

March 9, 2012

MEMORANDUM TO: Stewart L. Magruder, Chief
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Division of Advanced Reactors and Rulemaking
Office of New Reactors

FROM: Joseph F. Williams, Senior Project Manager /RA/
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SUBJECT: SUMMARY OF JANUARY 24, 2012 PUBLIC MEETING WITH
TENNESSEE VALLEY AUTHORITY REGARDING THE CLINCH
RIVER SITE PROJECT REGULATORY FRAMEWORK

On January 24, 2012, staff from the U.S. Nuclear Regulatory Commission (NRC) met with representatives from the Tennessee Valley Authority (TVA) at the NRC Headquarters in Rockville, MD. This was the fourth in a series of public meetings to discuss the TVA Clinch River Site Project Regulatory Framework development. Meeting attendees are listed in Attachment 1. Materials presented by TVA are available through the Agencywide Documents Access and Management System (ADAMS). The slide presentation can be found at ADAMS accession number ML12075A187, while TVA's December 21, 2011, letter providing the proposed framework documents is found at ADAMS accession number ML12009A097. A summary of the meeting is included below.

TVA described its objective as clarifying the level of detail to be provided in the Clinch River construction permit (CP) application. TVA is seeking NRC staff feedback with the intent of developing a mutual understanding of the proposed regulatory framework for the CP application.

During the public meeting the following application sections were discussed:

- Preliminary Safety Analysis Report (PSAR) Chapter 7 – Instrumentation and Control
- PSAR Chapter 8 – Electric Power
- PSAR Chapter 12 – Radiation Protection
- PSAR Chapter 13 – Conduct of Operations
- PSAR Chapter 14 – Initial Test Program and ITAAC design Certification
- PSAR Chapter 17 – Quality Assurance
- PSAR Chapter 18 – Human Factors Engineering
- Part 5 – Safeguards and Security Plans

Enclosure 2 summarizes comments provided by the NRC staff on these topics. These provide perspective of the staff preparing for a review of a 10 CFR Part 50 CP application, and are not intended to describe regulatory requirements or policies beyond those approved or directed by the Commission.

Members of the public who monitored the meeting had questions for the NRC staff. The staff responded to questions regarding issues such as TVA's financial qualification, and the need to consider effects of electromagnetic pulse on electrical grid stability and availability. While these topics were outside the scope of the Clinch River regulatory framework documents discussed in the meeting, the NRC staff briefly described how these issues will be addressed through other NRC processes, including the licensing review for the construction permit and operating license, or via consideration for possible rulemaking.

Project No.: 785

Enclosure:

1. Meeting attendees
2. Summary of NRC Staff Comments

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NRO-002

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DATE	3/8/12	3/9/12

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Attendees

U.S. Nuclear Regulatory Commission (NRC)/ Tennessee Valley Authority (TVA) Meeting Regarding Proposed Regulatory Framework Clinch River Construction Permit Application

January 24, 2012

<u>Name</u>	<u>Organization</u>
Chester Poslusny	B&W
Paul Kumar	B&W
Sara Misic	B&W
Steven Pope	B&W
Altheia Wyche	Bechtel
Christopher Kaplan	Bechtel
James Saldarini	Bechtel
Steve Sharpiro	Bechtel
Steven Kline	Bechtel
Jim Kinsey	DOE/INL
Jason Tokey	DOE/NE
Peter Hastings	GMP
Alice Stieve	NRC
Andrea Keim	NRC
Bob Fitzpatrick	NRC
Carl Weber	NRC
Charles Hinson	NRC
Chris Welch	NRC
Dan Barss	NRC
Darrell Murdock	NRC
Don Dube	NRC
Ed Robinson	NRC
Edward Stutzcage	NRC
Eric Lee	NRC
Hulbert Li	NRC
Ian Jung	NRC
Jacqwan Walker	NRC
Jan Mazza	NRC
Joe Williams	NRC

