UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Kristine Svinicki, Chairman
Commissioner Jeff Baran
Commissioner Annie Caputo
Commissioner David A. Wright

In the Matter of	)	
	)	Docket No. 52-025
Southern Nuclear Operating Co.	)	
	)	NRC-2008-0252
Vogtle Electric Generating Plant, Unit 3	)	April 20, 2020

NUCLEAR WATCH SOUTH PETITION FOR PUBLIC HEARING

On February 12, 2020, the Nuclear Regulatory Commission (NRC) published a notice of Southern Nuclear Operating Company's intended operation [of Vogtle Electric Generating Plant, Unit 3] and opportunity for hearing on conformance with the acceptance criteria in the combined license; and associated orders (ITAAC). The deadline to request a public hearing was to be April 13, 2020. On April 3, 2020, Nuclear Watch South requested a deadline extension based upon the tremendous disruption of life from the novel coronavirus (COVID 19) pandemic and global quarantine which is also expected to delay construction of Vogtle Unit 3. The Commission set a deadline of April 7, 2020, for parties to respond. Nuclear Watch South's request was opposed by both Southern Nuclear and NRC Staff although NRC Staff agreed to a one week extension. On April 9, 2020, by Order, the Commission extended Nuclear Watch South's deadline by one week to April 20, 2020.

Nuclear Watch South hereby submits this Contention of Omission opposing Southern Nuclear's Notice of Intended Operation of Vogtle Unit 3 situated on the Savannah River in Burke County, Georgia. Nuclear Watch South's petition sets forth with specificity why Southern Nuclear's Notice is grossly incomplete and should not have been filed for review. In preparing this filing, Nuclear Watch South relies on the expert testimony of

civil engineeer Arthur Frank Higley who was ITAAC project manager for Vogtle 3 & 4 from 2016 to 2018. Mr. Higley's declaration and resume are attached.

I. BACKGROUND

We have before us a first-of-its-kind ITAAC licensing request for the first nuclear power reactor for which a license has been sought in over three decades. The NRC ITAAC hearing process was formulated to replace the operating license which was dissolved in the development of one-step licensing, that is, Combined Operating License (COL), a rule adopted by the NRC in 1989, to "improve regulatory efficiency and add greater predictability to the process."[1]

The Commission, Southern Nuclear/Georgia Power, the NRC Staff, Vogtle contractors, and interested parties, are therefore are all found now in virgin territory charged with the asesome responsibility to verify the safety and accuracy of Vogtle Unit 3 construction of a Westinghouse-designed AP1000 reactor prior to licensing Southern Nuclear/Georgia Power to load nuclear fuel and begin operating the risky new power reactor.

CONSTRUCTION PROBLEMS FROM THE START

Vogtle Unit 3 reactor construction problems with the Westinghouse AP1000 reactor have been well documented in the public eye. Indeed, almost immediately after Georgia Power obtained its NRC license to begin construction in February 2012, the NRC halted construction in April 2012 due to improperly installed rebar. In October 2013, the project manager and reactor designer Westinghouse entered into litigation against both its lead contractor CB&I and owner Georgia Power over who was responsible for the cost overruns which were racking up from do-overs and delays. In November 2013, the first concrete was poured on Unit 3. In December 2013, the NRC stopped work due to a finding of "significant breakdown in the Quality Assurance of CB&I."

[1] Backgrounder on Nuclear Power Plant Licensing Process https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/licensing-process-fs.html

Problems have also been well documented with Vogtle suppliers. Non-nuclear grade rebar was already installed before the problem was caught and corrected, or at least analyzed. Significant modules from start-up suppliers such as Shaw Industries in Lake Charles, LA, were famously off-spec, leading to supplier delays and forcing Westinghouse to establish repair workshops on the Vogtle construction site.

Contractor turnover on the Vogtle construction project has been high. In 2013, CB&I acquired Shaw Industries but module construction problems continued, then in 2015 Westinghouse acquired CB&I as part of its lengthy litigation resolution. In 2017, Westinghouse declared bankruptcy and Georgia Power took over as project manager on its own Vogtle project, hiring first Fluor, and then Bechtel as lead contractor.

