



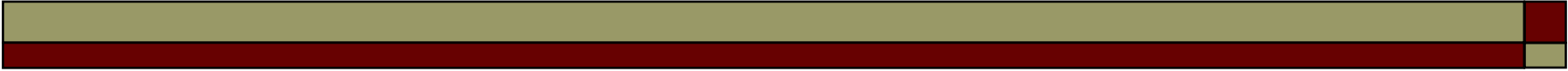
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# South Texas Project Units 3 and 4

# Overview

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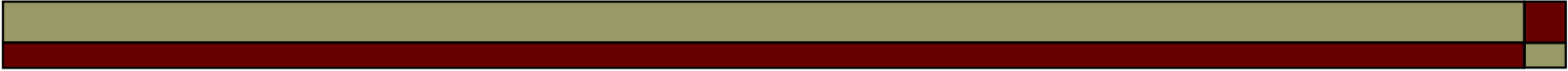
Mark McBurnett  
Vice President



# Agenda

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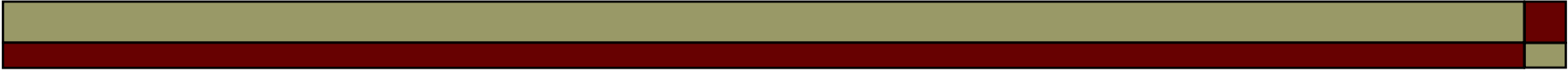
- Overview – Mark McBurnett
- ABWR Design & Engineering – Steve Thomas
- COLA Revision 2 – Greg Gibson
- Closing Remarks – Kevin Richards



# Purpose

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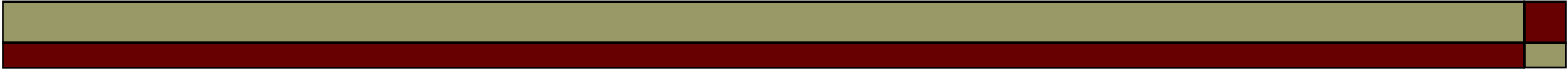
- Brief NRC Staff on:
  - Resolution of Vendor Support
    - Engineering, Procurement, and Constructor (EPC) Team status
  - Path Forward
  - ABWR Design and Engineering
    - Toshiba Capabilities Assessment Project
    - STP “Due Diligence” Project
  - COLA Revision 2
    - Changes from Revision 1



# Background

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- ❑ January 10, 2008 Letter STP to NRC
- ❑ January 30, 2008 Letter NRC to STP
- ❑ Review schedule was adjusted to allow STPNOC time to resolve vendor issues
- ❑ Review of site specific portions of the application and the Environmental Report continue



# Path Forward

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- ❑ An Engineering, Procurement, and Constructor (EPC) Team lead by Toshiba will design and construct the ABWR certified design
- ❑ COLA Revision 2 will reflect these changes

# ABWR Design & Engineering

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Steve Thomas  
Manager, Engineering

