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Docket No.: 52-025
Docket No.: 52-026

MAY 17 2016

ND-16-0753
10 CFR 52.99(c)(1)

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

Southern Nuclear Operating Company
Vogtle Electric Generating Plant Units 3 and 4
Treatment of Process ITAAC Closure Notification

Ladies and Gentlemen:

In accordance with 10 CFR 52.99(c)(1), the Licensees are required to notify the Nuclear Regulatory Commission (NRC) of the completion of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC). The closure process for ITAAC is based on the guidance described in NEI 08-01, "Industry Guideline for the ITAAC Closure Process under 10 CFR Part 52," which was endorsed by the NRC in Regulatory Guide 1.215. The purpose of this letter is to notify the NRC of methodology that was used and will be used for the "Process" related ITAAC and request that the NRC provide clarification on treatment of these ITAAC.

Specifically, Vogtle 3&4 COL includes five I&C ITAAC that are process related. These include ITAAC 2.5.01.04 [Index Number 519], 2.5.02.11 [Index Number 550], 2.5.02.12 [Index Number 551], 2.5.02.13 [Index Number 552], and 2.5.02.14 [Index Number 553]. During the recent inspection planning meetings and public phone calls, NRC staff has stated that these ITAAC are for implementation of design rather than a description of processes; as such, the ITAAC Completion Notification (ICN) should address implementation including requirements, detailed design, installation and operations/maintenance phases. Southern Nuclear Operating Company (SNC) believes such interpretation is inappropriate and does not meet the intent of the ITAAC. As shown in Enclosure 1, the ITA (Inspection, Test and Analysis) for these ITAAC states that "Inspection will be performed of the process …."

This issue was discussed in May and November 2014 CIP public meetings related to ITAAC completion (See ML13308B204 and ML14141A404). At the time, the staff concurred with the Licensees' interpretation to close the "Process" based ITAAC to the processes only. The staff also clarified that the NRC seeks confidence in rigorous processes by inspecting the implementation; therefore, they will continue to inspect the implementation under 10 CFR Part 50, Appendix B. Licensees and the industry found the approach acceptable.

Subsequently, SNC submitted the ICN for ITAAC 552 based on the inspection of the processes. The NRC accepted this ITAAC completion notification. As agreed upon previously and already used for the completion of ITAAC 552, SNC is requesting that NRC continue to complete the subject ITAAC based on the processes only rather than implementation. This approach does not impact the scope and mission of NRC for continued inspection of the implementation under 10 CFR Part 50, Appendix B.

Changing the intent of these ITAAC from "process" to "implementation" creates a condition where the ITAAC can no longer be closed prior to the fuel load since the PMS implementation documentation will be updated throughout the construction of the plant and beyond the fuel load (note that there is a large volume of hardware, software, analysis and testing documents that show PMS implementation). There is also potential for design changes based on Startup Testing lessons learned. Therefore, using "implementation" approach, ITAAC 550 and 551 would not have a clear completion point. In addition, ITAAC 550 includes a "maintenance" phase in the Acceptance Criterion. Closure based on the implementation of maintenance extends to the entire life of the plant. As a result, the ITAAC completion must not be based on the implementation, and should rely on the rigorous processes.

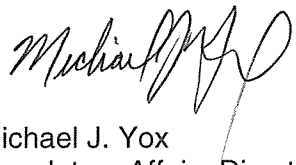
Enclosure 2 provides additional information supporting SNC's position. The following is a summary of Enclosure 2:

1. UFSAR Section 14.3 "Certified Design Material" explicitly states that, as part of the ITAAC selection methodology, processes are chosen. "Design-related processes have been included in the Certified Design Material for aspects of the AP1000 design likely to undergo rapid, beneficial technological developments in the lifetime of the design certification. Certifying the design processes associated with these areas of the design, rather than specific design details…"
2. UFSAR Section 14.3 "Certified Design Material" explicitly states "*In general, the certified design descriptions do not address the processes (…) Exceptions to this criterion are the selected design and qualification processes defined in the instrumentation and control portions.*
3. NUREG-1793 "Final Safety Evaluation Report [FSER] Related to Certification of the AP1000 Standard Design," (Reference 1), includes language to support that the digital Instrumentation and Control (I&C) ITAAC are process but that the staff would review the process outputs related to the Protection and Safety Monitoring System (PMS) as part of the inspection efforts.
4. Branch Technical Position (BTP) 7-14 (Reference 2) provides the NRC's primary guidance for review of digital I&C systems. BTP 7-14 defines process as: "a series of actions, changes, or functions that bring about a result. A QA program is an example of a process definition." The BTP 7-14 process definition does not include implementation.