Shortly after Westinghouse's bankruptcy in March 2017, construction was stopped in July 2017 at two AP1000 reactors being built on the Summer site in South Carolina. In the wake of Summer's demise, an internal Westinghouse report surfaced from 2011, in which an independent contractor discussed some of the fundamental problems which were hamstringing Westinghouse, who had no previous experience managing a construction project of the magnitude of an AP1000 reactor.[2] Prominent in the findings were the absence of an integrated project schedule and a practice of waiving professional engineer review and stamping of certain design documents, a practice which is presumed legal, but has practical negative impacts in the construction field as it led to unconstructible documents in the field, stop work/change orders and a confusing array of design revisions.

ITAAC PROGRAM PROBLEMS

In 2016, the Vogtle ITAAC team had 27 associates and managers plus project manager Westinghouse's designers and contractors on the Vogtle ITAAC team. The ITAAC program under Westinghouse was quite robust as, in addition to an adequate number of associates, License Amendment Requests (LARs), the common cure for design

[2] The Case for Paradigm Shift: An assessment of project delivery risk against the backdrop of industry practice, by M.G. Eveges, PE, August 2011. http://www.nonukesyall.org/pdfs/EX-G_Paradigm_shift_2011_Westinghouse.pdf

nonconformances, could be handled efficiently because of the hands-on presence of the Westinghouse AP1000 reactor design engineers.

Georgia Power took over as project manager in the wake of Westinghouse's bankruptcy in March 2017 and transferred civil engineers serving as ITAAC project managers to the new lead contractor, Fluor, to address the shortage of field engineers. This move left the ITAAC team with only 20 associates. The decision by Southern Nuclear/Georgia Power ignored the standard published in NEI 08-01 ("Industry Guideline for the ITAAC Closure Process Under10 CFR Part 52" (ML14182A160) which states in Sec. 10.7: "Staffing projections should account for the surge in submittals, and allow sufficient time for staff indoctrination and training." *NEI 08-01, Sec. 10.7*

In July 2017, Bechtel replaced Fluor as lead contractor and Georgia Power radically increased the craft workforce and developed a more aggressive completion schedule while simultaneously reducing the number of ITAAC project managers to four project managers with mechanical/civil engineer qualifications. This was a problem for more than one reason. Concrete ITAACs require oversight and authorization signature by a civil engineer and the amount of concrete being poured and pumped at Vogtle is truly legendary. But at this point, the lone, 40-hour-per-week civil engineer was responsible not only for concrete, but also for protective coatings and mechanical. In 2018, the one remaining civil engineer was laid-off and it is uncertain how ITAACs were completed in the vital safety-related area of concrete afterwards. Judging by the information deficiencies in ITAAC #760, they have been unable to properly address the concrete ITAAC for the nuclear island. *See II.A. below*

In addition to insufficient staff, other problems with ITAAC standards were observed on the Vogtle site. There was a concerning trend for ITAAC review engineers to attempt to produce ITAAC without inspecting in the field. While it is possible to have qualified field engineers make inspections and measurements and report to the lead reviewer there was no official procedure or quality control on the practice to ensure qualified ITAAC people were making inspections and measurements.

As construction delays at Vogtle have become extended over several years, and chronic contractor and project oversight turnover occur, problems with inventory management and record-keeping have escalated. For instance, inventory will be recorded as received, but overwhelm efforts to track it in storage. Errors and delays have increased as materials are difficult to locate on-site. Similarly, it has become increasingly difficult and time-consuming to locate and obtain the documentation necessary to complete ITAAC due to eroding record-keeping management among vendors and departments.

Finally, in November 2019, the NRC issued violations to Vogtle for "deliberate misconduct" by two senior executives, Thomas Saunders and Mark Rauckhorst, who were involved in terminating employees who were "engaged in protected activity by raising concerns regarding design and code compliance issues in 2013 and 2014." [3]

These issues underscore the need for rigorous review of Southern Nuclear's Notice of Intended Operation of Vogtle Unit 3. Nuclear Watch South is very concerned that the NRC accepted Southern Nuclear's incomplete ITAAC notice for review and calls upon the agency to perform its role to protect the public from radiological harm by demanding proper ITAAC documentation from the would-be reactor operators and undertaking the most rigorous review of this new and untested reactor design.