Sara Barczak	SACE
Barry Cooper	Nexus Engineering
Mandy Hancock	SACE
Steve Maheras	Pacific Northwest National Laboratory
Scott Bussey	NRC
Joelle Starefos	NRC
John Budzynski	NRC
Luis Betancourt	NRC
Lynn Mrowca	NRC
Marie Pohida	NRC
Mark Caruso	NRC
Matt Humberstone	NRC
Melissa Ralph	NRC
Pete Lee	NRC
Peter Kang	NRC
Rick Pelton	NRC
Robert Vettori	NRC
Ron Lavera	NRC
Ross Moore	NRC
Seshagiri Tammara	NRC
Steve Williams	NRC
Steven Downey	NRC
Thomas Boyle	NRC
Thomas Kendzia	NRC
Todd Hilsmeier	NRC
Vince Williams	NRC
Y.C. Li	NRC
Jean-Claude Dehmel	NRC
Jim Kellum	NRC
Joe Ashcraft	NRC
Jana Bergman	Scientech
Andrea Sterdis	TVA
Tom Spink	TVA
Edward Burns	Westinghouse
Tom Clements	
Louise Gorenflo	Sierra Club, Tennessee Chapter BEST, Mothers Against Tennessee River Radiation
Gretel Johnston	
Garry Morgan	

U.S. Nuclear Regulatory Commission (NRC) Staff Comments on Proposed Tennessee Valley Authority (TVA) Regulatory Framework Documents

<u>SECTION</u>	<u>TITLE</u>	<u>COMMENTS</u>
7.1	Instrumentation and Controls – Introduction	<p>NRC staff noted that some industry guidance cited by TVA is not endorsed by NRC. TVA indicated its intent to conform to guidance approved as of 6 months prior to the CP application.</p> <p>NRC staff also noted concerns regarding embedded digital devices.</p>
7.2	Reactor Trip System	<p>NRC staff suggested including Branch Technical Position (BTP) 8-5. The staff also stated that instrumentation and controls BTPs are being incorporated into the Standard Review Plan.</p> <p>Issues with software quality assurance are expected to be addressed in PSAR Chapter 17.</p>
7.6	Interlock Systems Important To Safety	<p>NRC staff stated that guidance for this topic is based on traditional analog systems, and so is generally obsolete. Standards are expected to be different for digital systems.</p>
7.7	Control Systems Not Required For Safety	<p>NRC staff noted the need to consider how to address the interface between safety and non-safety systems, including systems designated for regulatory treatment of non-safety systems (RTNSS).</p>
8.2	Offsite Power System	<p>NRC staff provided feedback regarding the planned exemption from General Design Criterion (GDC) 17.</p> <p>NRC staff noted that 10 CFR 52.80 is relevant to the expected design certification application.</p> <p>Feedback was provided on the section outline. TVA agreed that the characterization of the exemption from GDC 17 for passive designs needs to be revised. It was also suggested that compliance with regulatory requirements for the design certification application could be clarified.</p>

8.3	Onsite Power Systems	NRC staff noted relevance of Interim Staff Guidance 18 regarding RTNSS Category C equipment. TVA indicated intent to apply lessons learned from the Fukushima Dai-ichi accident to this topic.
8.4	Station Blackout	NRC staff indicated that clarification will be needed regarding the definition of safe shutdown. The relevance of GDC 5 to shared equipment was also noted.
12.1	Ensuring That Occupational Radiation Exposures Are As Low As Reasonably Achievable	NRC staff noted the relevance of 10 CFR 30, 40, and 70 to this topic. TVA was advised to examine NRC documents (ADAMS accession numbers ML083030065 and ML11129A156) for applicability. TVA was also advised to include Regulatory Guide (RG) 4.21 and NEI 07-03A and NEI 08-08A in this RFD.
12.2	Radiation Sources	<p>NRC staff noted that NUREG-0737 item II.B.2 may be affected by lessons learned from the accident at Fukushima Dai-ichi.</p> <p>The staff also suggests that, in defining specific radioactive source terms and application in different radiological assessments and analyses, confirm that the use of radioactive source terms, such as primary and secondary coolant concentrations and assumed failed fuel fractions, are consistent and fully integrated with PSAR/FSAR Sections 11.1 to 11.3 and other supporting sections, as warranted by system descriptions and process treatment.</p>
12.3	Radiation Protection Design Features	<p>NRC staff indicated that ISG-6 may be relevant.</p> <p>The staff also suggests that, in describing design features of the radioactive waste management system attributed for compliance with 10 CFR 20.1406 and associated guidance (IE Bulletin 80-10, RG 4.21, and NEI 08-08A), confirm that such design features are consistent and fully integrated with PSAR/FSAR Section 12.3 descriptions and other supporting sections, such as 5.2, 9.2, 9.3, 9.4, 10.4, 11.2 to 11.5, etc. Such design features should address reduction in radioactive leakages, avoiding uncontrolled and unmonitored releases, and minimizing the contamination of plant discharge blowdown systems and environment, including groundwater and surface water.</p>