# ABWR Evolution



STP 3,4



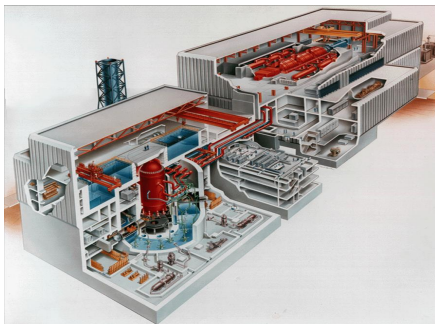
Hamaoka 5



Shika 2



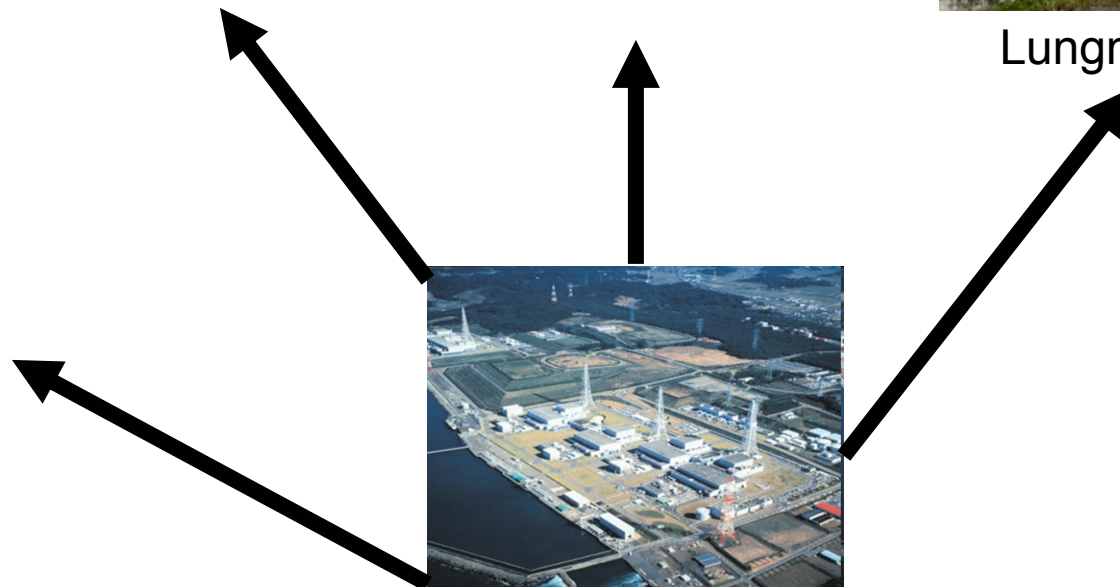
Lungmen 1,2



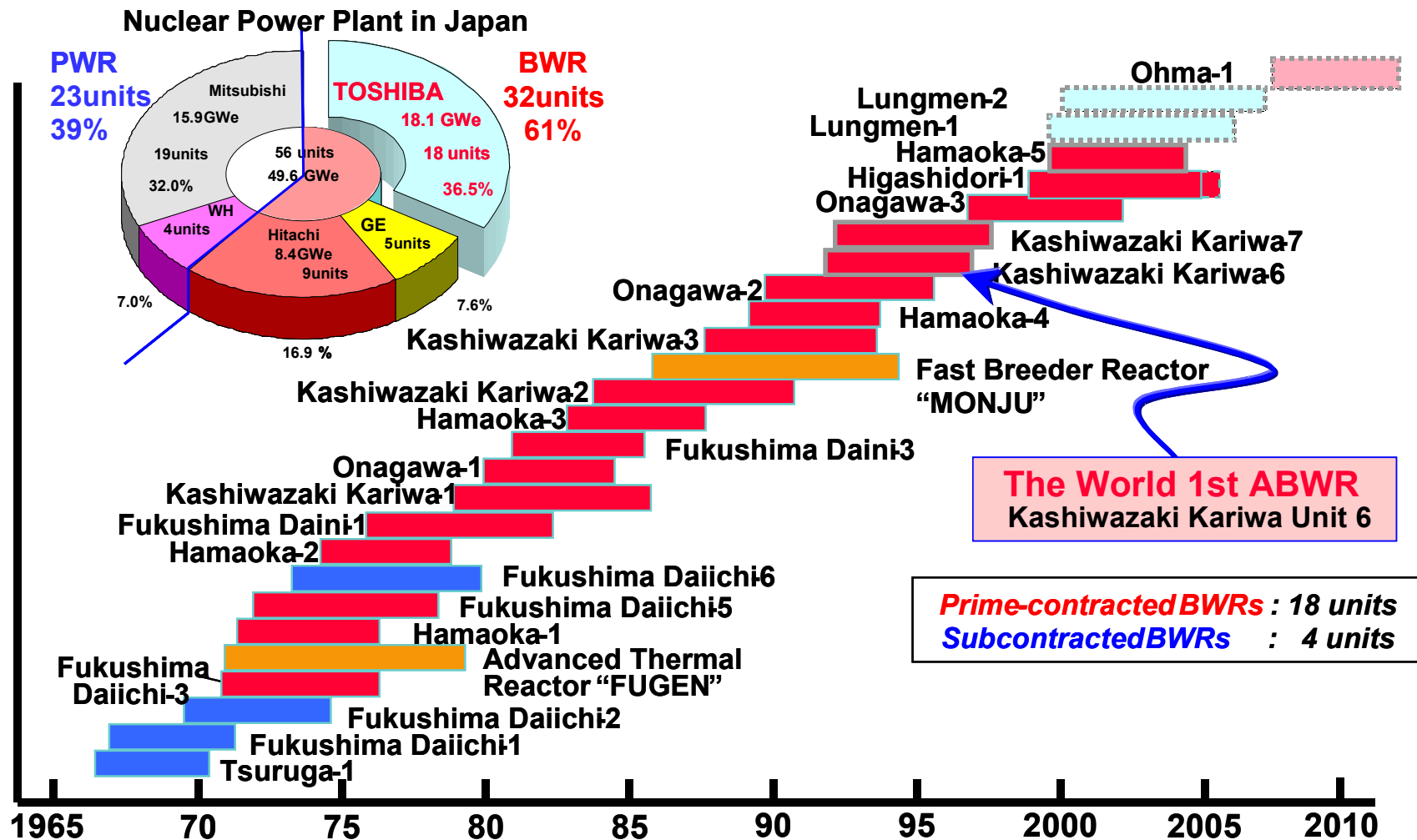
US ABWR  
DCD

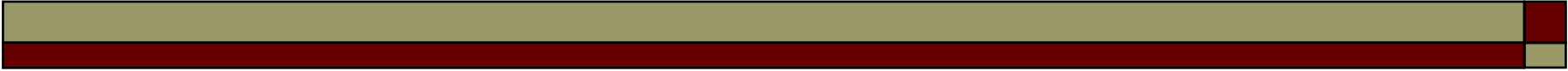


Kashiwazaki 6,7



# Toshiba Nuclear Experience



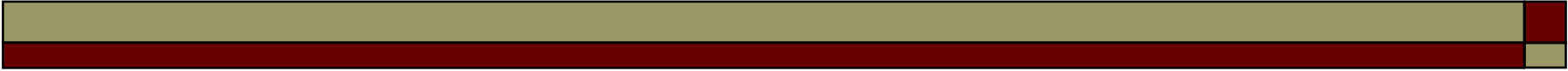


# Toshiba ABWR Experience

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Toshiba has extensive experience in the design & construction of three operating ABWRs:

