, in part, "A fission product water monitor...." The NRC staff notes that a fission product water monitor is not listed in Table 1. Make TS 7.3 and Table 1 consistent with respect to a fission product water monitor, or justify why no change is needed.
- 10.4.4 (Original question) Overall, the NRC staff notes that it is not clear which equipment/specifications listed in Table 1 apply to the equipment/specifications described in TS 7.0. Review Table 1 and TS 7.0 (i.e., TSs 7.1 through 7.7) and clearly identify which radiation monitoring equipment is required and provide the required specifications in both Table 1 and TS 7.0. Include the name of the equipment, the annunciation function (if applicable), the alarm function (if applicable), the corresponding setpoints, and the required operability conditions, or justify why no change is needed.
- 10.5 (Original question) The NRC staff notes that the term "as long as fuel is being stored" in proposed TS 6.0 is not clear. Also, the LAR, as supplemented, does not appear to justify why the instrumentation (in TS Table 1) that would continue to be required by proposed TS 6.0 would be unnecessary when fuel is not being stored. The NRC staff suggests replacing this term with "while fuel is present at the facility." For all of the NRC staff's suggested changes, confirm that the changes are correct and appropriately reflect the status of the ARRR and that Aerotest agrees with the suggested changes, propose and justify alternate changes, or justify why no changes are needed. Additionally, justify why the instrumentation in TS Table 1 is not necessary when fuel is no longer present at the facility, or justify why no additional information is required.
- (Additional discussion) The NRC staff notes that Aerotest revised TS 6.0 to clarify the language, but does not appear to have provided justification for why the instrumentation in TS Table 1 is not necessary when fuel is no longer present at the facility (or why no additional information is required).

- 10.6 (Original question) The NRC staff notes that there is no provision for an out of service condition for the equipment listed in TS 6.0, and suggests that Aerotest consider an allowed out-of-service specification for TS 6.0 to facilitate the performance of repairs, replacement, periodic maintenance, calibration, etc.

(Additional discussion) The NRC staff notes that a 30 day allowed out-of-service period has been added to proposed TS 6.0; however, no justification or basis was provided to support the NRC staff review. Provide a basis or justification for the use of 30 days. Examples would include historical measurement values, use of alternate measurement means during the out-of-service time, limiting activity that could impact the measured parameter, etc.

Additionally, it is not clear whether the out-of-service allowance in TS 6.0 also applies for the required control room instrumentation indications in TS 7.0 (i.e., the TS 7.2 requirement for gas effluent, the TS 7.3 requirement for fission product water monitor, and the TS 7.7 requirements for pool water temperature and conductivity). Revise TS 6.0 to clarify whether it provides an out-of-service allowance for instrumentation/readouts that are required by TS 7.0 but not necessarily included in Table 1.

11. By letter dated April 28, 2021, the licensee proposed to revise TS 8.5 to read:

Thermal Column

Shall be authorized for reflector element storage only.

8.5.1 The thermal column shall be positioned remotely on steel locating pins immediately adjacent to the reactor structure.

However, the information requested by the following RAI (from the NRC staff's March 30, 2021 letter) did not appear to be provided. Additional information and/or TS changes appear to continue to be required because some information or language in the TS remains unclear. The NRC staff has suggested TS changes that may help resolve these issues. Provide the requested information or justify why no additional information is needed.

- 11.1 (Original question) The NRC staff notes that the term "reactor core" may not be appropriate given the proposed POL status of the facility and that it is also not defined in the TS definitions. The NRC staff notes that the TS-defined term "core structure" may be more appropriate. Change TS 8.5 to more accurately reflect the proposed POL status of the facility, or justify why no change is needed.

(Additional discussion) The NRC staff notes that the licensee replaced the term "reactor core" with the term "reactor structure." However, "reactor structure" is not defined in the TS definitions, whereas, the term "core structure" has a TS definition, and its use may help to promote a consistent understanding of the TS. Consider if the use of "core structure" would improve the meaning of TS 8.5, or acknowledge your intent to continue to use the term "reactor structure" and consider if a TS definition would be useful.

14. By letter dated April 28, 2021, the licensee proposed to revise TS 11.5 to read:

No more than one fuel element shall be allowed in the facility which is not in storage. The only movement of the fuel elements are for fuel element inspections, canister surveillances, rearrangement of fuel elements in storage, or final placement in the transportation cask.

However, the information requested by the following RAIs (from the NRC staff's March 30, 2021 letter) did not appear to be provided. Additional information and/or TS changes appear to continue to be required because some information or language in the TS remains unclear. The NRC staff has suggested TS changes that may help resolve these issues. Provide the requested information or justify why no additional information is needed.

