UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

May 25, 2012

Mr. Michael D. Skaggs
Senior Vice President
Nuclear Generation Development and Construction
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: MEETING SUMMARY – PUBLIC MEETING WATTS BAR NUCLEAR UNIT 2

Dear Mr. Skaggs:

This refers to the meeting conducted at our request at the Spring City Municipal Building in Spring City, TN on May 22, 2012 at 1:00 p.m. The meeting's purpose was to discuss the status of the Watts Bar Unit 2 Construction Project, including major milestones and potential challenges that may impact the project schedule with the public.

On May 22, 2012, the NRC held a Category 1 meeting in which TVA provided a presentation about the current progress and scheduling plans for the Watts Bar Nuclear (WBN) Unit 2 construction project. The NRC staff presented information on the current status of the NRC's licensing and construction inspection programs for WBN Unit 2. Additional topics related to the WBN Unit 2 construction project were discussed between the NRC and TVA. Following these presentations and discussions, members of the public had an opportunity to provide comments and ask questions. The agenda (Enclosure 1), the list of attendees (Enclosure 2), the TVA presentation material used for discussions (Enclosure 3), and the NRC presentation material used for discussions (Enclosure 4) are attached to this letter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS).

ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room). Should you have any questions concerning this meeting, please contact James Baptist at 404-997-4506.

Sincerely,

/RA/

Robert Haag, Chief
Construction Projects Branch 2
Division of Construction Projects

Docket No. 50-391
Construction Permit No: CPPR-92

Enclosures:
1. Agenda
2. List of Attendees
3. Presentation - TVA
4. Presentation - NRC

cc w/encl:
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Enclosures:
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* See Previous Concurrence

▪ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ▪ NON-SENSITIVE
ADAMS: ☐ Yes ACCESSION NUMBER: ML12150A036 ▪ SUNSI REVIEW COMPLETE

OFFICE	RII:DCP	RII:DCP	RII:DCP	RII:DCP	RII:DCP	RII:DCP	RII:DCI
SIGNATURE	RCH	CJE via E-Mail					
NAME	RHaag	CEven					
DATE	05/25 /2012	05/24/2012					
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\CCI\DCP\CPB3\WATTS BAR 2\PUBLIC MEETINGS\MAY 2012\MEETING SUMMARY.DOCX

Letter to Michael D. Skaggs from Robert C. Haag dated May 25, 2012.

SUBJECT: MEETING SUMMARY – PUBLIC MEETING WATTS BAR NUCLEAR PLANT UNIT 2

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PUBLIC

AGENDA FOR PUBLIC MEETING

WITH

NRC AND TVA

May 22, 2012

1:00p	Start of Meeting Purpose of Meeting Introductions	NRC
	Status of Watts Bar Unit 2 Construction Project	TVA
	Updates to the Unit 2 Construction Schedule	TVA
	Update on Construction Inspection Activities	NRC
	Licensing Status	NRC
	Results of the Root Cause and Associated Corrective Actions for the Recent Human Performance Event	TVA
	Assessment Results Regarding Work Order Quality Concerns	TVA
	Corrective Actions to Address Commercial Grade Dedication Violations	TVA
	Changes to Corrective Action Program	TVA
	Preventative Maintenance and Equipment Layup Program Changes	TVA
	Public Comments and Questions	NRC
3:00p	Meeting Adjourned	