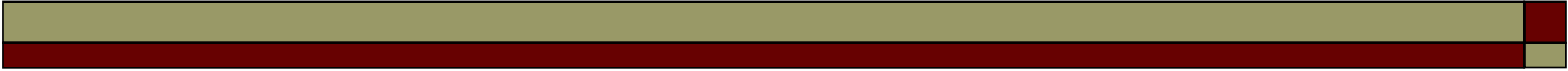
- First ABWRs (Consortium): **Kashiwazaki-Kariwa Unit 6** (1996); **KK Unit 7** (1997).
- Toshiba provided the ABWR NI on **Hamaoka Unit 5** (2005).



# Questions

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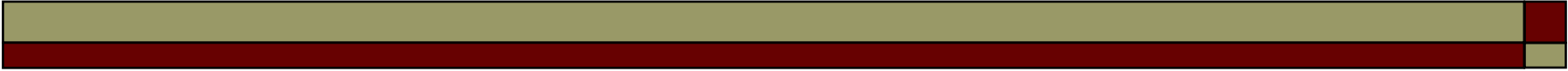
- ❑ Design Basis Documentation
- ❑ Extent of Previous Experience
- ❑ Staff
- ❑ Project Management
- ❑ U.S. Codes and Standards
- ❑ Process Controls
- ❑ Analytical Tools
- ❑ Operating Experience



