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August 15, 2013

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

Dear Mr. Traiforos:

As per my telephone conversation with you earlier today, we are reporting that during our annual fuel inspection from July 24-26, 2013, we discovered two more aluminum fuel elements with non-displaced cracks, S/N 612E and 630E. The cracks are both longitudinal cracks at about 22" from the bottom of the element, in the non-fuel area near the fuel boundary.

We are obligated to inspect 20% of our fuel elements every year, and 100% after 5 years. Even though we did a 100% inspection in 2012, we chose to inspect all of the uncanned aluminum elements this year (55 of 104 elements in the pool) because we wanted to be aware of any possible changes that may have occurred. We compared the video from the 2012 inspection with the 2013 inspection, with the following results:

S/N 612E: This element had been removed from the core in 2005 and had been stored in the wall storage rack since then. The visible separation was not apparent in the 2012 inspection:

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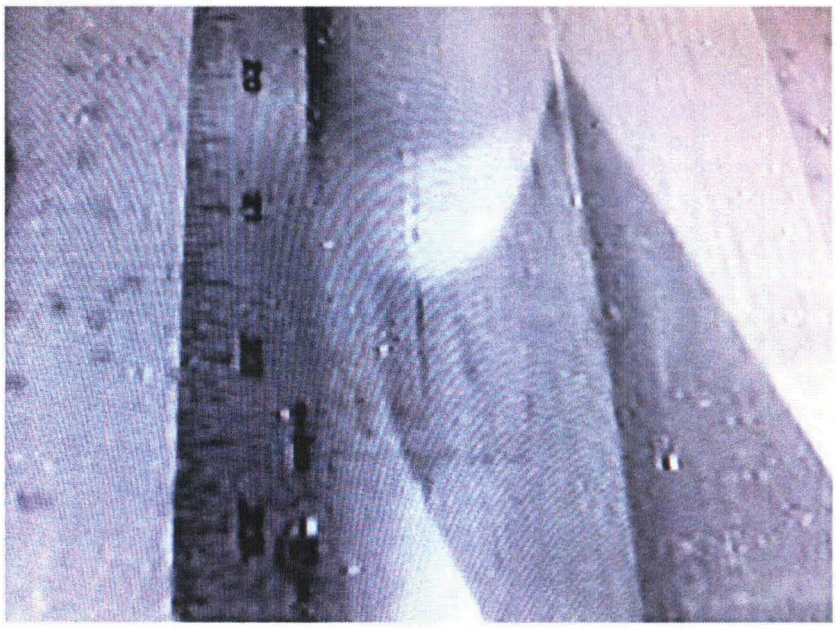
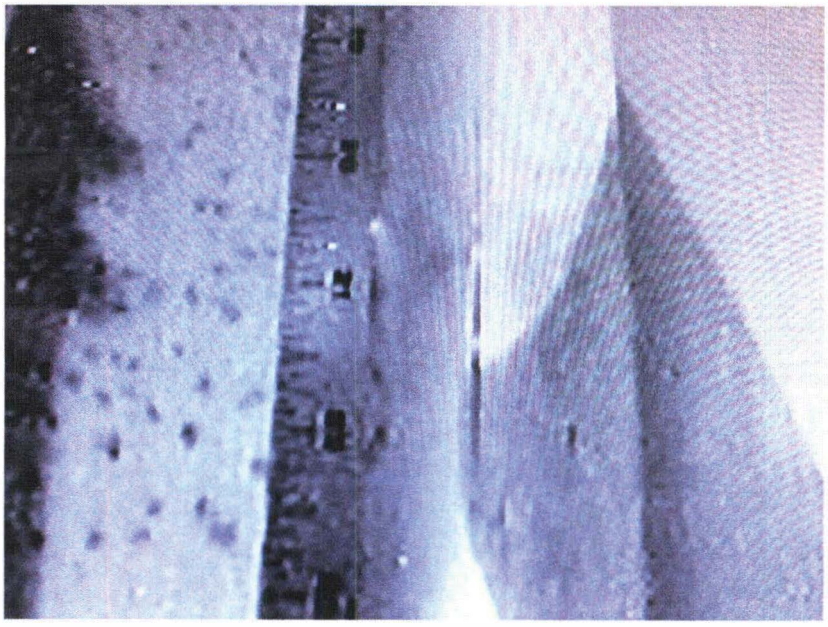
It is clearly visible now in 2013 in the same position:



Please note that the elements are mounted in our inspection fixture which we have been using since 2012. The two different inspections have the camera (which is on a pole that we move up and down) in a somewhat different angle position for each inspection effort, so the view is not precisely the same for the four still shots taken off of the video. We attempted to get the best still shot we could to show the worst view of the crack for each year. On the full video, the crack can appear longer in 2013 when the light hits it right.

S/N 630E: This element was previously one of the elements that would not fit through the upper grid plate prior to the fuel removal work done in 2012. There was a vertical line on the elements in 2012 which evidently caused much discussion among the fuel inspection crew at the time. Also present poolside was Craig Bassett of the NRC. The 2012 video (which has no audio discussion since the camera is underwater) lingers for a long time on the area in question. After shining the light around in different areas, it was decided that there was no depth for light to go into, and therefore because of the straightness of the line, it was probably just a vertical scrape caused by rubbing the element against the storage rack or grid plate while lifting it upward. All of our previous cracks were more jagged than this:

In 2013, the vertical line appears wider, and there is now some depth similar to a groove. Please note that the last picture is upside down from the others; we paused the video shot and took the pictures with an iPhone. For some reason, the computer flipped the image when I converted it from an iPhone to a jpeg image, but you can see the mark right down the middle. It is obvious there has been a change that has developed over the year. There is also a little pea of material in the center of the crack in two places, perhaps just an area where the clad did not open up:



Both of these elements still appear to have very good structural integrity. There is no obvious evidence that either of these cracks has gone all the way through the clad. Moving the lighting around does not appear to show a deep area where light penetrates only when directly in front of the crack, therefore it seems to us that the crack is not as deep yet as some others we have seen. Since July of 2012, these elements have been stored in subcritical assembly storage racks. Therefore, these elements have not received any kilowatt hours or even been in close proximity to other elements or a neutron source while these changes have been occurring. The pool water chemistry is still extremely good, less than 2 micromhos of conductivity.

As you know, in December of 2012, we canned all of our elements that had any cracks in them, for a total of 22 canned elements so far. We do have 2 additional cans available right now, but unless the NRC would like us to consider otherwise, we would prefer not to can these elements at this time. If we can these elements, we will not be able to inspect them again without removing them from the conditioned cans. Putting them in the cans where they are in a dry environment will change the conditions for these elements. We would like to observe these elements over the next year in the same environment to see how the areas might change. This is a good opportunity to get information about cracking in aluminum elements while the elements are clearly still structurally sound. Our pool water counts remain low as they have since we canned up the other elements, so we don't believe that they are leaking any significant isotopes.

We currently own a total of 77 aluminum elements at the ARRR. There are 22 Al elements canned, conditioned, and stored at the bottom of the pool. There are 55 Al elements exposed to water in the pool storage racks. We also have 27 stainless-steel used elements that are exposed to water in the pool storage racks, and 12 unused new elements in storage.

We can make copies of the videos in question which we can send to the NRC if desired.

Kind Regards,

Sandra L. Warren
General Manager