UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E LAMAR BLVD
ARLINGTON, TX 76011-4511

January 8, 2015

MEMORANDUM TO: Marc L. Dapas, Regional Administrator, Region IV

THRU: Neil O'Keefe, Chief, Projects Branch B CFO

Jeff Clark, Deputy Director, Division of Reactor Safety, Region IV

FROM: Thomas Farnholtz, Chief, Engineering Branch 1 TRF

SUBJECT: FOCUSED BASELINE INSPECTION AT THE WOLF CREEK SITE FOR A MAJOR ESSENTIAL SERVICE WATER MODIFICATION

Engineering Branch 1 proposes to perform a focused baseline inspection at the Wolf Creek facility in the January to April 2015 timeframe to inspect and monitor a major modification that the licensee is performing. The modification is intended to mitigate a long-standing water hammer condition in the essential service water system by installing a 'loop seal' arrangement. This modification will require installation of approximately 100 feet of additional service water piping most of which will be enclosed in a building addition attached to the existing safety-related auxiliary building. The modification consists of the design and construction of the building addition, the fabrication of the new essential service water system piping, and the tie-in to the existing service water system. In addition, the engineering documentation, procedure revisions, operator training, and testing associated with this modification will be inspected.

The scope of the inspection and the inspection plan are attached. Engineering Branch 1 is requesting authorization to perform the inspection in accordance with Inspection Manual Chapter 2515, Appendix C, "Special and Infrequently Performed Inspections."

The signature below indicates approval to proceed with the focused baseline inspection as described:

Marc L. Dapas 1/13/15
Marc L. Dapas, Regional Administrator, Region IV

ML15015A171

PROPOSED FOCUSED BASELINE INSPECTION FOR THE WOLF CREEK STATION
ESSENTIAL SERVICE WATER SYSTEM MODIFICATION

Scope and Objective

Engineering Branch 1 proposes to perform a focused baseline inspection of a significant modification to the Wolf Creek plant Essential Service Water (ESW) system that includes an addition to a seismically qualified building and over 100 feet of safety-related piping, valves, and instrumentation. The purpose of this modification is to address a long-standing issue related to water hammer in the ESW system and resulting system leaks. This modification will require evaluation for Code, seismic, and functionality to assess whether the modification will have the desired effect and to assure that no new issues are introduced. The modification will require revision of operating procedures and training of operators. The attached plan delineates the necessary inspection activities with estimated hours.

Timeframe

The construction efforts have already begun at the site including final planning, excavation, and fabrication of some parts. The majority of construction will be performed in the January 2015 timeframe which will be the initial concrete pouring and the installation of the prefabricated building modules. The schedule shows completion of construction by late February or early March 2015. The plant is scheduled to enter a refueling outage in March 2015 at which time final tie-in to the existing essential service water system is to be completed. Following this, testing of the newly configured system will be performed.

Personnel

The inspection plan was developed by Wayne Sifre who will be the project lead for the inspection effort. Wayne will inspect the technical aspects of the modification including piping, valve, and instrumentation installation. Megan Williams will conduct the inspections related to the construction of the new building including the concrete pour along with the seismic aspects of the modification. Jim Drake is currently scheduled to perform IP 71111.08 (In-Service Inspection Activities) at the Wolf Creek site in the March 2015 timeframe during the refueling outage. He will add the final tie-in to the existing essential service water system and the testing aspect to his normal ISI activities. Potential procedure revisions and operator training on the new system will be reviewed by Wayne with assistance from Operator Licensing branch inspectors.

Proposed Inspection Hours

As described in the inspection plan, we are proposing approximately 192 total hours of direct inspection activity. This estimate is based on experience from similar activities performed in the past. As a point of reference, direct inspection effort for a steam generator replacement project has historically been approximately 175 hours (Inspection Procedure 50001 recommends up to

350 hours of direct inspection effort for a steam generator replacement). For a reactor vessel head replacement project, such as was performed at the Callaway plant in 2014, 215 inspection hours were expended. The inspection plan would provide approximately two weeks on-site: one on-site week in January and a second week in February or March. In addition, on-site inspection work would be performed during the scheduled refueling outage in March in conjunction with the ISI activities. The remainder of the inspection would be in-office document review. The majority of the inspection hours would be charged to either IP 71111.17 (Evaluations of Changes, Tests and Experiments and Permanent Plant Modifications) or IP 71111.18 (Plant Modifications). The additional scope added to the ISI inspection will be charged to IP 71111.08 (In-Service Inspection Activities). Some hours may also be charged to IP 71111.19 (Post Maintenance Testing). Where appropriate, these hours will be credited toward satisfying the baseline requirement as appropriate (for example, this effort would be credited as one plant modification towards the required 5 to 15 permanent plant modifications required to be reviewed by IP 71111.17 and the required 3 to 7 temporary and/or permanent modifications required to be reviewed by IP 71111.18). The planned inspection activities will be adjusted as required as the project proceeds.