# Objectives

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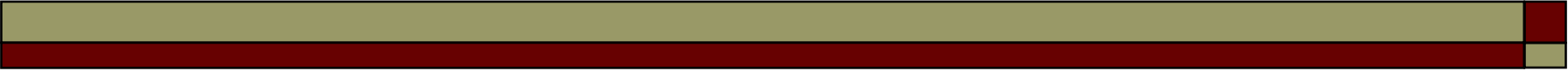
- ❑ Determine if Toshiba satisfies STPNOC's expectations to design, construct, and support the certified ABWR design for 60 years
- ❑ Determine if Toshiba is qualified to supply the Certified ABWR Design (10 CFR52.73)



# Success Factors

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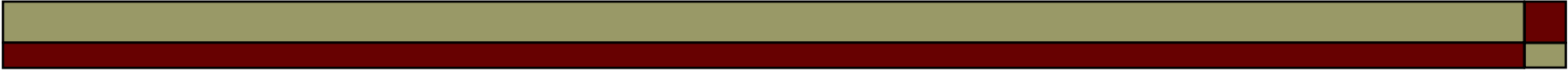
- ❑ Engineering documentation supports the certified design and license application
- ❑ Any schedule adjustments support project objectives
- ❑ Multiple sources of supply exist for critical components and equipment
- ❑ Work activities are supported by plans of action and implementation schedules



# Toshiba Capability Assessment Project (TCAP)

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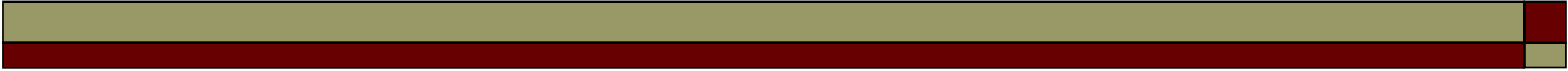
- Planning Meeting in Chicago with STPNOC
  - Toshiba
  - Sargent & Lundy
  - Westinghouse
  - Fluor
  - MPR
- Project Manager Assigned
- Investigation Areas Identified
- Responsible Managers and Companies Assigned
- Schedule Established
- Resources Committed



# TCAP Investigation Areas

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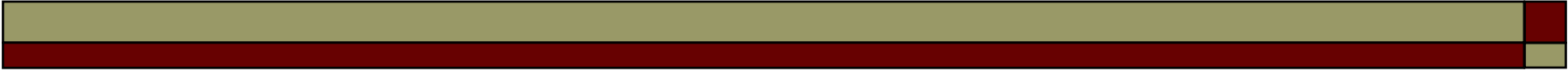
- Design Basis Documentation
- Licensing Capability
- Seismic Analysis
- Structural Design
- I&C Systems
- Human Factors Engineering
- Hydrodynamic Loads
- Severe Accident Methodology
- PRA
- Supply Chain
- Fuel
- “Americanization”



# STPNOC Due Diligence

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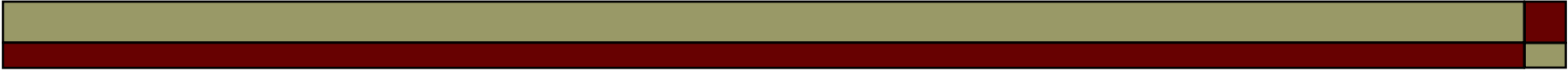
- Objectives
  - TCAP Oversight
  - Independent Assessment
  
- Team
  - Internal
  - External



# Schedule

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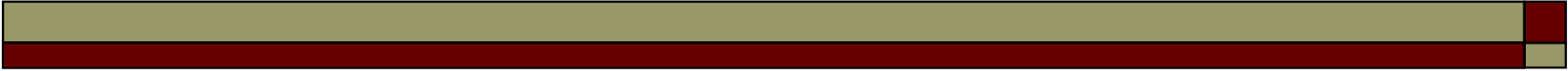
- ❑ TCAP & Due Diligence Kick-off – Jan 31
- ❑ Interim Assessment in Isogo – March 3-7
- ❑ LES Benchmarking – April 25
- ❑ Westinghouse Review – April 28-29
- ❑ S&L Review – April 30 – May 1
- ❑ Areva Benchmarking – May 7
- ❑ Final Toshiba Review in Isogo – May 15-20
- ❑ Draft Report Review – June 11-12
- ❑ Due Diligence Final Report Issuance – June 25