Enclosure 1

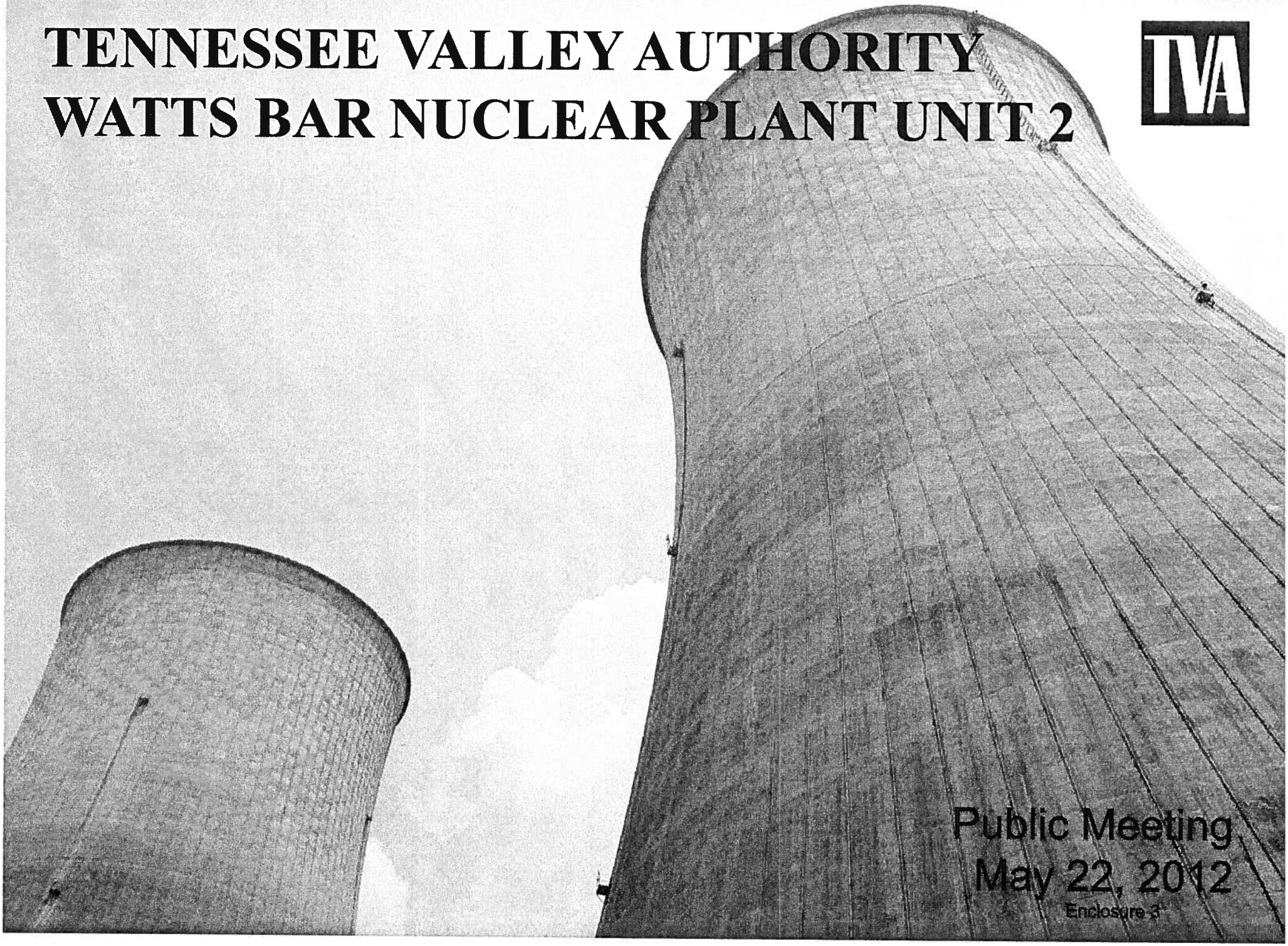
SIGN-IN SHEET

WATTS BAR UNIT 2 PUBLIC MEETING

Date: 05/22/2012 **Location: Spring City Municipal Building**

Name	Company
Betty Hamby	Public
Tom Trotter	Public
Bob Crane	Public
Woody Evans	Public
Tomy Finnell	Public
Gary Humphrey	Public
Pete Johnson	Public
Linda Ellis	TVA
Jim Hopson	TVA
Kay Whittenburg	TVA
Ann Harris	Public
Annette Gould	Public
Frederick Brown	NRC
Terrance Reis	NRC
Robert Haag	NRC
Mark Lesser	NRC
Kathleen O'Donohue	NRC
Jaime Heisserer	NRC
William Burton	NRC
Gordon Arent	TVA
Tom Wallace	TVA
Ike Zeringue	TVA
Ray Hruby	TVA
Ric Wiggall	TVA

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT UNIT 2



Public Meeting
May 22, 2012

Enclosure 3

Agenda

• Estimate to Complete	Ray Hruby
• Construction Schedule & Milestones	Ike Zeringue
• Quality of Work Orders	Ike Zeringue
• Asset Preservation	Ike Zeringue
• Unit 1 / Unit 2 Interface	Tom Wallace
• Material Control	Ric Wiggall
• Corrective Action Program Changes	Ray Hruby
• Conclusion	
• Questions	

Watts Bar Unit 2 Estimate To Complete

- TVA Board authorized completion of the Watts Bar 2 Project in accordance with the revised Estimate to Complete (ETC) on April 26, 2012.
- The project is scheduled to complete by December of 2015.
  - Construction permit extension request was submitted on May 17, 2012.
- Project leadership has a high degree of confidence in the revised ETC.
- Though several project risks and opportunities remain, these are manageable.
- Completing the Watts Bar Unit 2 project helps TVA balance its generating mix and achieve its vision to be a leader of low-cost cleaner energy.

Independent Assessments

Several root and contributing causes of project performance have been identified

- **Leadership:** Organization and management capabilities misaligned with unique project characteristics
- **Estimate:** Inadequate understanding of the work to be done led to low initial estimates and impeded planning
- **Execution:** Management did not execute a robust execution plan or fully utilize available capabilities
- **Oversight:** Inadequate Nuclear Generation Development and Construction/TVA oversight and project assurance

Independent assessments aligned with TVA Root Cause Analysis (RCA)

McKinsey and Associates
Insights are incorporated directly into the body of the RCA

High Bridge Associates
Aligned with ETC methodology and provided suggested corrective actions consistent with RCA

TVA Inspector General
Aligned with RCA and provided insight into additional programmatic improvements

Corrective Actions

Project Execution Improvements

Completed

- Comprehensive revision of ETC
- Ensured buy-in of revised cost/schedule
- Restructured project organization
- Established independent, integrated schedule and cost monitoring tools to track progress

