



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

NEXTERA ENERGY SEABROOK, LLC

(Seabrook Station, Unit 1)

Docket No. 50-443-LA-2

ASLBP No. 17-953-02-LA-BD01

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**SUPPLEMENTAL TESTIMONY OF VICTOR E. SAOUMA, PH.D
REGARDING ADEQUACY OF PETROGRAPHIC DOCUMENTS
TO SUPPORT MINERALOGICAL COMPARISON
BETWEEN SEABROOK CONCRETE AND LSTP TEST SPECIMENS**

1. The purpose of this supplemental testimony is to explain how data recently produced by NextEra, regarding the mineralogy of certain aggregates from a New Mexico quarry, affect my evaluation of the comparability of the Seabrook aggregates with aggregates in test specimens used in the Large-Scale Testing Program (LSTP) at Ferguson Engineering Laboratory (FSEL). This data is found in the following document: SGH Project No. 120766, Examination of Aggregate Samples from New Mexico by the University of Texas, in Support of the On-Going Evaluation [of] the Impact of ASR, Seabrook Nuclear (Sept. 17, 2012) (FP100750, Rev. 1) ("Santa Ana Aggregates Report").
2. In my previous testimony, I stated that NextEra has not provided enough information to allow an adequate comparison between the aggregates used in making Seabrook concrete and the aggregates used in the LSTP. As I stated in my Direct Testimony, both the physical and the chemical characteristics of the concrete and its constituents are important to a comparison between Seabrook concrete and test samples. Exh. INT001-R, § C.2.1. Reactivity of the aggregate has a significant effect on the characteristics of the gel and microcracking. Exh. INT028, §§ D.1, D.6, D.7.2, D.8.1. I also testified to these points during the hearing, at tr. 981-2, 984-85, 1073-76, and 1082-83.
3. The Santa Ana Aggregates Report does contain some information about the mineralogy of aggregates. But the information is inadequate in two key respects. First, it is not clear from the document whether the Santa Ana aggregate was used in the LSTP, or whether it was merely sampled. Second, assuming the Santa Ana aggregate was used in the LSTP, the document lacks a direct mineralogical comparison (both physical and chemical) between the test aggregate (and sand) and the aggregate (and sand) used in Seabrook structures. The qualitative description provided on pages 3 and 4 of the Santa Ana Aggregates Report is insufficient. As I previously testified, a reasonable mineralogical comparison would include a table with side-by-side columns that compare each of the

specific mineralogical characteristics of the test specimens with Seabrook core samples, quantifying them to the extent possible.

4. Nor have I found such a mineralogical comparison in any of the other documents that NextEra has identified as having information about the petrographic characteristics of Seabrook and LSTP test specimen aggregates, including Exhibits NER022-R Appendix K, NER076 and the six documents referenced on page 2 of the Atomic Safety and Licensing Board's Order of October 16, 2019.
5. For these reasons, I conclude that NextEra has not provided enough information to allow a comparison between the mineralogy of Seabrook concrete and LSTP test specimens, and consequentially the concrete is not proven to be sufficiently representative.

I declare that the foregoing testimony is true and correct to the best of my knowledge, and the opinions expressed herein are based on my best professional judgment.

Executed in accord with 10 C.F.R. § 2.304(d) by
Victor E. Saouma, Ph.D

December 20, 2019