# Assessment in Isogo JP

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- ❑ March 3-7, 2008
- ❑ Objective – Look at each task to determine areas of highest project risk
- ❑ Observations – Exceeded expectations
- ❑ Conclusions
  - Knowledgeable staff
  - Comprehensive documentation and information management system
  - No areas of unacceptable project risk



# Benchmarking

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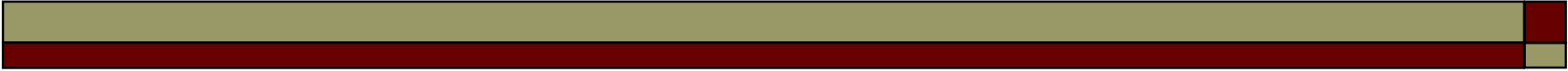
- ❑ LES, Houston, Texas, April 25<sup>th</sup> : VP Engineering
- ❑ AREVA, Charlotte, NC, May 7<sup>th</sup> : VP New Plants, VP Business Development, Licensing Mgr, Asst. Chief Engineer
- ❑ Objective – Understand lessons learned in design & construction when importing non-domestic technology into the US regulatory and industrial environment
- ❑ Take Aways:
  - Qualification of Specialized Foreign Equipment
  - Units of Measurement Interfaces
  - Single Set of Processes - Common Design Criteria, Methods, Processes, Tools, etc.
  - “Tropicalization”

# Westinghouse, Monroeville PA

## S&L, Chicago IL

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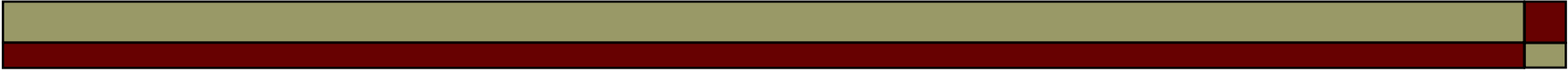
- April 28<sup>th</sup> – May 1<sup>st</sup>
- Objective – Confirm their EPC Team assigned responsibilities
- Westinghouse
  - Project support for I&C systems
  - Fuel (alternate supplier) and Safety Analyses
  - Licensing Support
- S&L
  - Nuclear Island detailed engineering
  - Electrical Design
- Conclusions
  - Westinghouse and S&L add extensive capabilities and US experience
  - Supports Toshiba's overall capabilities



# Final Assessment in Isogo JP

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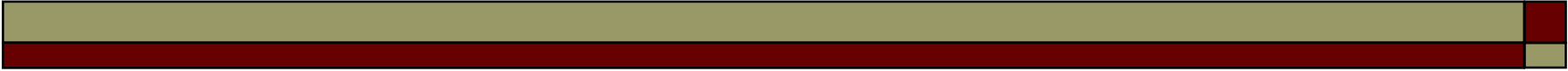
- May 15<sup>th</sup> – 20<sup>th</sup>
- FOAKE – Vertical slice assessments of EQ and Reactor Pressure Vessel
- Are we ready to go forward?
  - Verification of Toshiba as EPC lead and NSSS provider
  - Ensure action plans are in place for follow up activities



# Final Conclusions

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- ❑ We have confidence in the ability of the EPC Team to build the Certified ABWR Design and support the STP COLA
- ❑ Project risks & impacts have been addressed and found acceptable
- ❑ Action Plans are in place to address follow up activities