14.1 (Original question) To improve clarity, the NRC staff suggests that the first sentence be written as "No more than one fuel element that is not in storage shall be allowed in the facility" and that "are" be replaced with "shall be" in the second sentence. Make these changes, propose and justify alternate changes, or justify why no changes are needed.

15. By letter dated April 28, 2021, the licensee proposed to revise TS 12.1.1 (now TS 12.1.3) to read:

The Certified Fuel Handler Supervisor (Level 3) shall have the responsibility of handling fuel and in all matters pertaining to fuel handling operations and to these Technical Specifications, the Certified Fuel Handler Supervisor shall be responsible to the President, Aerotest Operations, Inc. The CFH Supervisor shall have at least 5 years of experience in irradiated fuel movements and demonstrated knowledge of the relevant NRC regulations and ALARA principles. Successfully completed college-level work in the nuclear and radiation related fields of study may be considered in lieu of the experience requirement. Maintain health/medical requirements required for the CFH job. The biennial CFH Health Questionnaire will be used to assess health/medical requirements.

By letter dated April 28, 2021, the license also proposed to add TS 12.1.5, which reads:

The Certified Fuel Handler (level 4) is a non-licensed operator who has qualified in accordance with the Certified Fuel Handler Training and Recertification Program. Fuel handling obligations include maintenance, periodic fuel inspections and/or putting the spent fuel in transportation caskets [sic] for fuel shipment from facility. The CFH only handle fuel when need [sic] and only handle 1 fuel element at a time. The CFH does not make decisions on fuel handling, decommissioning or radiation; those are made by the Reactor Administrator or Radiation Safety Officer (RSO). the [sic] CFH shall have at least 2 years of experience in irradiated fuel movements and demonstrated knowledge of the relevant NRC regulations and ALARA principles. Successfully completed college-level work in the nuclear and radiation related fields of study may be considered in lieu of the experience requirement. Maintain health/medical requirements required for the CFH job. The biennial CFH Health Questionnaire will be used to assess health/medical requirements.

However, the information requested by the following RAIs (from the NRC staff's March 30, 2021 letter) does not appear to be provided. Additional information and/or TS changes appear to continue to be required because some information or language in the TSs remains unclear, and because some changes proposed to the TSs still do not appear to have a clear, acceptable basis. In some cases, the NRC staff has suggested TS changes that may help resolve these issues. Provide the requested information or justify why no additional information is needed.

15.1 (Original question) The NRC staff notes that the organizational structure of the ARRR facility is not clear. Provide a TS in Section 12 that provides the following information (consider using the guidance in NUREG-1537, Part 1, Appendix 14.1, Section 6.1, "Organization[.]" and ANSI/ANS-15.1-2007, Section 6.1, "Organization"):

15.1.3 (Original question) reporting and communication lines (e.g., ANSI/ANS-15.1-2007, Figure 1, "Organizational Chart").

(Additional discussion) The NRC staff notes that the revised TS 12.1.3 states that the certified fuel handler (CFH) supervisor is responsible to the President, Aerotest Operations, Inc. However, TS Figure 1, "ARRR Organization chart," shows a solid line (i.e., "reporting line" in accordance with ANSI/ANS-15.1-2007, Figure 1) from the CHF Supervisor to the Reactor Administrator, not the President. Provide clarification/consistency on the CFH Supervisor reporting relationship in TS 12.1.3 and TS Figure 1.

The NRC staff also notes that TS Figure 1 appears to show that the Radiation Safety Officer (RSO) reports to both the Reactor Administrator and the President, but TS 12.1.4 states that the RSO is responsible to the President. Revise TS Figure 1 and/or TS 12.1.4 to be consistent and such that TS Figure 1 clearly indicates a single reporting line for the RSO.

Additionally, the NRC staff suggests revising TS 12.1 and/or TS Figure 1 to clearly indicate that the solid lines in TS Figure 1 denote reporting lines, consistent with ANSI/ANS-15.1-2007, if this is the case.

15.2 (Original question) The NRC staff notes that the staffing requirements during the proposed POL period (i.e., conditions when a CFH or CFH Supervisor is required to be physically present at the facility) are not clear. It is also not clear whether any specific activities require a second CFH or other person to be at the facility. Provide this TS staffing requirement information in TS 12.

(Additional discussion) The NRC staff notes that proposed TS 11.4 specifies staffing requirements during fuel movements, but it is still not clear if specific staffing is required at any other times.

