# AEROTEST OPERATIONS, INC.

3455 FOSTORIA WAY • SAN RAMON, CA 94583 • (925) 866-1212 • FAX (925) 866-1716


January 9, 2012
**AMENDED AND RE-SUBMITTED**
January 11, 2012

Mr. Spyros Traiforos
Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Traiforos:

As per our telephone discussion earlier today between Jesse Quichocho, Patrick Isaac, Spyros Traiforos and Sandra Warren, we are reporting that in our annual fuel inspection from December 5-12, 2011, we discovered four aluminum TRIGA elements with what we assume are non-displaced cracks. Although not precisely measured, these cracks may be in a non-fuel area. While we do not believe they are an immediate safety issue, they are certainly significant defects.

The following issues were discussed on the phone:

1) The site characterization done on the facility in 2011 revealed that the resin in the demineralizer contained some Cesium-137 and transuranics that would indicate a fuel failure. At that time, we went back through all of our fuel inspections for the last 5 years and realized that there was an element which had been removed from the core in 2007 that was the most likely candidate for a clad failure. We reported that element to Cindy Montgomery on September 19, 2011, and in a later conference call with Al Adams, it was decided that the proper course of action would be for Ms. Montgomery to summarize the call in an email to Patricia Silva, which she did. The monthly pool water surveys on our own equipment had not revealed the presence of Cesium, but the resin does concentrate radioactivity.

2) Our fuel inspection for 2011 required us to do a 100% inspection of all fuel elements. Our inspection procedure calls for a different 20% of the core to be inspected annually, and after five fuel movement programs, 100% of the core must be inspected. We performed fuel movements from December 5 -7, 2011, with a normal-speed video review on December 8-12, 2011. Although the fuel inspection remains an open item at this time because there are several maintenance/administrative items left open (such as calibrating the control rods upon re-assembly), we completed the general fuel inspection operations on December 12, 2011, as far as we could go at that time without re-assembly.



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3) As of the 2011 inspection, we now have 27 elements that cannot be removed from the grid plate because they have swollen in some manner, usually in the upper non-fuel area. We also have 11 stuck graphite elements that have no fuel at all in them. The four elements that were discovered to be cracked in this inspection are all among the 27 stuck elements.

4) The continuous air and water monitors were usually set at 10% of the Emergency Action Levels and did not annunciate in the last 5 years except for occasional 3-5 second responses from the water monitor which were assumed to be the "bubbles" that have been discussed in the TRIGA community from uranium trapped in the welds of the stainless steel elements. Base level counts have been increasing since the 1980's but have always remained below 10% of the Emergency Action Levels.

5) Aerotest has not discharged any water since the shutdown. The last time the reactor went critical was December 5, 2011 at 100w for an excess reactivity measurement as required before the fuel inspection. We did a loss-to-power briefly at 250kw on October 4, 2011. A thermal power calibration was performed for 1:05 hours at 205kw and 0:01 hours at 250kw for another loss-to-power.

6) Paragraph 10.2 of our Technical Specifications requires that we not operate the reactor if any significant defects are present. Our Tech Specs also define "operating" as not being shutdown. Therefore, since the Tech Specs and our Critical Assembly procedure were now in conflict, we wrote a Temporary Change to a Procedure on December 12, 2011 to our Critical Assembly and Power Calibration (attached). The Temporary Procedure will have to be renewed while we apply some engineering to resolve this situation.

7) The issues we will work on immediately are: removing the instrumented element, possibly by sawing off the thermocouple; maintaining accountability of the elements if we drop them out from below the grid plate, making a tool to pick them up from the bottom grid plate, discussing the issue with General Atomics, RSC meetings, etc. A potential possession-only license amendment still being discussed would affect how things are handled.

Since we have to access the stuck elements soon, we left the good elements in the storage racks, so what we have now is really a subcritical assembly. We still have all of our compensatory security measures in place.

We will maintain contact with Spyros Traiforos to keep him informed on the status.

On behalf of Aerotest Operations, Inc., I certify that the content of this letter contains information that is true and correct to the best of my knowledge.

Sandra L. Warren
General Manager