# Final Conclusions

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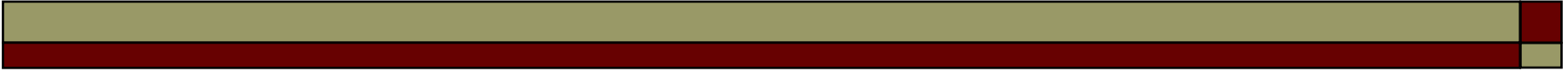
- COLA Rev 2 quality has benefited from the thorough independent review and revalidation by Toshiba and the EPC team, and our Due Diligence effort
- We are ready to go forward

# COLA Revision 2

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Greg Gibson

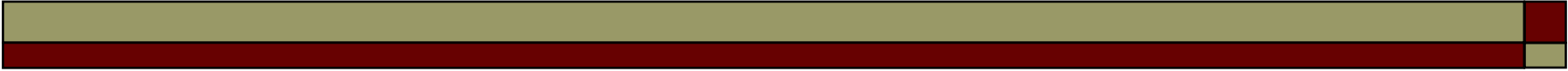
Manager, Regulatory Affairs



# Agenda

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- Overview
- Departures
- External References
- Ultimate Heat Sinks
- Schedule



# Overview

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- What has happened since Rev 1?

**We assured ourselves that Toshiba is qualified to support the ABWR Certified Design**

- What will change from Rev 1 to Rev 2:
  - Deleted some departures to return to DCD design
  - Revised/New departures
  - Removed some external references
  - Changed from a Single to Two Ultimate Heat Sinks

# Departures Against 1997 ABWR Certified Design

## Rev 0 – 11 Tier 1

- 5 – New technology
  - I&C
  - Reactor Core Isolation Cooling (RCIC)
  - Feedwater Line Break (FWLB)
  - Control systems changes
  - Safety Relief Valve (SRV) setpoint changes
- 1 – Site specific
  - Site Env Parameters
- 5 – Misc Changes
  - Eliminated H2 recombiners
  - 4<sup>th</sup> Div I&C
  - Electrical breaker coordination
  - Spent Fuel Cooling
  - Main Steam Isolation Valve (MSIV) Closure

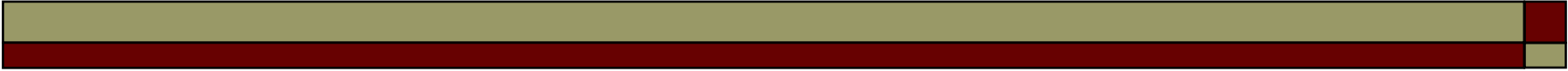
## Rev 2 – 14 Tier 1

- 4 – New technology
  - I&C
  - RCIC
  - FWLB
  - Control system changes
  - **[SRV setpoint changes]**
- 2 – Site Specific
  - Site Env Parameters (revise to include Minimum Shear Wave Velocity)
  - **Diesel Generator (DG) Room Temp**
- 8 – Misc Changes
  - Eliminated H2 recombiners
  - 4<sup>th</sup> Div I&C
  - Electrical breaker coordination
  - Spent Fuel Cooling
  - MSIV Closure
  - **Reactor Internal Pump (RIP) motor clad**
  - **Rad Waste Bldg Non-Seismic**
  - **Fix omission on water chemistry**

# Tier 1 Departures (Continued)

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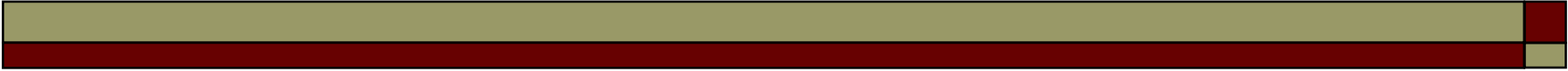
- T1 2.1-1 **Deleted** – Safety Relief Valves setpoint changes (going back to DCD)
- T1 2.1-2 **New** – Clarifies that RIP Motors do have some cladding
- T1 2.15-1 **New** – Clarifies that the RadWaste building is non-seismic
- T1 3.2-1 **New** – DCD reflects dated technology in water chemistry. Make Tier 1 consistent with Tier 2.