15.3 (Original question) The NRC staff is not clear as to what other roles the CFH or CFH Supervisor may have other than fuel handling, decommissioning, and emergency response. Describe any other required roles in TS 12.

(Additional discussion) The NRC staff notes that TS 12.1.5 appears to describe the roles of the CFH as activities generally related to fuel handling (which could include emergency response). However, it is still not clear if TS 12.1.3 fully describes the

roles of the CFH Supervisor. Revise TS 12.1.3 to clearly indicate all CFH Supervisor roles, including any roles other than fuel handling, decommissioning, and emergency response. If the CFH Supervisor roles are similar to those of the CFH (described in TS 12.1.5) except that the CFH Supervisor oversees other CFHs (and may have other roles, such as serving as Emergency Coordinator in the President's absence, in accordance with the current ARRR Emergency Plan, dated March 26, 2020 (ADAMS Accession No. ML20098D412)), the NRC staff suggests indicating this in TS 12.1.3.

- 15.4 (Original question) The NRC staff is not clear as to whether CFHs or CFH Supervisors are required after fuel is removed. Address this issue or justify why no changes are needed.
- 15.6 (New question) The NRC staff notes that TS 12.1.3, as provided in the clean version of the TSs (Enclosure 3 to Aerotest's April 28, 2021, letter), has a closed-quotation mark (") at its end which appears to be a typographical error. Indicate if it should be removed.

Additionally, the NRC staff suggests revising the last 2 sentences of TS 12.1.3 to include "shall" for clarity (i.e., to clearly denote the requirement), such that they would read: "The CFH Supervisor shall maintain health/medical requirements required for the CFH job. The biennial CFH Health Questionnaire shall be used to assess health/medical requirements."

- 15.8 (New question) The NRC staff notes that proposed TS 12.1.5 appears to contain several apparent typographical errors, or statements that may be appropriate to revise for clarity (e.g., by including "shall"). The NRC staff suggests the following changes:

- (First sentence) Revise "The" at beginning of sentence to "A";
- (First sentence) Revise "level 4" to "Level 4" for consistency;
- (First sentence) Revise "is" to "shall be";
- (First sentence) Insert space after period (.) at end of sentence;
- (Second sentence) Insert "shall" after "obligations";
- (Second sentence) Revise "caskets" to "casks";
- (Third sentence) Insert "shall" after "CFH";
- (Third sentence) Revise "need" to "needed";
- (Fourth sentence) Revise "does not" to "shall not";
- (Fifth sentence) Capitalize "the" at beginning of sentence;
- (Seventh and eighth sentences) Revise to "The CFH Supervisor shall maintain health/medical requirements required for the CFH job. The biennial CFH Health Questionnaire shall be used to assess health/medical requirements."

The NRC staff also notes that the TS 12.1.5 statement that "The CFH does not make decisions on fuel handling, decommissioning or radiation" may be overly restrictive because, even if CFHs (or the CFH supervisor) do not make major or engineering decisions related to fuel handling, decommissioning, or radiation, it may be necessary for CFHs to use judgement related to these areas in performing their duties, including in emergency response situations. Revise TS 12.1.5 (and/or

TS 12.1.3) to clarify the CFH (and/or CFH supervisor) roles, such that these individuals are not precluded from using necessary judgement.

16. By letter dated April 28, 2021, the licensee proposed to revise TS 12.1.3.2 (now TS 12.1.6.2) to read:

Reviewing facilities procedures and modifications;

- 16.1 (Original question) The NRC staff notes that “facilities” appears to be a typographical error. The NRC staff suggests replacing this with “ARRR facility.”

(Additional discussion) The apparent typographical error “facilities” was not corrected. Additional TS changes appear to continue to be required because the TS remains unclear. The NRC staff has suggested TS changes that may help resolve this issue. Indicate if you intend to use the term “facilities,” or provide a corrected version of the TS.

18. By letter dated April 28, 2021, the licensee proposed TS 12.1.3.5 (now TS 12.1.6.5) to read:

Reviewing all reported violations of these Technical Specifications, evaluating the causes of such events and the corrective action taken and recommending measures to prevent reoccurrence and;

(Original question) The NRC staff notes that the words “abnormal occurrences and” were removed from this TS without an explanation or justification in the LAR. Indicate if this change was intentional and, if so, provide a basis and justification for the proposed change.

