



Sequoyah and Watts Bar Nuclear Plants

***1st Quarterly Update for
the Improved Flood Mitigation System***

June 27, 2013



TVA *Agenda*

Introduction

*Joe Shea, Vice President
Nuclear Licensing*

Improved Flood Mitigation System Update

*Joe Shea
Andrea Sterdis, General Manager
Project Management
Neil Gannon, General Manager
Fukushima Response Project*

Closing Remarks

Joe Shea



Improved Flood Mitigation System Update

Commitment to Improved Flood Mitigation Systems

- ◆ TVA Commitment Submitted in Letter dated April 16, 2013:
 - Implement an improved flood mitigation system at SQN Units 1 and 2 and WBN Units 1 and 2 by December 31, 2016
 - Provide periodic written updates regarding progress of the project by the last day of March, June, September and December of each year until the project is completed, beginning with the first written progress report to be filed by June 30, 2013.
 - Submit an updated strategy for FLEX equipment storage at WBN Units 1 and 2 on or before June 30, 2013.



Commitment to Improved Flood Mitigation Systems

- ◆ Key Safety and Regulatory Aspects of Flood Mitigation System Commitment:
 - Provide Additional Margin and Improve Protection Against Flood Hazards
 - System Is In Addition to TVA Design and Strategy for Responding to Beyond Design Basis Events (FLEX)
 - Flood Mitigation System Design May Leverage Elements of FLEX Strategy
 - System is Not Required for Compliance with Current Licensing Basis for Flood Protection
 - Current Licensing Basis for Flood Protection Is Adequate



Commitment to Improved Flood Mitigation Systems

- ◆ Key Design Functions and Features in April 16, 2013 Commitment Letter:
 - Improved Decay Heat Removal During Flood Mode
 - Additional Reactor Coolant System Makeup and Criticality Control Capability During Flood Mode
 - Provide Protection for Flood Mitigation System With No Less Than Fifteen Feet Margin Above Current Probable Maximum Flood Levels
 - Protection for Power Supplies
 - Protection for New Decay Heat Removal and RCS Makeup Capability
 - Provide Clean Water Supply
 - Develop Maintenance and Testing Capability



Commitment to Improved Flood Mitigation Systems

◆ Transition from Commitment into Design and Construction Process:

- April 16, 2013 Commitment Informed by Conceptual Engineering Approach
 - Sufficiently Informed to Make December 2016 Schedule Commitments

- Fulfillment of Commitment Will Be Assured Through TVA Project Controls and Engineering Design Process
 - Engineering Design and Project Controls Process Provide for Rigorous Evaluation of Final Design Prior to Start of Construction
 - Some Design Aspects Will Evolve From Conceptual Design
 - Key Design Functions and Features Will Remain Unchanged



Commitment to Improved Flood Mitigation Systems

◆ Key Concepts That *May* Evolve Through Application of Engineering Design and Project Controls Process:

— Design of Hardened Structure

- Use of Flood Elevated FLEX Equipment Storage Building vs. Design of Stand Alone Flood Mitigation System Building
- Final Decision on Building Design Will Include Consideration of Impacts on Compliance Schedule for FLEX Mitigation Order
- Final Decision on Building Design Will Ensure Minimum of Fifteen Feet of Margin Above Current PMF Levels
- Final Building Decision Will Include Consideration of Risk Improvements for Scenarios Other Than Flooding



Commitment to Improved Flood Mitigation Systems

- ◆ Key Concepts That *May* Evolve Through Application of Engineering Design and Project Controls Process (Continued):
 - Power Source for Flood Mitigation System
 - April 16, 2013 Commitment Letter Discussed FLEX 3MW Diesel Generators
 - Subsequent Additional Engineering Assessment Indicates that 3MW DGs May Be Too Lightly Loaded During Flood Mitigation System Operation
 - Resolution of DG Loading Challenges May Warrant Consideration of Additional Protected DGs Dedicated to Flood Mitigation System