II. CONTENTION OF OMISSION

Southern Nuclear Operating Company's notice that it intends to operate Vogtle Unit 3 does not contain sufficient detail for the NRC to find that the acceptance criteria in the combined operating license (COL) are, or will be, met as required by 10 CFR 52.99(c)(3). 10 CFR 52.99(c)(3) requires that the applicant must include sufficient information so that interested persons will have information on uncompleted ITAAC at a level of detail sufficient to address the Atomic Energy Act of 1954, Section 189.a(1)(B) governing public hearings. Likewise, there must be sufficient information for the NRC to complete its review of the application to load nuclear fuel. This standard

[3] NRC: Second nuclear exec wrongly ousted worker after safety concerns, by Matt Kempner, Atlanta Journal-Constitution, 11-22-19, https://www.ajc.com/news/state--regional/nrc-second-nuclear-exec-wrongly-ousted-worker-after-safety-concerns/xsztCJMc84sLdRotmHpp7K/

is also published in NEI 08-01 "Industry Guideline for the ITAAC Closure Process Under 10 CFR Part 52" (ML14182A160), p. 29, para. 2.

The ITAAC Determination Basis (IDB) requires Principal Closure Documents (*e.g.,* test reports, completed procedures, completed analyses, etc.) which are missing from the nuclear island and shield building ITAACs (#760 and #761), arguably the most significant safety features of Vogtle Unit 3. Southern Nuclear's Notice is grossly deficient and should have never been filed.

NEI 08-01 5.1.1 states that the licensee process for review and preparation of ITAAC Closure notification includes "Compiling and maintaining the documentation required for each ITAAC completion package." Southern Nuclear's decision to submit flagrantly incomplete UINs (uncompleted ITAAC notifications) instead of ICNs (ITAAC Closure Notifications) without the reports needed to make a determination of the validity of an ITAAC abuses the intention of the ITAAC review process and wastes the resources of both the Nuclear Regulatory Commission and the public.

Deviations and nonconformances from the design are resolved through, for example, License Amendment Requests (LAR) which create a vital paper trail. Nuclear safety is undermined by the defective attempt of Southern Nuclear to prematurely load nuclear fuel into Vogtle 3 with such thin evidence of its construction quality. Indeed, the ITAAC Review Status Report for Vogtle Unit 3 lists a total of 881 ITAACs. Of that number, 482 ITAACs have been deleted, leaving 399 ITAAC for Vogtle Unit 3. Of that number, 277 ITAAC are UIN, *i.e.* incomplete. Close to 70% of Vogtle ITAAC are incomplete, and two critical path ITAAC, the nuclear island and the shield building, were submitted virtually blank.

Nuclear Watch South does not have the resources to investigate all 277 UINs and so focuses below on two significant ITAAC for the nuclear island [ITAAC #760, Item 3.3.00.02.a.i.a] and the shield building [ITAAC #761, Item 3.3.00.02a.i.b] to show particular deficiencies which do not meet the legal threshold for regulatory review or a

public hearing and which, if left unresolved, pose significant safety threats from the first nuclear reactor built in 30 years and which is being licensed in a brand new untested safety review process.

A. **ITAAC #760, Item 3.3.00.02.a.i.a** was filed by Southern Nuclear Operating Company on November 22, 2019. This large ITAAC covers significant aspects of the nuclear island, *i.e.* the concrete walls, for Unit 3 and Unit 4. Besides the lack of detail in the ITAAC notice overall, it is irrelevant and confusing to include Vogtle Unit 4, which is not applying for fuel load in November 2020, and is further behind in construction than Unit 3. This is the first time an ITAAC review for a nuclear reactor has ever been performed and it should be obvious that attempting a Unit 3 safety review that includes random details about Unit 4 will not work and is potentially confusing and unsafe.