This letter contains no new NRC regulatory commitments. SNC requests NRC staff confirmation of this determination and publication of the required notice in the Federal Register per 10 CFR 52.99.

If there are any questions, please contact David Woods at 706-848-5531.

Respectfully submitted,



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References:

1. NUREG-1793 "Final Safety Evaluation Report [FSER] Related to Certification of the AP1000 Standard Design," Initial Report

2. NUREG 0800, Standard Review Plan, BTP 7-14

Enclosures:

1. Vogtle Electric Generating Plant (VEGP) Unit 3 & 4 Process ITAAC

2. Vogtle Electric Generating Plant (VEGP) Unit 3 & 4 Process ITAAC Supporting Information

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Enclosure 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Process ITAAC

(Enclosure 1 includes four pages, including this cover page.)

NRC Index No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
519	2.5.01.04	4. The DAS hardware and any software are developed using a planned design process which provides for specific design documentation and reviews during the following life cycle stages: a) Development phase for hardware and any software b) System test phase c) Installation phase The planned design process also provides for the use of commercial off-the-shelf hardware and software.	Inspection will be performed of the process used to design the hardware and any software.	A report exists and concludes that the process defines the organizational responsibilities, activities, and configuration management controls for the following: a) Documentation and review of hardware and any software. b) Performance of tests and the documentation of test results during the system test phase. c) Performance of tests and inspections during the installation phase. The process also defines requirements for the use of commercial off-the-shelf hardware and software.
550	2.5.02.11	11. The PMS hardware and software is developed using a planned design process which provides for specific design documentation and reviews during the following life cycle stages: a) Not Used b) System definition phase c) Hardware and software development phase, consisting of hardware and software design and implementation d) System integration and test phase e) Installation phase	Inspection will be performed of the process used to design the hardware and software.	A report exists and concludes that the process defines the organizational responsibilities, activities, and configuration management controls for the following: a) Not used. b) Specification of functional requirements. c) Documentation and review of hardware and software. d) Performance of system tests and the documentation of system test results, including a response time test performed under maximum CPU loading to demonstrate that the PMS can fulfill its response time criteria. e) Performance of installation tests and inspections.

551	2.5.02.12	12. The PMS software is designed, tested, installed, and maintained using a process which incorporates a graded approach according to the relative importance of the software to safety and specifies requirements for: a) Software management including documentation requirements, standards, review requirements, and procedures for problem reporting and corrective action. b) Software configuration management including historical records of software and control of software changes. c) Verification and validation including requirements for reviewer independence.	Inspection will be performed of the process used to design, test, install, and maintain the PMS software.	A report exists and concludes that the process establishes a method for classifying the PMS software elements according to their relative importance to safety and specifies requirements for software assigned to each safety classification. The report also concludes that requirements are provided for the following software development functions: a) Software management including documentation requirements, standards, review requirements, and procedures for problem reporting and corrective action. Software management requirements may be documented in the software quality assurance plan, software management plan, software development plan, software safety plan, and software operation and maintenance plan; or these requirements may be combined into a single software management plan. b) Software configuration management including historical records of software and control of software changes. Software configuration management requirements are provided in the software configuration management plan. c) Verification and validation including requirements for reviewer independence. Verification and validation requirements are provided in the verification and validation plan.
552	2.5.02.13	13. The use of commercial grade computer hardware and software items in the PMS is accomplished through a process that specifies requirements for: a) Review of supplier design control, configuration management, problem reporting, and change control. b) Review of product performance. c) Receipt acceptance of the commercial grade item. d) Acceptance based on equipment qualification and software validation in the integrated system.	Inspection will be performed of the process defined to use commercial grade components in the application.	A report exists and concludes that the process has requirements for: a) Review of supplier design control, configuration management, problem reporting, and change control. b) Review of product performance. c) Receipt acceptance of the commercial grade item. d) Acceptance based on equipment qualification and software validation in the integrated system.