Commitment to Improved Flood Mitigation Systems

- ◆ Key Concepts That *May* Evolve Through Application of Engineering Design and Project Controls Process (Continued):
 - Decay Heat Removal
 - April 16, 2013 Commitment Letter Discussed Condensate Recovery System
 - Subsequent Additional Engineering Assessment Indicated Potential Reliability Challenges
 - Resolution of Decay Heat Removal Condensate Recovery Challenges May Warrant Consideration of Large Protected Clean Water Source in Once-Through Process



Commitment to Improved Flood Mitigation Systems

- ◆ Description of Project Controls Process (Subsequent Slides)
- ◆ Includes Key Project Milestones and Current Schedule
- ◆ Will Form Basis for Future Updates to NRC On Progress
- ◆ Update and Status on April 16, 2013 Progress Report Commitments
 - June 30, 2013 Written Progress Report
 - June 30, 2013 Updated Strategy on Watts Bar Unit 1 and 2 FLEX Equipment Storage
 - Submit by July 15
 - Reaffirm Commitment to Watts Bar FLEX Strategy and Schedule
 - Changes to Watts Bar FLEX Equipment Storage Will Be Included in Periodic Required FLEX Updates



Project Management and Design Process

Project Planning

- Develop Project Plan
- Identify Initial System Design Functions
- Define Initial System Scope
- Conduct Pre-Project Risk Identification
- Develop System Design Criteria
- Develop High-Level System Design Requirements
- Develop Initial Project Schedule and Estimate

Conceptual Design Phase

- Develop Conceptual Design Document
- Conduct Plant Walkdowns Reflecting Conceptual Design
- Develop Initial Implementation Schedule and Estimate
- Evaluate Design and Component Alternatives
- Identify Long-Lead Items
- Develop Design Schedule and Estimate
- Revise Risk Register and Risk Management Strategies.

Preliminary Design Phase

- 10% DCN Development and Review
- Evaluate Long-Lead Vendor Alternatives
- Detailed Engineering Schedule and Estimate
- Develop Implementation Schedule and Estimate based on 10% DCN
- Design Schedule and Estimate
- High level Implementation Schedule and Estimate
- Conceptual Design Risk Register and Risk Management Strategies

TVA *SQN and WBN Improved Flood Mitigation System*
Project Management and Design Process

**Engineering
And
Long Lead
Procurement
Phase**

- Complete Engineering
- Develop Detailed Pre-Outage and Outage Work Schedules
- Identify Detailed Commodity Needs
- Revise Risk Register and Mitigation Strategies to address Completed Design, Implementation Work Plans and Materials
- Procure Long-Lead Materials
- Conduct Detailed Design and Operational Walkdowns
- Plan Implementation Work Orders

**Implementation
Phase**

- Complete Physical Implementation
- Perform QA/QC Verifications of As-built
- Implement Project Controls to Monitor Progress Against Resource Loaded Schedule
- Update Procedures/Conduct Training
- Conduct System Testing
- Update Design Documentation
- Plan Implementation Work Orders

**System Turnover
And Closure
Phase**

- Turnover System
- Verify Documentation Complete
- Close Work Orders, DCNs and POs
- Evaluate and Document Lessons-Learned



SQN and WBN Improved Flood Mitigation System Project Status – Preliminary Schedule

	Task	Scheduled Start	Scheduled Finish	Status
1	Team Organization Structure		05/29/13	Completed
2	Develop Project Plan	06/01/13	09/30/13	In-progress
3	Perform Conceptual Design Phase	06/01/13	09/30/13	In-progress
4	Perform Preliminary Design Phase	10/01/13	02/27/14	Not Started
5	Conduct Engineering Design Phase	03/01/14	01/29/15	Not Started
6	Procure Long-Lead Items	11/01/13	01/29/15	Not Started
7	Implementation	02/28/15	12/15/16	Not Started
8	Project Closeout	12/16/16	09/30/17	Not Started



Closing Remarks