Ongoing

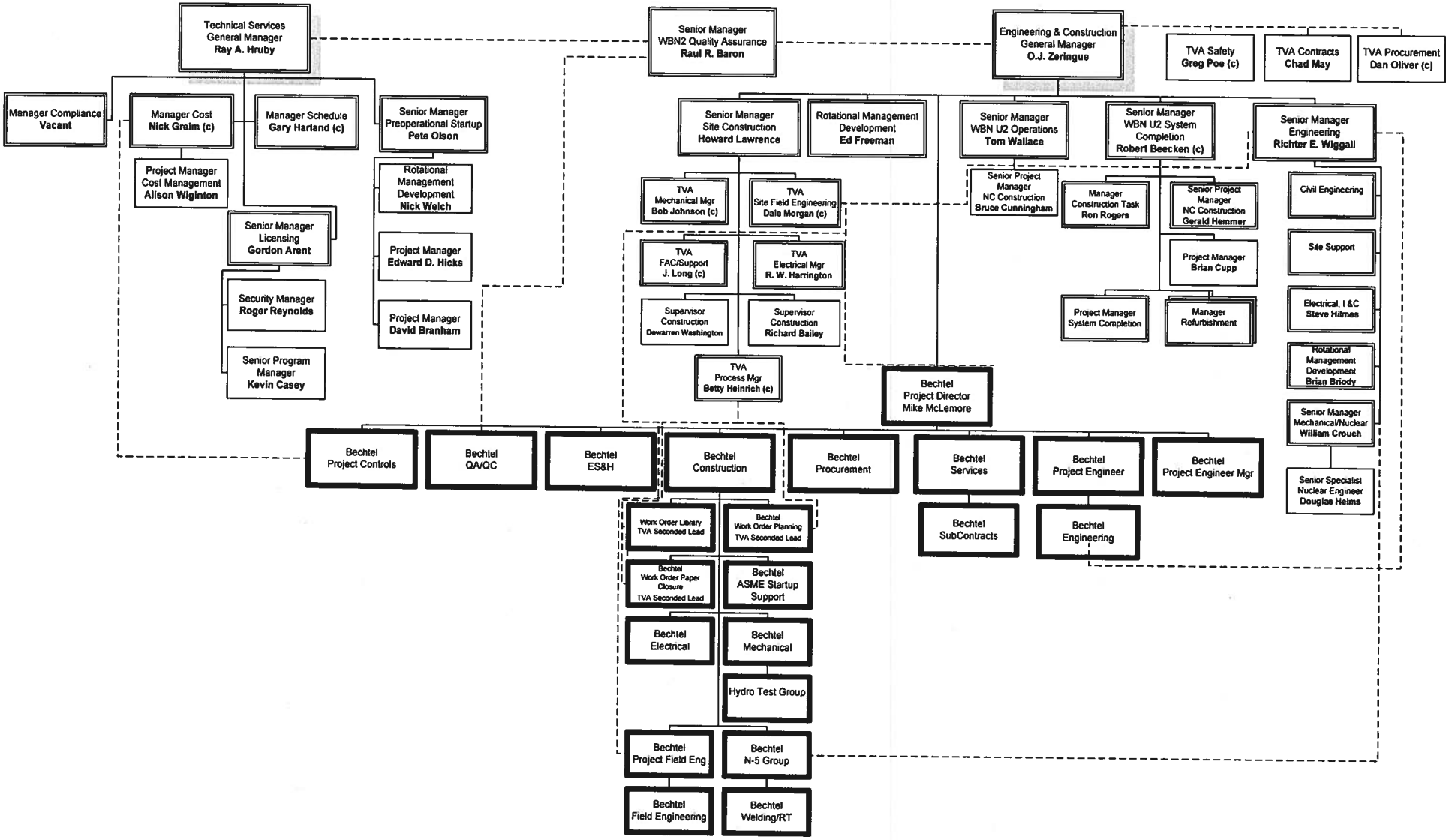
- Improve quality and timing of Planning documents
- Improve effectiveness of field engineering
- Utilize independent, integrated schedule and cost monitoring tools to track progress
- Establish process and oversight improvements
- Increase transparency, build trust
- Empower employees
- Improve craft morale

Planned

- Initiate regular executive sponsor meetings
- Streamline work package rebuilds
- Surface productivity measures
- Establish a process to control project scope
- Provide regular project updates