# Tier 1 Departures (Continued)

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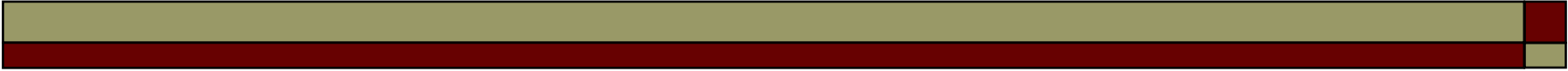
- T1 2.15-2 **New** – Site characteristics increase the DG Room maximum design temperature from 50°C to 60°C – designing for less than a 5°C increase (above 46.1°C) requires significant changes in the DCD-approved cooling water systems, buildings and/or power requirements for an expanded DG room cooling system. EQ increased for limited number of components.



# Tier 1 Departures (Continued)

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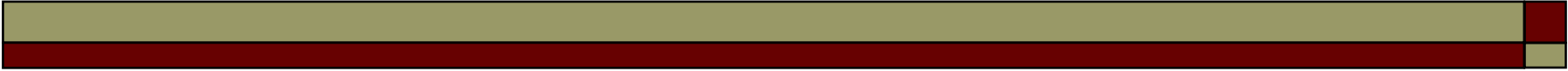
- T1 5.0-1 **Revised** – Site Parameter changes from generic envelope (minimum shear wave velocity)



## Tier 2\* Departure

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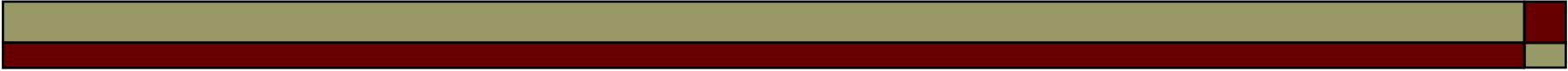
- One Tier 2\* Departure 1.8-1 is updated for compliance with:
  - Tier 2 Table 1.8-20 listing of applicable NRC Regulatory Guides
  - Tier 2 Table 1.8-21 listing of applicable industry codes and standards



## Other Changes

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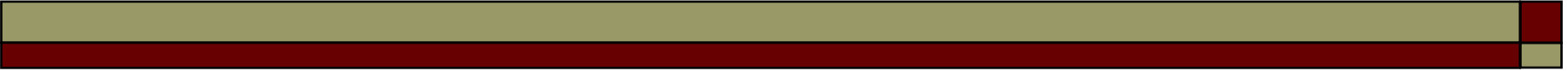
Changes to Tier 2 information are being made in accordance with our processes under 10 CFR 52, Appendix A, VIII.B.5(a) – Changes that can be made without prior NRC approval.



# External References

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- Rev 0 and Rev 1 referenced 13 new external documents
- Rev 2 incorporates these as supplemental information, requiring no external references

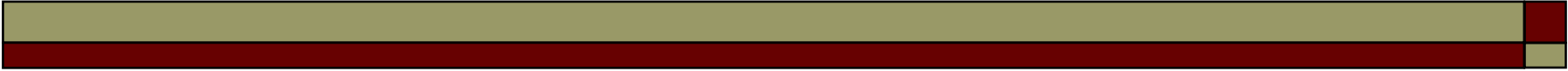


# Ultimate Heat Sink

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Significantly reduces the design & construction complexity of the reactor service water piping & tunnels

| REV 1               | REV 2                                                                           |
|---------------------|---------------------------------------------------------------------------------|
| One large structure | Two separate structures, one per unit. Significantly closer to reactor building |



# Schedule

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- Will submit a letter in August on TCAP/DD
- Revision 2 scheduled for October submittal
  - Currently completing COLA markups
  - Currently completing TCAP actions
- Expected NRC actions after Rev 2 submittal
  - Republish a notice of opportunity for hearing on the Application
  - Finalize review schedule

# Closing Remarks

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Kevin Richards

Group Vice President