553	2.5.02.14	14. The Component Interface Module (CIM) is developed using a planned design process which provides for specific design documentation and reviews. {Design Acceptance Criteria}	An inspection and or an audit will be performed of the processes used to design the hardware, development software, qualification and testing.	A report exists and concludes that CIM meets the below listed life cycle stages. Life cycle stages: a. Design requirements phase, may be referred to as conceptual or project definition phase b. System definition phase c. Hardware and software development phase, consisting of hardware and software design and implementation d. System integration and test phase e. Installation phase

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Enclosure 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

Process ITAAC Supporting Information

(Enclosure 2 includes five pages, including this cover page.)

The following provides additional supporting arguments to justify SNC's position that the subject Inspections, Tests, Analyses and Acceptance Criteria (ITAAC) can be completed solely based on the Processes described by the associated Inspections, Tests and Analyses (ITA).

The methodology that will be outlined in each Principal Closure Document outline the process and provides adequate information to inform the inspection. The ITAAC Completion Notification (ICN) will also include a summary of the methodology that points to process as supported by the definition in NUREG-0800, Standard Review Plan, Branch Technical Position (BTP) 7-14.

Regulatory / Licensing Basis Supporting "Process" ITAAC

DCD/UFSAR

As described above, the verbatim language of the ITAAC requires that the report concludes that the processes meet the requirements and not implementation. Note that in the Component Interface Module (CIM) ITAAC 2.5.02.14 item c) contains the word "implementation;" however, this is the name of a life cycle phase (Design & Implementation) and not a requirement that implementation is included in the ITAAC.

In addition, UFSAR Section 14.3.2.1 identifies selection criteria for ITAAC in section 14.3.2.2 and identifies that for selected design and qualification processes, such as Instrumentation and Control (I&C), that the ITAAC address the processes. Section 14.3.2.1 also identifies that certain aspects of the AP1000 design undergo rapid, beneficial technological developments.

> *In general, the certified design descriptions do not address the processes that will be used for designing and constructing a plant that references the AP1000 design certification. This is acceptable because the safety-function of a structure, system, or component is dependent upon its final as-built condition and not the processes used to achieve that condition. Exceptions to this criterion are the selected design and qualification processes defined in the instrumentation and control portions and piping portions of Section 2 and the piping, seismic, structural and human factors portion of Section 3.*

FSERs

NUREG-1793 for Revision 15 of the DCD includes the first mention of any "process" ITAAC including ITAAC 2.5.2.11 on pages 7-22 and 7-23. The FSER acknowledges that the staff would review the process outputs related to the Protection and Safety Monitoring System (PMS) as part of the inspection efforts. Of particular note is the clear break between inspection of the process (the subject of the ITAAC) and implementation of the process under the Quality Assurance Program (under 10 CFR Part 50, Appendix B, Criterion V):

An inspection will be performed on the processes used to design the hardware and software. Each process used shall define the organizational responsibilities, activities, and configuration management controls for the following:

- *establishment of plans and methodologies*
- *specification of functional requirements*
- *documentation and review of hardware and software*
- *performance of system tests and the documentation of system test results*
- *performance of installation tests and inspections*

In accordance with the AP1000 Quality Assurance Program, administrative control procedures are used to establish software quality assurance and configuration management for process computer software, firmware, and associated software development, computer systems, and documentation. These ensure that the integrity of a process software product is known and preserved throughout its life cycle (from development to retirement). These controls also apply to the development tools and systems used to develop and test process software.

In NUREG-1793 Supplement 2 (2011), there are several areas that discuss three of the five "Process" ITAAC. Note that ITAAC 2.5.02.12 and 2.5.02.13 are not discussed.

For ITAAC 2.5.2.14, there is mention on page 7-36 of the FSER that the ITAAC is related to the development process. In addition, on page 7-39 the FSER indicates that ITAAC 2.5.02.11a could be closed due to the "addition of the ITAAC related to the information that will be provided for the Component Interface Module (CIM) development process, (Design Description and Design Commitment 14 in Tier 1 Chapter 2.5.2 and Table 2.5.2-8, respectively)."