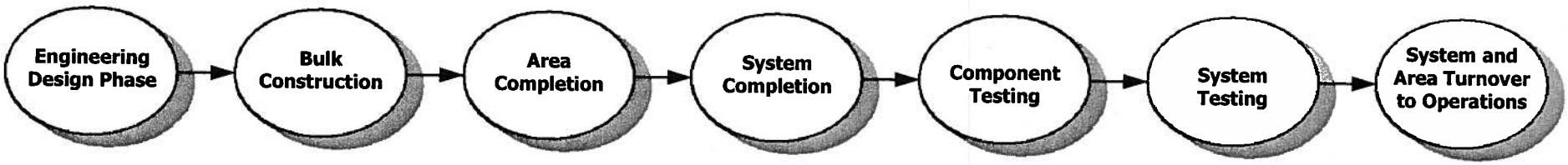
Enclosure 3

Organization Chart

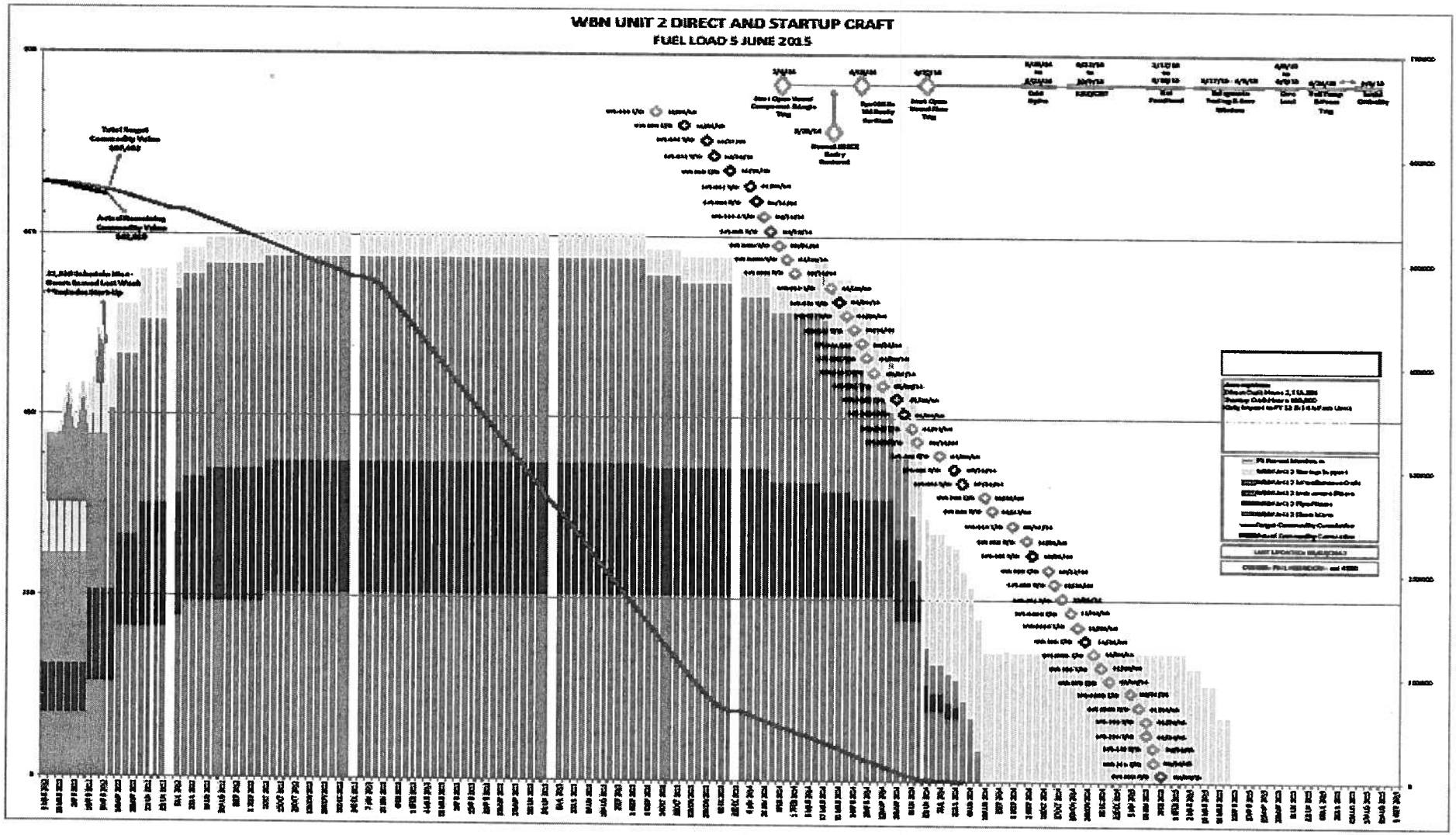


Enclosure 3

Construction Phase Map

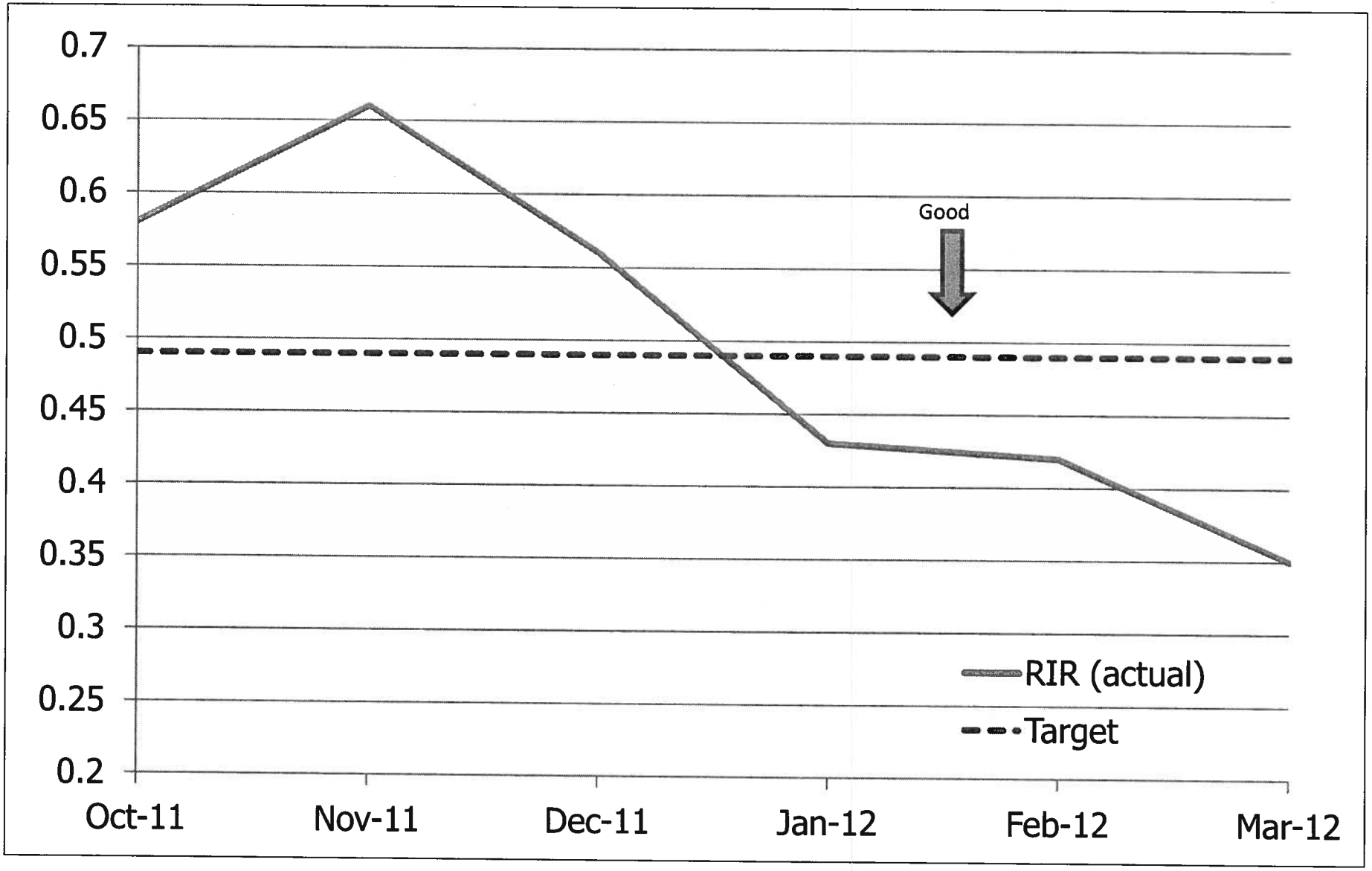


Schedule and Milestones



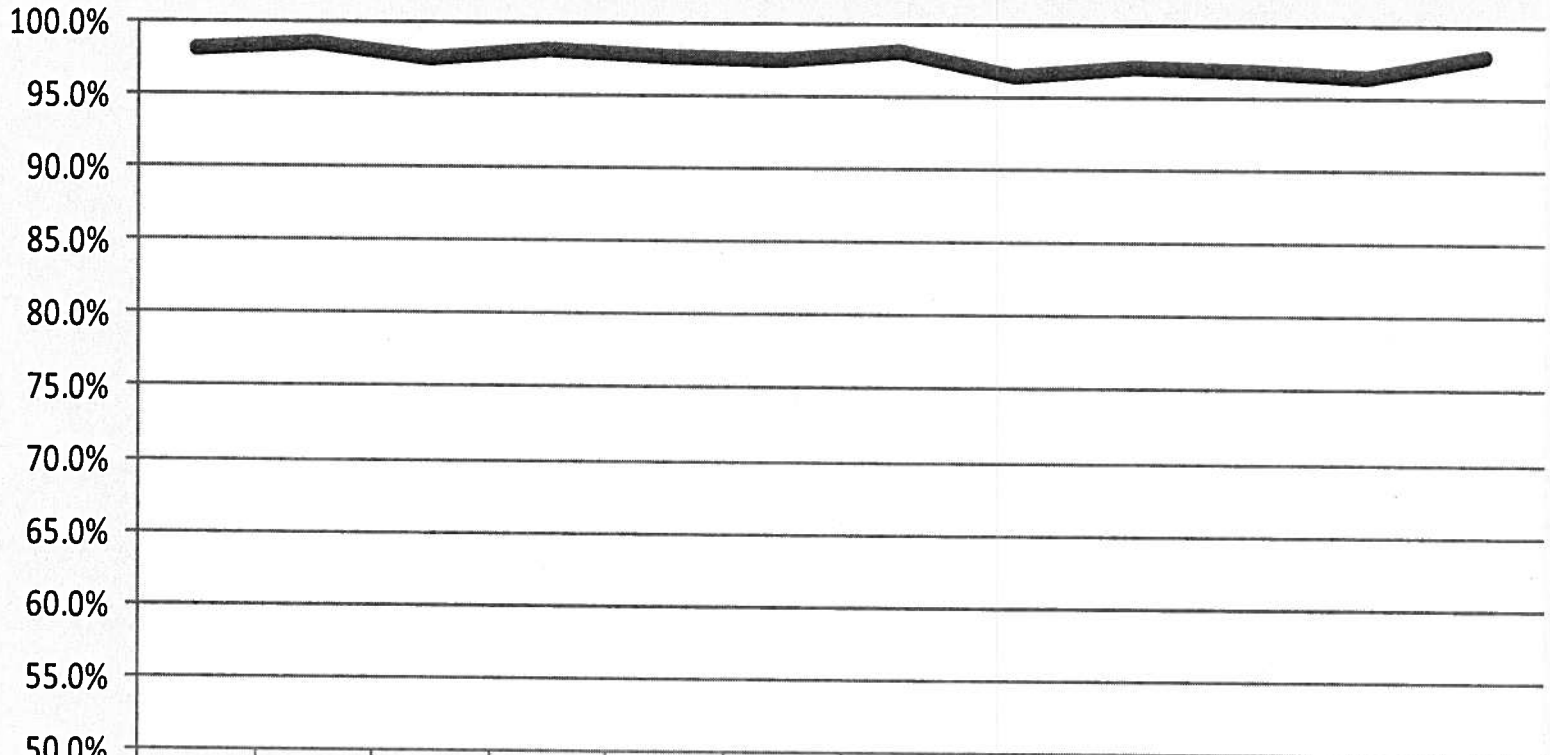
Enclosure 3

Safety Performance



Enclosure 3

Project Quality



	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Acceptance %	98.1%	98.5%	97.6%	98.1%	97.6%	97.5%	98.1%	96.5%	97.0%	97.0%	96.5%	97.9%

Enclosure 3

Schedule Performance

Measures of Success – Calendar Year 2012

- Schedule Performance Index – Consistently >1
- Earned Hours vs. Schedule – Consistently >1
- Commodity Work Off – Meeting Schedule
  - Piping
  - Electrical
  - Instrumentation
  - Ventilation
  - Hangers and Supports

Work Order Quality

Quality Assurance Identified Deficiencies in Work Order Packages Related to Document Completeness.

- Cause
  - Complex work packages and inconsistent adherence to procedural guidance
- Corrective Actions
  - Re-write complex work order packages to reduce and eliminate potential human error traps
  - Established a Work Closure Group to review work orders for completeness prior to closure
  - Trained work closure group on expectations and procedural guidance
  - Revised governing procedure to add clarification to the closure review process
  - Construction superintendent briefed construction discipline superintendents regarding expectations for work order completion by the craft

Work Order Quality