12.4	Dose Assessment	NRC staff noted that the update of the Standard Review Plan (SRP) relocated some information and evaluations from other sections where similar information is found in older applications. Dose results for members of the public are now presented SRP Section 11.2 for liquid effluents and SRP Section 11.3 for gaseous effluents under RG 1.206 and the current SRP of March 2007. These sections address compliance with 10 CFR 20, Appendix B, Table 2 effluent concentrations; doses under 10 CFR 20.1301 and 10 CFR 20.1302; 40 CFR Part 190 under 10 CFR 20.1301(e), and all 10 CFR 50, Appendix I design objectives and as-low-as-reasonably-achievable (ALARA) provisions.
12.5	Operational Radiation Protection Program	NRC staff noted that requirements from the Occupational Safety and Health Administration (OSHA) will apply to breathing air systems.
13.1	Organizational Structure of Applicant	NRC staff questioned whether an exemption might be required for control room staffing. Small modular reactors, such as that proposed for Clinch River, are expected to be designed such that there are lesser demands on operators, so reduced staffing may be practical
13.3	Emergency Planning	<p>NRC staff noted relevance of 10 CFR 30, 40, and 70 to this topic. Staff also noted that NSIR/DPR-ISG-01 provides an extensive list of references, including items not otherwise cited by TVA. TVA's current list also includes items not addressed in that ISG.</p> <p>The staff noted that TVA's reference to Part 4 of the CP application in the Chapter 13 outline should actually be Part 5.</p> <p>The Chapter 13 outline also refers to existing emergency plans and provisions within the Final Safety Analysis Report. The staff stated this reference was not clear, and TVA indicated they will clarify the statement.</p>

13.4	Operational Program Implementation	<p>NRC staff advised TVA to consider NEI 07-03A, NEI 07-08A, NEI 07-09A, and NEI 07-10A.</p> <p>With respect to SECY-05-0197 and GL 89-01 on the submission of the standard radiological effluent controls (SREC), offsite dose calculation manual (ODCM), radiological effluent monitoring program (REMP), and process control program (PCP), consider the merits of an initial PSAR commitment of NEI templates for operational programs (NEI 07-09A for the ODCM/SREC/REMP and NEI 07-10A for the PCP) followed by the submissions of a plant and site-specific SREC, ODCM, REMP, and PCP at the FSAR stage.</p> <p>Note that for P/FSAR Table 13.4-1 (Op Programs) for P/FSAR Sections 11.4 and 11.5 program commitments should be populated using NUREG-1301 and GL 89-01. Note that SECY-05-0197 and SRP Section 13.4 use abbreviated nomenclatures for the PCP, ODCM, REMP, and SREC (aka RETS).</p>
13.5	Plant Procedures	<p>Additional information regarding emergency operating procedures may be expected, based on lessons learned from Fukushima Dai-ichi. For example, severe accident mitigation guidelines should be addressed in the PSAR, at least in a preliminary fashion.</p>
13.6	Security	<p>NRC staff noted development of review guidance for loss of large areas of the plant, which is expected to be addressed by SRP 19.4, so this topic should be addressed in that chapter, as opposed to Chapter 13.</p> <p>The staff also mentioned expectations of the Energy Policy Act of 2005 regarding NRC consultation with the Department of Homeland Security.</p> <p>The staff noted the recent issuance of SECY 11-0137, "Security Regulatory Framework for Certifying, Approving, and Licensing Small Modular Nuclear Reactors," dated December 29, 2011.</p> <p>The staff also notes the need to consider cyber-security, and suggests TVA consider CMWCO-10-0001, "Regulation of Cyber Security at Nuclear Power Plants," October 21, 2010, ADAMS accession number ML102940009, and SECY-10-0153, "Cyber Security – Implementation of the Commission's</p>