ITAAC findings for Item 3.3.00.02a.i.a [Index Number 760] listed in Southern Nuclear's notice and in the ITAAC Review Status Report do not agree. Southern Nuclear's notice lists 16 NRC findings with 11 different ML numbers. The ITAAC Review Status Report contains significantly more findings than are referenced in Southern Nuclear's Notice of Uncompleted ITAAC, *i.e.,* 42 inspection reports plus 8 vendor reports listed under 50 unique ML numbers. Of the ML numbers on Southern Nuclear's List of ITAAC Findings, five of them (ML13312A316, ML18317A396, ML18100A857, ML15175A446, and ML18101A168) do not appear on the ITAAC Review Status Report for Unit 3 at all. This discrepancy is disconcerting and potentially confusing, especially given the safety significance of the walls which are to contain the radiation within the nuclear island.

The list of references refers to numerous large documents without specificity as to page number. Of far greater concern are the references numbered from 4 to 9 which list reports that do not exist:

4. As-Built Summary Report for Unit 3 Containment Structural Modules, SV3-AAA-BBB-###
5. As-Built Summary Report for Unit 4 Containment Structural Modules, SV4-AAA-BBB-###,
6. As-Built Summary Report for Unit 3 Other Containment Internal Structures, SV3-CCC-DDD-###
7. As-Built Summary Report for Unit 4 Other Containment Internal Structures, SV4-CCC-DDD-###
8. As-Built Summary Report for Unit 3 Nuclear Island Basemat, SV3-EEE-FFF-###
9. As-Built Summary Report for Unit 4 Nuclear Island Basemat, SV4-EEE-FFF-###

One would expect for ITAAC #760 to contain, for example, LAR-19-005R1 because this large document addresses numerous nonconformaces and would be assumed to be relied upon to support completing the ITAAC. LAR-19-005R1 applies similarly to ITAACs #761, #762 and #763. In any event, the walls in ITAAC 760 have been completed for some time and the above listed reports should have been drafted and have examples of all the deviations already reported. Again, it is confusing and potentially dangerous to include Unit 4 documents in the ITAAC review for Unit 3.

Fuel load is planned for November 2020 and Southern Nuclear attempts to limit the amount of time for NRC, or Nuclear Watch South, to review all the containment internal structure deviations, which include welds, structural steel, rebar, concrete, walls, floors, and containment internal structures as listed in Table 3.3-7 and 3.3-1.

The likelihood for findings of nonconformance of concrete structures is very high. Vogtle construction relied heavily on pumped concrete, an admixture which poses certain problems in the high-heat and high-humidity environment of middle Georgia. Not only does pumped concrete have more of a tendency to form voids than poured concrete, but concrete has the property of covering up its attributes in the process of setting impeding the ability to perform meaningful visual inspection. If there are rebar misplacements, or surface honeycombing (a sign that internal voids may exist) which has been covered up by protective coating prior to visual inspection, nondestructive testing is required to verify that the as-built structure conforms to the design.

The potential for concrete voids is great at Vogtle, not only due to environmental conditions, but due to the complex walls which contain internal elements around which the thick concrete must flow. Voids in the walls of the nuclear island could prove disastrous as radiation can escape to the surrounding environment. Simply measuring the thickness and placement of the wall will be insufficient if the wall contains a void with zero material in it.

It is impossible to overstate the safety significance of the nuclear island. Failure to prove that the structure is built according to the design may result in catastrophic radiological exposure to the environment and public.

B. **ITAAC #761, Item 3.3.00.02.a.i.b** was filed by Southern Nuclear Operating Company on November 22, 2019. This large ITAAC covers the shield building and suffers from the same deficiency as the aforementioned ITAAC 760 in Part A. Besides the lack of detail in the ITAAC notice overall, it is irrelevant and confusing to include Vogtle Unit 4, which is not applying for fuel load in November 2020, and is further behind in construction than Unit 3.