- Work Implementation
  - Quality Control inspections
  - Quality Assurance audits
  - Work order closure review
  - As-built verifications of engineering documents
- Testing
  - Component testing
  - System tests, pre-op and acceptance tests
  - Integrated plant testing
- Validation
  - Operational Readiness Turnover Process, including system walkdowns, re-verifications of processes and commitments as was completed by the System Pre-operability Checklists for Unit 1 licensing
  - System Plant Acceptance Evaluation, a final engineering review in support of system readiness for turnover and licensing

Asset Preservation

- Process
  - Strengthening the process that manages and provides oversight of activities that ensure plant equipment and system are maintained and properly layed-up
  - Reviewing plant equipment ensuring lay-up and preservation requirements are in the program
- Oversight
  - Establishing performance indicators to facilitate monitoring of the effectiveness of the asset preservation program for each system
  - Perform periodic assessments of program effectiveness

Unit 1/Unit 2 Interface

- Unit 1 Presence on Unit 2
  - Prior to planning evaluation performed to determine impact on operating Unit requires SRO input
    - Interface
    - Common system component
    - Auxiliary Building Secondary Containment Enclosure
    - Proximity to trip or risk sensitive equipment
  - Activities affecting Unit 1 are in operating plant schedule and receive risk review
  - Construction activities in common plant areas are monitored and controlled
  - All work planned on operating plant side of the interface is performed in accordance with operating plant processes and requirements

- Unit 2 Presence on Unit 1
  - A Unit 2 TVA manager participates in Unit 1 Plan of the Day meeting
  - Work in operating spaces is reviewed daily with the plant management
  - Unit 2 attends daily schedule meetings and provides input
  - Unit 2 unrestricted access is controlled by procedure and by approved access list

Unit 1/Unit 2 Interface

Unit 1 Pressurizer Heater Transformer De-energized

- Cause
  - Direct cause was improper use of human performance tools - specifically, individuals failed to verify correct component to work on
  - Root cause identified that process to restart work that had been started and delayed should be strengthened to protect plant and workers
- Corrective actions
  - Stopped project work and sent craft home to ensure we understood what occurred and that we had proper controls in place to protect plant and workers
  - Senior managers met with supervisors and craft to discuss event and what must happen to move forward
  - Verification practices are now observed in the field by supervisors
  - Involved plant operators to actively challenge workers in operating spaces
  - Injected additional levels of approval to work in common areas
  - Involved the trade unions in root cause and developing measures to prevent reoccurrence