		Determination of Systems and Equipment Within the Scope of Title 10 of the Code of Federal Regulations, Section 73.54,” dated November 19, 2010, ADAMS accession number ML103000016.
13.7	Fitness-for-Duty	<p>TVA’s table cites NEI 06-06. NRC staff noted that Revision 6 of this document is not yet endorsed by NRC.</p> <p>The staff also noted the need to address fitness-for-duty in the construction permit application with regard to construction activities. The staff said that it expects to solicit public comments on a proposed update of the SRP for this topic as soon as February 2012.</p>
14.1	Specific Information to be Addressed for the Initial Plant Test Program	The staff noted that RG 1.68 is being revised, and is expected to be complete this year.
14.2	Initial Plant Test Program	<p>NRC staff suggested that TVA include 10 CFR 50.34(f) in the regulatory requirements list.</p> <p>The staff also notes test program lessons learned from recent design certification and combined license reviews. The test program should</p> <ol style="list-style-type: none"> 1. Verify automatic proper positioning of process control valves for conditions defined by alarm setpoints. 2. Confirm proper operation of protective measures to prevent cross-contamination of non-radioactive systems. 3. Confirm consistency of test acceptance criteria with system functions described in all sections of the PSAR and FSAR. 4. Test programs should define plant conditions which must be reviewed to ensure adequate radiological protection of plant personnel and the public.
14.3	Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)	<p>ITAAC are not applicable to the 10 CFR 50 process proposed for Clinch River. However, TVA’s regulatory framework addresses, in part, the relationship between its proposed applications and an expected mPower design certification application to be submitted in accordance with 10 CFR 52. Therefore, the staff provides the following comments regarding ITAAC.</p> <p>ITAAC language should be clear and amenable to inspection, without ambiguity, and should serve to confirm proper fabrication, installation,</p>

		<p>functional arrangements and operational performance of structures, systems, and components (SSCs).</p> <p>For SSCs used to demonstrate compliance with requirements of 10 CFR 20, the staff provided the following specific feedback:</p> <ol style="list-style-type: none"> 1. Confirm automatic isolation and/or termination functions of process and effluent controls are included in ITAAC. Describe test methods that rely on test signals to verify valve operation to terminate or divert process flow and provide remote and local alarms. 2. Confirm that any automatic control features for monitoring deviations of in-process system flow rates and isolating process flows, or for monitoring deviations in in-plant dilution flow rates for terminating releases and ensuring compliance with radioactive effluent regulations are included in ITAAC. 3. Confirm that the initial introduction of the proper types and amounts of adsorption and filtration media in the radioactive waste management system, as described in FSAR Tier 2, Sections 10.4.8, 11.2, and 11.3 are included in ITAAC. Specify the volumes of vessels and tanks in which treatment media is to be introduced, and identify the type of media. Such media typically include nuclear grade cation or anion resins in single demineralizer columns, nuclear grade cation/anion resins in mixed demineralizer columns, and nuclear grade activated charcoal and mesh size or bulk density used in charcoal beds. 4. Describe in ITAAC testing methods to confirm design features applied to protect temperature sensitive filtration and adsorption media from thermal damage and resulting degradation in decontamination factors or removal efficiencies, such as for ion-exchange demineralizers and charcoal filtration systems and beds. 5. Confirm in ITAAC that test signals used to verify automatic control features of radiation monitoring equipment will rely on the use of radioactivity (calibration or built-in check sources) to check the operation of the entire monitoring system starting with the radiation detector, as the use of simulated electronic test signals will not confirm the proper function of radiation detectors.
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17.3	Quality Assurance	In describing the scope the QA program, confirm that for RWMS listed in P/FSAR Section 11 the elements of the QA program will be consistent with QA provisions for radioactive waste management systems, structures, and components in accordance with the guidelines of RG 1.143, 1.26, and 1.29, and differentiate those under Appendix B to 10 CFR Part 50, in so far as it applies to systems and components not covered by the QA guidance of RG 1.143. As a result, applicants are being requested to include stand alone discussions on compliance with RG 1.143 QA and associated ANSI/ANS RWMS standards in P/FSAR Sections 11.2 to 11.5 for each system.
17.4	Reliability Assurance Program	NRC staff and TVA briefly discussed how RTNSS will be described in the PSAR. TVA said that RTNSS will be addressed qualitatively.
18.0	Human Factors Engineering	NRC staff noted that design acceptance criteria (DAC) and inspections, tests, analyses, and acceptance criteria (ITAAC) are relevant to licensing under 10 CFR 52, not 10 CFR 50, and so do not apply to the proposed CP or operating license application.
18.1	Human Factors Engineering Management	NRC staff suggested that section 13.3 be added to the “Related Sections” column.
18.4	Task Analysis	NRC staff suggested that NSIR/DPR ISG-01 on emergency planning shift staffing be added to the guidance list for this topic.
18.7	Human-System Interface Design	NRC staff suggested that ISG-1 be added to the guidance list for this topic.
19A	Beyond Design Basis Aircraft Impact Assessment	NRC staff noted that this topic should be designated as section 19.5.
19B	Regulatory Treatment of Non-safety Systems	NRC staff noted that this topic should be designated as section 19.3.
19C	Availability Controls Manual	NRC staff noted that this topic should be incorporated into section 19.3 as part of the RTNSS discussion.

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(Revised 02/17/2012)

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