The list of references for ITAAC #761 refers to numerous large documents without specificity as to page number. Of far greater concern are references numbered from 4 to 7 which list reports that do not exist:

4. As-Built Summary Report for Unit 3 Shield Building, SV3-AAA-BBB-###
5. As-Built Summary Report for Unit 4 Shield Building, SV4-AAA-BBB-###,
6. As-Built Summary Report for Unit 3 Nuclear Island Basemat, SV3-EEE-FFF-###
7. As-Built Summary Report for Unit 4 Nuclear Island Basemat, SV4-EEE-FFF-###

As stated above, one would expect for ITAAC #761 to contain LAR-19-005R1 as it documents the resolution to numerous safety-related nonconformances. The shield building walls have achieved significant elevation and the roof has been placed. Although the reports cannot be completed, there are many details that can be supplied in draft,

indicating the metodology and analysis that is planned to support this ITAAC review. And again, it is confusing and potentially dangerous to include Unit 4 documents in the ITAAC review for Unit 3.

Concrete issues with the shield building are particularly challenging. In addition to the impacts of high heat and humidity on pumped concrete, the shield building panels' complex inner structure and extremely tight tolerance at multiple intersections requires great expertise both to construct and to inspect. The concrete has to be exact at every corner and every intersection in order to have no gaps and for welding integrity to provide the as-designed, all-important radiological barrier between the nuclear island and the environment. Vendor failures with respect to the shield building panels posed a particularly difficult problem at the outset of Vogtle 3 construction. Chinese operation of Sanmen, the first Westinghouse AP1000 reactors built on Earth was delayed for more than one year by unexpected performance issues of the shield building in hot start-up. [4]

The potential for concrete voids is high for the shield building, not only due to environmental conditions, but due to the complex walls which contain internal elements around which the concrete must flow. Voids in the walls of the shield building could prove disastrous as radiation can escape to the surrounding environment. The effectiveness of the shield building as a radiation barrier will be insufficient if the wall contains a void with zero material in it.

It would be difficult to overstate the safety significance of the shield building. Failure to prove that the shield building is built according to the design may result in catastrophic radiological exposure to the environment and public.

[4] Troubled Chinese Nuclear Project Illustrates Toshiba's Challenges, by Brian Spegele, The Wall Street Journal, 12-29-16, https://www.wsj.com/articles/troubled-chinese-nuclear-project-illustrates-toshibas-challenges-1483051382

III. CONCLUSION

It is Nuclear Watch South's contention that Southern Nuclear prematurely filed its Notice of Intent to Load Fuel and that not only is there insufficient detail in the application for Nuclear Watch South to raise a specifc issue, but there is insufficient detail for the NRC to complete a proper safety review. Southern Nuclear's Notice should not be accepted for review at this time and the opportunity to petition for a hearing should be deferred until Southern Nuclear files an application with sufficient detail for review.

At this moment in history, Southern Nuclear and Georgia Power's apparent disregard for public health is on display as cases of the novel coronavirus COVID-19 mount in a steep curve on the Vogtle construction site. Southern Nuclear has ignored Georgia Governor Brian Kemp's stay-at-home order and kept 9,000 workers on-site, flaunting social distancing mandates during this unprecedented public health crisis. Local news outlets display pictures of empty soap dispensers, crowded dining halls and filthy port-o-lets,[5] as cases have mounted from the first positive test of COVID-19 on April 6, 2020 to 89 COVID-19-infected workers as this document is being filed on April 20, 2020.

Southern Nuclear/Georgia Power's disregard for their workers' health is unconscionable. It is urgent that Vogtle Unit 3 be properly inspected, tested, and analyzed for conformace with the design before being given a permit to load nuclear fuel. Nuclear Watch South calls upon the NRC to reject Southern Nuclear's incomplete ITAAC notice for review and to perform its vital role to protect the public from radiological harm by demanding proper ITAAC documentation for the first reactor built in this new millenium and by performing the most rigorous review of this new and untested reactor design under this new and untested safety review process.

[5] I-TEAM: 'It's really a furlough disguised as a layoff': New layoff agreement at Plant Vogtle could affect thousands of families, WRDW, 4-16-20, https://www.wrdw.com/content/news/I-TEAM-Its-really-a-furlough-disguised-as-a-layoff-New-layoff-agreement-at-Plant-Vogtle-could-affect-thousands-of-families-569704071.html

Respectfully submitted,

[signed electronically by]

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Attachments