Unit 1/Unit 2 Interface

- Corrective Actions (continued)
  - Placed additional controls on individuals granted unrestricted access to operating spaces
  - Formalized process for continuing work in the event the work package activity has been delayed
  - Formalized requirements for Pre-Job Brief and STARRT card Briefings
  - Required technical data fields on data sheets to be populated prior to going to the field.
  - Supervisor or Operations approval required prior to work in common areas
  - Union representatives reviewed event and importance of using human performance tools during meetings with the craft
  - Access to individuals in Unit 1 areas limited, with upper management approval required for access authorization

Unit 1/Unit 2 Interface

- Corrective Actions (continued)
  - Event Scenario incorporated into Dynamic Learning Center training
  - Strengthened requirements - Pre-job and STARRT Card Briefings
  - Developed process for continuing work after work package has been delayed
  - Required unit identifications on data sheets for field work
- Conclusions
  - Controls are in place to protect personnel and equipment and assure the safe operation of Unit 1.
  - We took aggressive action and fixed this problem.
  - If challenges are encountered, the team responds quickly and actions are put into place to address the problem and to preclude it from happening again.

Material Control

Program Issues

- Program implementation weaknesses were identified in specifying failure modes, safety functions and critical characteristics when performing commercial grade dedications.
- Commercial grade dedication is the process where Engineering evaluates a commercially available component to ensure it can perform a design safety function prior to approving the component for use.
- Cause
  - Methods used by Unit 2 to perform commercial grade dedications were not in accordance with current industry guidance and standards.
- Corrective Actions
  - Independent industry experts performed 100% review of commercial grade dedication packages utilized by Unit 2 Completion Project.
    - No technical issues identified that would challenge the component's ability to perform its safety function

Material Control

- Corrective Actions (continued)
  - Revise program procedures to incorporate latest regulatory and industry standards
  - Provided EPRI training on commercial grade dedication to unit 2, procurement engineering group personnel
  - Unit 2's commercial grade dedications identified with weaknesses will be revised/updated
  - Re-review the Unit 2, Replacement Items Project (RIP) Corrective Action Program for any potential impact

- Conclusions
  - Actions have been taken to address the weaknesses identified in the Commercial Grade Dedication program.
  - Commercial Grade Dedication packages used in support of Unit 2 have been evaluated.
  - No technical issues have been identified that would challenge the component's ability to perform its safety function.