FOCUSED BASELINE INSPECTION PLAN
WOLF CREEK ESW MODIFICATION

MC Section	Description	Inspection Organization	Planned Hours	Planned Inspection	Notes IR No. Inspector
71111.17					
02.02.b.1	Verify that supporting design basis documentation have been updated accordingly and are still consistent with the new design. Some examples of supporting design basis documentation would be calculations, design specifications, and vendor manuals.	EB-1	2	In-office	
02.02.b.2	Verify that license basis documentation have been updated accordingly and are still consistent with the new design. Some examples of license basis documentation that could be affected are the UFSAR, Technical Specification and Bases, and plant specific Safety Evaluation Reports.	EB-1	2	In-office	
02.02.b.3	Verify that other design basis features affected by the modification have been adequately accounted for. Some examples of these types of features include structural, fire protection, flooding, environmental qualification, and potential Emergency Core Cooling System strainer blockage mitigation.	EB-1	2	In-office	
02.02.b.4	Verify that procedures and training plans affected by the modification have been updated adequately. Some examples would be abnormal operating procedures, alarm response procedures, and Licensed Operator Training Manuals. Inspectors may review programmatic procedures to verify that licensee processes and standards are met.	EB-1 OB	4 4	In-office On-site	
02.02.b.5	Verify that affected test documentation has been updated and/or new test documentation has been initiated as required by applicable test programs. Some examples of these types of tests would be instrument calibration, inservice testing, and breaker clean and inspect.	EB-1	4	In-office	
71111.18					
02.02.b.1	Design Review: During inspection preparation, identify which affected parameters inspected. Emphasis should be placed on those parameters not verified by testing. Review the design adequacy of the modification by performing the inspection activities for the selected parameters.	EB-1	4	In-office	

MC Section	Description	Inspection Organization	Planned Hours	Planned Inspection	Notes IR No. Inspector
	Materials: • Material Compatibility – Verify materials/components are compatible with physical interfaces • Functional Properties – Verify materials/components serve functional requirements under accident/event conditions. • Environmental Qualification – Verify materials/components are environmentally qualified for application. • Seismic Qualification – Verify components are seismically qualified. • Classification – Verify Code and safety classification is consistent with design bases. Verify new components are added to the maintenance rule scope.	EB-1 PSB-2(ISI)	10 8	In-office On-site	
	Timing: • Sequence – Verify that any sequence changes are bounded by accident analyses and loading on support systems are acceptable. • Response Time – Verify response times are sufficient to serve accident/event functional requirements assumed by design analysis. Verify response time does not cause an unintended interaction with other SSCs. • Duration – Verify equipment will be able to function for the duration required under accident/event conditions.	EB-1	8	In-office	
	Heat Removal: Verify heat removal requirements can be addressed by support systems under accident/event conditions.	EB-1	4	In-office	
	Operations: Verify that affected operation procedures and training have been identified and necessary changes are in process. Verify that the plant simulator has been updated as required.	EB-1 OB	4 8	In-office On-site	
	Flowpaths: Verify that revised flowpaths serve functional requirements under accident/event conditions.	EB-1	4	In-office	

MC Section	Description	Inspection Organization	Planned Hours	Planned Inspection	Notes IR No. Inspector
	Ventilation Boundary: Verify that changes to the ventilation boundaries do not increase risk of spreading contamination. Verify that changes to ventilation boundaries do not adversely affect functionality of ventilation system under accident/event conditions.	EB-1	2 4	In-office On-site	
	Structural: Verify modified SSCs structural integrity acceptable for accident/event conditions. Verify modified SSCs structural effects upon attachment points acceptable. Verify modified SSCs effect on seismic evaluations is acceptable.	EB-1	6 12	In-office On-site	
	Process Medium (Fluid Pressures, Fluid Flowrates, Voltages, Currents): Verify that affected processes medium properties will be acceptable for both modified SSCs and unmodified SSCs under accident/event conditions.	EB-1	4	In-office	
	Failure Mode: Verify those failure modes introduced by the modification are bounded by existing analyses.	EB-1	4	In-office	
02.02.b.2	Implementation Review: Verify that modification preparation, staging, and implementation does not impair the following: • In-plant emergency/abnormal operating procedure actions. • Key safety functions • Operator response to loss of key safety functions.	EB-1 OB RI	20	On-site	
	Walkdown: Perform walkdown of final structure. Verify as-built is as-designed or that differences have been verified and analyzed.	EB-1 RI	10	On-site	

MC Section	Description	Inspection Organization	Planned Hours	Planned Inspection	Notes IR No. Inspector
02.02.b.3	Testing Review: Verify that post-modification testing will maintain the plant in a safe configuration during testing. Verify that post-modification testing will establish operability by: • Verifying that unintended system interactions will not occur. • Verifying SSC performance characteristics, which could have been affected by the modification, meet the design bases. • Validating the appropriateness of modification design assumptions. • Demonstrating that the modification test acceptance criteria have been met.	EB-1 RI	20	On-site	Consider for IP 71111.19 sample credit
02.03	Problem Identification and Resolution: Verify that problems associated with modifications are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee corrective action program.	EB-1	10	In-office	
71111.08					
	Welding/Fabrication: Observe/review welding activities and procedures. Verify welding performed in accordance with procedures and applicable Codes. Review post-weld NDE. Verify identified issues are addressed either by repair or analysis.	PSB-2(ISI)	16	On-site	

Summary of Hours

Branch	Hours	In Office	On Site
EB-1	156 hours	74	82
RI	(TBD) hours	-----	-----
PSB-2(ISI)	24 hours	-----	24
OB	12 hours	-----	12
Total:	192	74	118