FSER mentions implementation in the NRC's documentation of Plant-Specific Action item (PSAI) 6.5, which includes the following: "The commitment to verify the implementation of the SLC [Software Life Cycle] appears in AP1000 DCD Tier 1, Chapter 2, Section 2.5.2, ITAAC Table 2.5.2-8, Design Commitment 11." Although the description includes verification of implementation, the SNC's position is that in order to close the ITAAC, the principal closure document is responsive to the words of the ITAAC, and would cover the processes used for all of the life cycle phases; but closure would not be completed until all of the processes have been implemented and the processes are identified to be acceptable. This is corroborated in DCD Revision 19 FSER Section 7.2.5 where there is discussion about "Completing" part a) of ITAAC 11. Further in the discussion about completion of the ITAAC, it is noted that the completion of those phases is based on docketed information **and** information listed in audit reports. That discussion on elimination of an ITAAC during design certification is a direct parallel to ITAAC closure post-design certification. This shows that completion of the ITAAC can be accomplished via ICN content and the audited (inspected) information (implementation) can be captured in the NRC inspection reports. The docketed ICN content focuses on the design process, similar to the docketed licensing basis information.

It should also be noted that because of the design and testing processes, the PMS implementation documents will be updated throughout the construction of the plant and past fuel load. As a result, if the ITAAC is not closed as it is written, there will be no completion point for ITAAC 2.5.02.11 and 2.5.02.12. In addition, there are other ITAAC throughout the COL that cover aspects of implementation for the PMS, Diverse Actuation System (DAS), and CIM systems including items like Environmental Qualification (EQ) ITAAC, preoperational testing, and ITAAC 2.5.02.10, which has requirements for response time testing.

Regulatory and Industry Guidance

In addition to the UFSAR and FSER text that is specific to these ITAAC, insight can be gained from related regulatory and industry guidance.

BTP 7-14 provides the NRC's primary guidance for review of digital I&C systems. BTP 7-14 defines process as: "a series of actions, changes, or functions that bring about a result. A QA program is an example of a process definition." The definition for process does not include verification of the final results or implementation. This parallels our Quality Assurance Program, under which the Quality Assurance Program Description (QAPD) is submitted on the Licensee's docket but the NRC inspects implementation of the QADP to assure it is robust.

Nuclear Energy Institute (NEI) document, NEI 08-01, provides an example of a Digital I&C ITAAC related to a life cycle process. The language used in this ITAAC (for US-EPR) specifically calls out outputs in the ITAAC. Instead of requiring an inspection of the design process, the ITA states, "*Analyses will be performed to verify that the outputs for the PS manufacturing phase conform to the requirements of that phase.*" If the expectation was review of outputs for the Westinghouse ITAAC, the ITAAC would read similarly to the example ITAAC.

Interim Staff Guidance ISG-06 provides NRC guidance for review of digital I&C upgrades for operating plants, and includes the following:

> *The SRP Appendix 7.0-A and Branch Technical Position 7-14 (BTP 7-14) have been established to guide NRC staff in performing reviews of digital safety systems (DSS). While the NRC staff does not perform an independent design review of the DSS, the staff reviews the design and the development process to conclude that the design meets regulatory requirements (e.g., independence / redundancy, deterministic behavior, defense-in-depth and diversity,…) and that the process is of sufficient high quality to produce systems and software suitable for use in safety-related applications in nuclear power plants. In addition the staff may perform thread audits (in accordance with LIC-111, "Regulatory Audits" – ADAMS Accession No. ML082900195) to conclude that the DSS implementation activities are consistent with the DSS planning activities. The NRC staff then depends on the proper application of this high quality development process to produce acceptable systems and software. Therefore, in addition to review of system hardware and software architecture a portion of the NRC staff review is of documentation of plans and processes which describe the life-cycle development of the software to be used by and/or in support of the digital I&C system. The NRC staff should review the development process, and the associated implementation, with the intent of determining that the process described is the process that was used, that the process was used correctly, and that it was used in such a manner as to produce software suitable for use in safety-related applications at nuclear power plants.*

This guidance is consistent with the interpretation that NRC inspection of process implementation is necessary, but the purpose of the inspection is to verify that the process is implemented as described in the licensing basis (or ICN), and that the process is effective in producing a product that meets requirements.

Conclusion

ITAAC completion must be based on the words of the ITAAC as they are written in the Combined License. For the ITAAC listed in Enclosure 1, the ITAAC require an inspection of the process for the stated activity, and therefore ITAAC completion is based on the process documentation. This is consistent with licensing basis information, NRC safety evaluation statements, and both industry and regulatory guidance. It is fully understood and expected that the NRC will inspect implementation of these processes as part of ITAAC closure verification, which is also consistent with FSER statements.