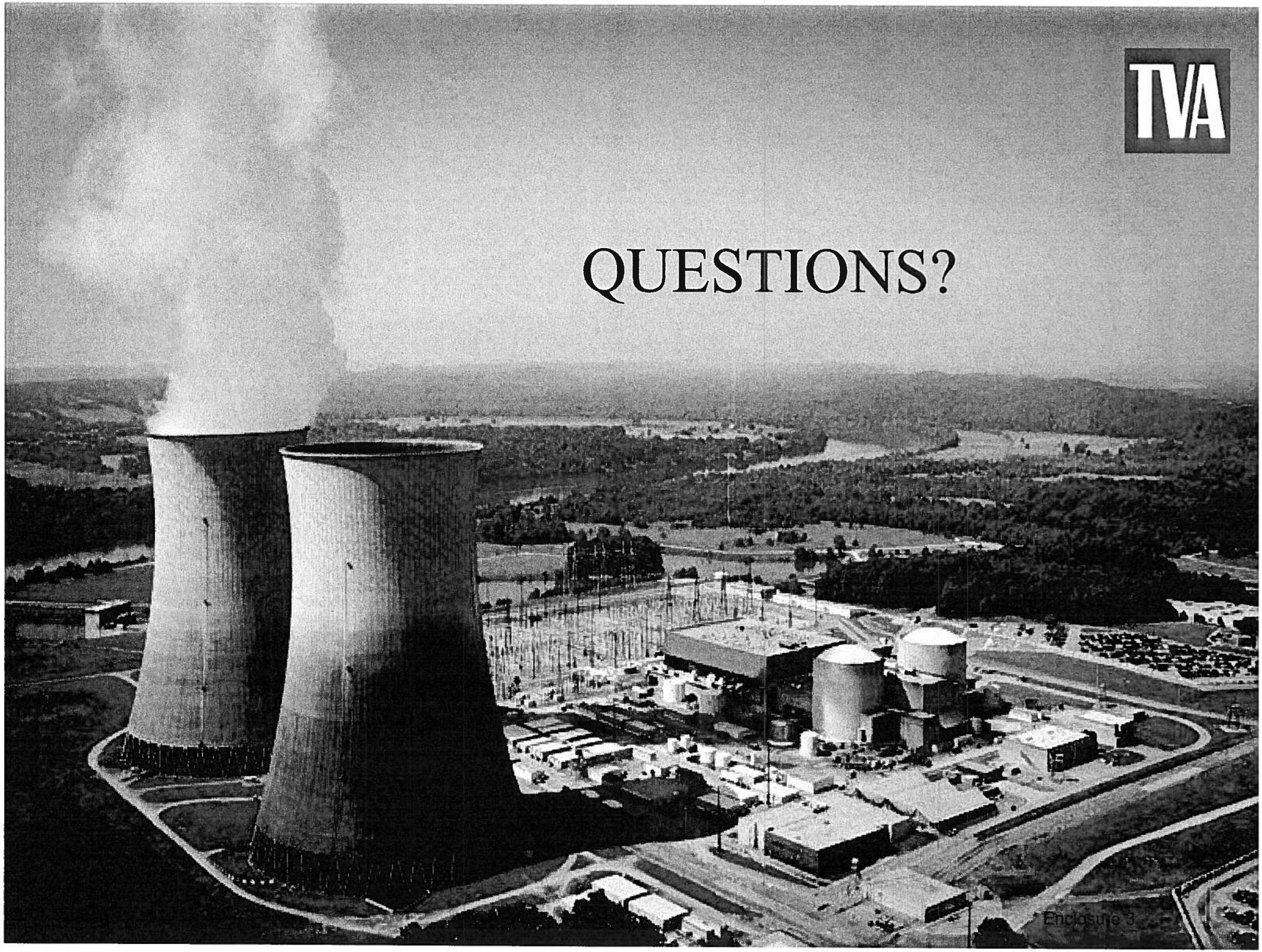
Corrective Action Program Changes

Effective use of CAP and work processes to drive timely correction of identified problems or issues

- Cause
  - Insufficient line management involvement and focus combined with large influx of low threshold items into the CAP – insufficient project integration
- Corrective Actions
  - Increase line management involvement (vs. support staff) at key process points – initiation, screening reviews, corrective action plan approval
  - Clarify through communication, training and process changes the most appropriate correction processes to expedite handling and completion
  - Re-review backlog for impact potential, priority, schedule integration – eliminate duplicative tracking and heighten monitoring of work-off plans
  - Restructure CAP alignment, monitoring, and oversight to improve effectiveness

Conclusions

- Complete Watts Bar Unit 2 in a safe and quality manner
- Focus on safe and uninterrupted operation of Unit 1
- Completing the project continues to be a cost-competitive investment in power generation capacity
- Independent, integrated schedule and cost performance indicators and tools in place to monitor progress and verify results.
- High degree of confidence in the revised schedule
- Several project risks and opportunities remain, yet these are manageable
- The project is scheduled to complete by December of 2015
  - Construction permit extension request submitted on May 17, 2012


TVA
QUESTIONS?

WELCOME

Watts Bar Unit 2 Construction Status Public Meeting

May 22, 2012

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Enclosure 4

Category 1 Public Meeting

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Please sign in
- Feedback forms
- Public invited to observe initial portion of meeting
- NRC available for questions/comments
- Agenda, slides, meeting summary, and list of attendees in Agency wide Documents Access and Management System (ADAMS)
  http://www.nrc.gov/reading-rm/adams.html

Agenda

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

1:00p – Introductions

- **Status of Watts Bar 2 Construction Project (TVA)**
- **Update on Construction Schedule (TVA)**
- **Update on Construction Inspection Activities (NRC)**
- **Licensing Status (NRC)**
- **Discussion of Recent Issues (TVA/NRC)**
- **Public Comments and Questions (NRC)**

3:00p – Meeting Adjourned

Inspection Program Updates

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- **Results of the End-of-cycle assessment review issued in a March 5, 2012 letter to TVA**
- **Overall acceptable performance**
- **Three items highlighted:**
  - **Inadequate corrective action for new and historical items**
  - **Commercial Grade Dedication program violations**
  - **No substantive cross-cutting issues**

Inspection Program Updates

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- **Next periodic assessment in August for the Mid-Cycle review**
- **Expended approximately 4,285 inspection related hours in 1st Quarter of 2012**

Impact of Schedule Changes on Inspection Program

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Reviewing TVA's Primavera construction schedule
- Adjusting NRC schedule for remaining inspection items
- Pace of regional inspections has slowed
- Number of resident inspectors reduced to three for the next six months
- Assigning a permanent 3rd resident inspector
  Use rotations for 4th resident position

Status of Inspection Items

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- **Approximately 537 construction inspection items in the Inspection Planning and Scheduling (IP&S) database**
- **Closed 206 items**
- **Many remaining IP&S items have been inspected, but require additional effort to close**
- **Closed eight (8) Corrective Action Programs and Special Programs, many sub-issues also closed**

Problem Identification & Resolution Inspection

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- Documented in Inspection Report 05000391/2012612 (ML12131A231)
- Identified two (2) Severity Level IV violations for incomplete problem identification and lack of timely corrective actions
- Concluded that a decline in performance in the Corrective Action Program had occurred since 2011
- Follow-up inspection being planned

Licensing Status

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

- **Safety Reviews – 96% complete**
  - **Results documented in SSERs 21 through 25**
  - **SSER 26 scheduled for September 2012**
    - **Fire Protection and closure of open items**
- **Security Program Reviews – 100% complete**
- **Emergency Preparedness Program – 100% complete**
- **Environmental Reviews**
  - **Draft published for comment in November 2011**
  - **Staff currently addressing comments**
  - **Final scheduled to be published in Aug/Sept 2012**

THANK YOU

Watts Bar Unit 2 Construction Status Public Meeting

May 22, 2012

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment