

From: Gray, Mel
Sent: Thursday, October 16, 2014 4:03 PM
To: debbie@[REDACTED]
Cc: Cook, William; Dentel, Glenn
Subject: Response to Emails Dated September 3, 8, and 23, 2014 regarding the Seabrook Station

Ms. Grinnell,

I want to take this opportunity to respond to your emails dated September 3, 8, and 23, 2014.

Your email dated September 3, refers to an NRC Office of Investigations (OI) report, Case No. 1-2013-009, recently released in part under FOIA request 2014-0252. You reference page 8 of the OI report, which identifies Seabrook Station corrective action document AR 01641413, entitled "Craze Cracking on Containment Concrete." The AR (Action Request) description states, "The reported craze cracking in the containment shell is being evaluated as part of the extent of condition evaluation associated with AR 574120, which identified a loss of concrete strength due to ASR." Your email asks "how was this done?" From the context I believe you mean, how did NextEra staff conclude craze cracking in localized areas of the containment structure resulted in a decrease in compressive strength? Your email also included statements about the NRC not requiring core samples and not requiring "a walk down for ASR."

Your email dated September 8, included statements regarding the OI report and your view that ACI 349.3R, "Evaluation of Existing Nuclear Safety-Related Concrete Structures," requires core samples.

Your email dated September 23, 2014, reiterated your view that core samples should be removed from "tier 3" areas of the containment structure and that the NRC should request this be done under ACI 349.3R.

Response:

NextEra staff completed walk downs of concrete structures at the Seabrook Station and observed "crazed cracking pattern" on the containment concrete shell between azimuth 310 and 320 at the minus 30-foot elevation in the containment enclosure building annulus region. As referenced above, the NextEra staff documented this observation in AR# 01641413, dated April 20, 2011. Seabrook staff completed these walk downs as a part of the extent of condition review of station structures under AR# 574120, which was previously initiated on August 18, 2010.

AR 574120 documented the initial results of core samples removed from the control building B electrical tunnel. The testing involved penetration resistance and core compressive strength tests. The 2010 core compressive strength testing results characterized an average 22 percent reduction in concrete compressive strength (compared to the average 1979 concrete placements using 28-day cylinder compressive strength test results). NextEra attributed the reduction in compressive strength to ASR. No cores were removed from the containment reinforced concrete shell, but within the context of the extent of condition review, NextEra conservatively assumed any ASR-affected concrete structure has (or will) undergo a reduction in compressive strength. This is how NextEra reached their conclusion described in AR 01641413.

The NRC's conclusions regarding the results of this OI investigation and subsequent report are documented in publically available NRC letter dated April 17, 2014 (ML14107A074). The NRC concluded the specific issues investigated by the OI were not substantiated.

With respect to NRC required containment inspections (in this context "walk downs"), a comprehensive IWL examination (the relevant section of the ASME Code) of the containment outer reinforced concrete surface is examined every five years. The 2010 IWL examination was performed by contractors for NextEra. However, the NRC staff did not agree with NextEra's initial view that this examination would satisfy their commitment to complete a comprehensive ASR walk down of all reinforced concrete structures potentially affected by ASR (Reference NRC IR 0050443/2012009, Section 7.2, available in ADAMS Accession

No. M112338A283). Consequently, NextEra will be re-performing the IWL examination in 2015 and specifically look for evidence of ASR on the outer reinforced concrete shell. No additional ASR-related inspections or testing of containment have been recommended or imposed by the NRC.

Based upon our reviews to date, NextEra is conforming to the evaluation guidance in ACI 349.3R. Specific to your inquiry, ACI 349.3R does not require drilled cores to evaluate the condition of reinforced concrete structures. Drilled cores are one of a number of methods available to licensees to examine structures and support a structural evaluation, if appropriate. NextEra has concluded that reinforced concrete structures at Seabrook are susceptible to ASR due to the use of slow-reacting aggregate in the original construction concrete mixes. Periodic visual examinations of all safety-related and important to safety concrete structures at Seabrook are conducted in accordance with the site Structures Monitoring Program (Structural Engineering Standard Technical Procedure 36180, Revision 3), which mirrors the guidance of ACI 349.3R.

The NRC's conclusions related to the localized ASR-affected areas of the containment structure are documented in NRC Inspection Report 0050443/2012010, Section 9.3 (ADAMS ML13221A172). The NRC reviewed and found acceptable the Prompt Operability Determination (POD) completed for the containment structure. Similar to the open PODs for ASR-affected concrete reinforced structures at Seabrook, the containment structure non-conforming ASR condition must be monitored for further degradation and adverse impact on structural performance. Resolution of the containment non-conforming condition may similarly be addressed by NextEra, for the long term, in accordance with 10 CFR 50.59 and/or 10 CFR 50.90.

Should you have any additional questions or concerns, please contact Mr. William Cook or myself.

Sincerely,

Mel Gray

Chief, Engineering Branch 1
Division of Reactor safety
NRC Region I