(Additional discussion) In its April 28, 2021, letter, Aerotest states that this language was removed from the TS because there is no relevant definition of the term’s use. In its earlier RAI response letter dated March 26, 2020 (ADAMS Accession No. ML20098D415), Aerotest had also stated that the language was deleted to clarify what the review committee reviews. However, additional information and/or TS changes appear to continue to be required because some changes proposed to the TS still do not appear to have a clear, acceptable basis. The NRC staff notes that it may still be appropriate for the review group to review operating abnormalities, even if they do not constitute a TS violation. The guidance in ANSI/ANS-15.1-2007 states that the review group should review “operating abnormalities having safety significance.” Revise proposed TS 12.1.6.5 to include the ANSI/ANS-15.1-2007 recommended language, propose and justify alternate language, or provide an acceptable justification why it is not necessary for the review group to review any operating abnormalities not involving TS violations.

22. By letter dated April 28, 2021, the licensee proposed TS 12.2.1.2 (formerly TS 12.2.1.1) to read:

Systems and components involving nuclear safety systems of the facility.

- 22.1 (Original question) The NRC staff notes that the current TS 12.2.1.1 was deleted without an explanation or justification; however, its reference to “systems and components involving nuclear safety of the facility” may still apply to the POL status.

Provide a justification for the deletion of current TS 12.2.1.1, or restore the applicable requirements.

(Additional discussion) In its April 28, 2021, letter, Aerotest proposed to add relevant language from current TS 12.2.1.1 back to the TSs in TS 12.2.1.2. However, additional information and/or TS changes appear to continue to be required because some information or language in the TS remains unclear. The NRC staff notes that “systems and components” are not “operations” (see proposed TS 12.2.1). Also, the meaning of “nuclear safety systems” is unclear (the NRC staff notes that this language often refers to nuclear protection/scram systems which are not relevant for a permanently-shutdown reactor). Additionally, proposed TS 12.2.1.2 contains an apparent typographical error in that the ending period (.) should be a semicolon (;). Clarify TS 12.2.1.2 to address these issues. To help resolve these issues, the NRC staff suggests revising TS 12.2.1.2 such that it would read, for example, “Normal operation of all systems and components involving nuclear safety of the facility;”, or similar.

Additional (New) RAIs – Changes made by Aerotest in its April 28, 2021 letter

30. (New question) By letter dated April 28, 2021, Aerotest proposed to revise TS 7.1 to remove the reference to a criticality alarm, such that it would read:

A fixed gamma monitor employing Geiger tube detectors shall be located on the wall connecting the control room and the reactor room. This monitor shall serve as an area radiation monitor and will annunciate through an automatic monitoring system to the San Ramon, California, Fire Department and actuate a siren within the reactor building on high radiation level. The monitor shall have a minimum range of 0 to 20 mr/hr. The annunciation and the siren actuation shall be tested monthly.

However, the NRC staff notes that Aerotest does not appear to have provided an explanation or justification for the proposed change. The regulations in 10 CFR 70.24, “Criticality accident requirements,” provide the requirements for a criticality alarm system.

Provide a justification or basis to support the removal of the criticality alarm from TS 7.1 (considering the requirements of 10 CFR 70.24), restore the criticality alarm reference (and ensure TS Table 1 is consistent with TS 7.1; see also RAI 10.4.1.1), or justify why no additional information is required.

Additionally, Aerotest’s letter dated April 28, 2021, states that “both” is being deleted from TS 7.1, but the clean (Enclosure 3 to Aerotest’s April 28, 2021, letter) version of the complete TSs still includes “~~both~~” (with strikeout); to resolve this issue, the NRC staff suggests this word be completely deleted from the clean version of the TSs.

31. (New question, but RAI 31.2 is also a follow-up to the response to RAI 13.3) By letter dated April 28, 2021, Aerotest proposed additional changes to TS 7.2 (beyond those proposed in its earlier letters).

The previous proposed TS 7.2 (as provided in Aerotest’s letter dated June 8, 2020 (ADAMS Accession No. ML20175A676)) reads:

During fuel movement in the reactor pool, a gas sample shall be continuously withdrawn from the roof vent above the reactor, or from the vicinity of the reactor bridge over the core structure, and pumped through a radioactive gas detection chamber. The gas chamber shall be monitored by a beta-gamma detector which shall have a continuous readout in the control room. An annunciator shall indicate when the gas exceeds 2 mr/hr.

With the additional proposed changes in Aerotest's letter dated April 28, 2021, TS 7.2 reads:

During fuel movement in reactor pool, a gas sample shall be continuously withdrawn from above the reactor in the vicinity of the reactor bridge. The gas-effluent shall be monitored by a beta-gamma detector which shall have a continuous readout in the control room. An annunciator shall indicate when the gas exceeds 2 mr/hr.

The regulation in 10 CFR 20.1101, "Radiation protection programs," paragraph (b), states: "The licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA)." Additionally, the regulations in 10 CFR 20.1501, "General," paragraph (a), require licensees to have appropriate radiation monitoring.

- 31.1. The basis for the additional proposed changes does not appear to be discussed in Aerotest's April 28, 2021, letter, and the NRC staff is not clear what effect these changes have on the licensee's ability to detect airborne gaseous effluents, and thus ensure radiation monitoring requirements are met and radiation doses are ALARA.

Provide a description of the effect of these proposed changes on the ARRR facility, and a justification to allow the NRC staff to determine whether the proposed changes continue to ensure radiation monitoring requirements are met and radiation doses are ALARA, or justify why no additional information is needed.

- 31.2. The NRC staff notes that TS 7.2 appears to be limited to fuel movement in the reactor pool. The NRC staff is not clear what airborne monitoring requirements are needed for fuel movements outside the reactor pool.

In its response to RAI 13.3 in its letter dated April 28, 2021, Aerotest proposed to revise TS 11.4 to state that all irradiated fuel transfers in the facility (in the reactor tank or otherwise) be monitored using a hand-held gamma/beta radiation monitoring instrument. However, it is not clear whether this would provide appropriate airborne radiation monitoring, if necessary, during fuel movements outside the reactor pool.

Revise TS 7.2 and/or TS 11.4 such that they require appropriate radiation monitoring (including airborne radiation monitoring, if needed) when irradiated fuel is being moved outside the reactor pool. Alternatively, justify why no changes are needed.

32. (New question) By letter dated April 28, 2021, Aerotest proposed changes to TS 7.6 to replace “detector packets containing a series of threshold detectors” with “dosimeter” (in Enclosures 1 and 2 to the April 28, 2021, letter) or “dosimeters” (in Enclosure 3 to the April 28, 2021, letter), and to replace “post-accident” with “area.” With the proposed changes, TS 7.6 reads as follows (Enclosure 3 version):

Radiation dosimeters shall be placed at several locations within the reactor building for area radiation analysis.

However, the basis for these proposed changes does not appear to be discussed in Aerotest’s April 28, 2021, letter, and the NRC staff is not clear what effect these changes have on the licensee’s ability to conduct radiation measurements. The regulations in 10 CFR 20.1501(a) require licensees to have appropriate radiation monitoring.

Additionally, Enclosures 1 and 2 to Aerotest’s April 28, 2021, letter provide proposed TS language that uses “dosimeter,” while Enclosure 3 uses “dosimeters,” and it is not clear which version is intended.

Provide a description of the effect of these proposed changes on the ARRR facility, and a justification to allow the NRC staff to determine whether the proposed changes continue to ensure adequate area radiation monitoring; and, clarify which version of the TS language is intended. Alternatively, justify why no additional information or TS changes are required.

33. (New question) By letter dated April 28, 2021, Aerotest proposed changes to TS 12.1.6.3, which reads as follows:

Determining whether proposed changes to the facility or procedures are allowed without prior authorization by the NRC, as detailed in 10 CFR 50.59,;

There appears to be a typographical error (inadvertent comma) after “50.59”.

34. (New question) By letter dated April 28, 2021, Aerotest proposed changes to TS 11.4, which reads as follows:

The transfer of Irradiated fuel in the reactor tank, storage pits and facility shall be conducted by a minimum staff of two; a Certified Fuel Handler (CFH) and an additional person trained In radiation safety. The staff shall monitor the operation using a hand held Gamma/Beta radiation monitoring instrument. The Radiation Safety Officer or deslgnee shall be present for irradiated fuel transfers outside of the reactor tank.

The following text was omitted:

but within the facility. Under no circumstances is fuel to be transferred to or stored in the core lattice.

Confirm this change was intended.

35. (New question) By letter dated April 28, 2021, Aerotest proposed changes to TS 12.1.1, which reads as follows:

Aerotest Operations President {Level 1} shall have the responsibilities for all activities associated with obligations and processes associated with operating Aerotest Operations which Includes complying with license and Technical specifications, facility physical security and safety programs. The President of Aerotest Operations, Inc. shall report to the Board of Directors of Aerotest Operations, Inc.

The NRC staff notes that “specifications” is not capitalized in TS 12.1.1, but is capitalized in all other instances. Consider capitalizing “Specification” for consistency.

36. (New question) The NRC staff notes the term “college level” and “college-level” are used throughout various TSs. Consider using a consistent form (with or without the hyphen) in the TSs.

DRAFT