12/14/22 C-10 Statement Guide

CLARIFYING INFORMATION

Background of ASR issue:

- 2009 discovery
- 2010 license renewal application (a little coincidental that this happened so close to the discovery, 20 years early before their then 2030 expiration date, with no mention of ASR?)
- In 2010, the NRC reported they were without a technical basis or regulatory basis for ASR, the industry had no experience or knowledge of ASR concrete degradation, and ASR research was limited and no long-term studies on nuclear plants exists.
- In 2011, the NRC reported that industry inspections must determine the extent and rate of ASR concrete degradation as it was an active, on-going form of degradation that was also not self-limiting and would continue to fail indefinitely.
- 2012 ASR is identified in 131 areas, these are only the areas where the ASR is so advanced that the cracks have reached the surface.
- In 2014, the NRC and the National Institute of Standards and Technology (NIST) signed on a interagency agreement to study ASR's structural performance on nuclear power plants.

- 2018 legal challenge, 2019 ruling with stricter guidelines), summary of petition.

In that ruling, the ASLB decided that NextEra must "be capable of fulfilling their intended functions" which included the timing of the frequencies of the ASR Structures Monitoring Program (SMP). The frequency, timing and accuracy of the Seabrook NextEra SMP are critical to keep the public safe.

Cited quote: Ronald M. Spritzer, Chairman Nicholas G. Trikouros, Dr. Sekazi K. Mtingwa, Docket No. 50-443-LA-2 ASLBP No. 17-953-02-LA-BD01 August 21, 2020, page 140

C-10 is focusing on two possible outcomes, and we would ask that at least one be brought to fruition:

1. If we are denied on the basis of not providing additional information than already known by the NRC, then we ask if this is an offer and opportunity for C-10 and/or ASR experts to gain entry into the plant to do an independent assessment of the ASR? How else can we get more information than what is made publicly available? We are not allowed to see where violations go once cited on the inspection reports, as they are moved the corrective

action list which C-10 and the public is not allowed to have access to see if/how/when violations are being resolved so that we can suggest better scientifically sound alternatives, hold accountable regulators and industry for undue delay. OR,

2. If C-10 and the public is not allowed to gain access to the plant, or at the very least be provided through FIOA of other venues all of the quantitative and qualitative measurements of the ASR data collection via visual and instrument collection, then how would the performance review board suggest we meet the 2.206 threshold?

   C-10 offered to withdraw the petition should it make it more streamlined for the NRC choose to electively investigate and if appropriate issue a confirmatory order on its own compelling the licensee to adhere to the current license requirements and in a certain time frame. The list of tasks that need to be addressed is likely much more than just the missing extensometers, only a thorough investigation focused on the ASR, logically and ideally with at least one outside ASR expert included, will lead to meaningful progress towards compliance.

The standard for regulation across most federal agencies is that the best available control technology be used to mitigate public safety and health risks. Does the NRC feel that their regulation and enforcement on ASR fits well within those guidelines? As everyone well knows, innovation is constant and so we hope that the Performance Review Board takes this moment as an opportunity to accept our petition to at least move into the next phase of at least performing a full investigation of the issues described in our petition.

In the absence of that, if C-10 or concerned ASR scientists really were given access to the ASR quantitative and qualitative data for one or more structures, they could provide examples of the most current technologies which are being used to models ASR damage inside structures, which everyone can surely agree provides more information than surface cracking when calculating a structure's remaining integrity and strength. This could include an evaluation of the best available technologies which can then be included in a confirmatory letter or action to be adopted by inspectors and/or the licensee for proper ASR tracking. The data is already being collected, the added cost of a single ASR expert contractor, or

advanced modeling software, is a drop in the licensee's operating budget and cannot reasonably be construed as an undue burden.

What we really deserve here is an investigation into the actual current state of ASR at the plant, and how well resourced the NRC and plant are to handle the license requirements related to ASR. What would it take to get an update to that 131 areas affected figure from 2012? Undoubtedly, every rational person here can presume that the ASR would be found in many more areas if a concerted effort was launched to truly learn of its extent. And if the NRC found it prudent to require a list of measurement and mitigation measures once ASR is identified, than it believes that ASR poses a risk to operability and safety of that structure, therefore it would be rational to believe that the NRC would want to know every structure that has ASR so that those measures can be taken at all of them.

SUPPLEMENTAL INFORMATION

In the time since our October 4 submittal of this petition, the 3rd quarter Integrated Inspection Report was published, and included

a repeat green Non-Cited-Violation for failure to use proper compensatory fire patrol measures. That same violation was published less than a year prior in the 2021 Q4 IIR, for a different area in the plant. This speaks to the resource issues at the plant which are well documented, including a mass resignation of seasoned employees causing lower staff numbers, inexperience, and diluting even further the little ASR knowledge that had been earned so far. To this day, the licensee nor the NRC has contracted an independent ASR scientific expert to collaborate on compliance measures. A team of PhD structural engineering students designing the buttresses to support the Tier 3 structure facing the worst of the ASR damage and nearing their operability thresholds, does not to me seem a reasonable attempt at hiring an expert. We are aware that the licensee is hiring an independent audit company to help with compliance, this too avoids a logical and attainable additional or alternative solution of hiring one or more ASR experts to oversee compliance including the soundness of taking the required qualitative and quantitative measurements and projecting trends until the next inspection interval, something the licensee has struggled with as shown by the Green NCV in the 2021 Q4 IIR.

Also included in the 2022 Q3 quarter report was an observation that an area in the cooling tower as identified as having ASR and that once measured it was near the allowable threshold. It is our understanding that the inspectors identified this area, why and how was this missed by the plant staff? Given that this is an incredibly humid environment, and moisture is one of the primary drivers of ASR progression, we are deeply concerned about the rate of progression even beyond the near threshold limits already observed. Our specific questions and concerns about this new finding are forthcoming and may result in another petition if this one is not ultimately accepted, otherwise if this petition is accepted the NRC's investigation would logically include this newest finding.

Where ASR is being tracked consistently in the structures that are already identified, the findings are worse than expected, moving faster than inspected, and new areas of ASR are being discovered in more critical structures. The license requirements are not nimble enough and even if fully complied with would not be sufficient. Then we are adding in the fact that the ASR related license requirements are repeatedly neglected out of either, or a combination of, the licensee's incompetence or willful negligence. The NRC, as stated by the inspectors themselves, have been doing

their best with the resources available but cannot possibly check every single ASR affected structure, let alone properly assess what new structures to add to the ASR list. The reliance on the use of the “sampling” technique, which has been historically very effective at measuring competency and overall compliance with most nuclear reactor operations, is showing to not be suitable for ASR. Having an entire area neglected, or 7 areas like those that were missing extensometers, or in particular a critical area like in the cooling tower, and for that oversight and ASR progression to go undiscovered until an inspector finds it, because it is coincidentally part of the sampling for that inspection interval, is not enough.

C-10 is trying all avenues to get the ASR issue the attention and resources it deserves. C-10 requested and was granted a meeting with the Atomic Committee on Reactor Safeguard (ACRS) in April 2022, with C-10 members, an ASR scientific expert, legislative aides, and various NRC participants from committee members to inspectors. This meeting was focused on the ASR issue at the plant, and aimed to compel the ACRS to create more stringent guidelines pertaining to the ASR progression as compared to Seabrook’s current license terms “NextEra Engineering

Department Standard 36180, “Structural Monitoring Program.” C-10 and Dr. Sauoma submitted letters containing specific requests and the associated evidence to support them in June. Those questions are still left unaddressed with 6 months of no reply, until a very recent update earlier this month that they were still under review by the committee, after our many email and phone follow up attempts.

I have selected excerpts from those documents which are to our petition. These focus on the “Corrective Action” program designed and implemented by structural engineers hired by NextEra who, as we were told by NRC inspections at the annual public meeting in, have no ASR experience:

a. Wouldn’t it be more appropriate to label the slide “Temporary Corrective Action” rather than “Corrective Actions” as no one surely does not believe that this is the final remedy at this location? <This is another example of how ASR is novel and unique from other workflows the NRC has used in the past. A leaky pipe will receive a corrective action and it will be considered a permanent fix requiring no further review of that part - that will never be true for ASR>

b. What kind of analysis was performed prior to installing bolts and braces? And was it performed by those with ASR expertise?

c. Aren't you concerned that by constraining the expansion along one direction, you are simply reorienting it in the orthogonal ones (with a combined ~33% increase)?
d. Could there be a point were too many of these localized patches (i.e. Band-Aids) become alarming. If so, is it quantified?"

"Mention has been made in a publically available transcript, that advanced finite element analysis are being performed by "very smart...PhD structural engineers",
a. ASR Modeling is quite complex, and well understood by only a handful of people in the world (no serious researcher has been treating ASR as thermal expansion for well over 15 years!!). What is the experience, peer reviewed papers written by those "very smart" people.
b. For a finite element code to make reliable prediction, it must first be validated against benchmark problems.
i. Has the code (using the ANSYS engineering software presumably) been validated for ASR? If so, is there such a public documentation?
ii. Would NextEra agree to perform a validation of their studies by analyzing (and reporting) a battery of 10 benchmark problems

given in reference (and addressed by researchers in the US, Canada, France, and Japan

These are all poignant questions, immediately thought of by an ASR expert, upon learning of these plans. This is just one example of where critical subject matter expertise would strengthen and improve the quality of actions taken by the licensee and NRC is the pursuit of compliance and safety when facing the ASR problem. Again, if there were prompt and complete replies to these inquiries, perhaps C-10 could have included new quantitative analyses which the PRB may deem “new” information, as the reasoning for your denial suggests we provide in order to be accepted.