Brunswick Nuclear Plant
Units 1 and 2

TS 3.8.1
Diesel Generator
Completion Time Extension

License Amendment Request
Pre-Submittal Meeting
June 7, 2012

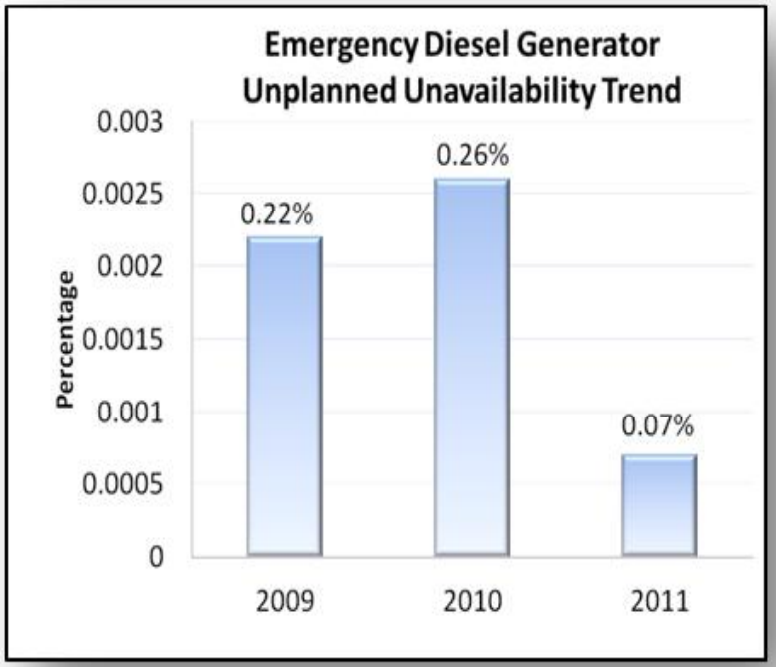
NGG
Think Fleet.

Progress Energy

Agenda

- Introductions / Opening Remarks
- License Amendment Request (LAR) Overview
- Project Overview
- Probabilistic Risk Assessment (PRA) Overview

Introduction/Opening Remarks
Nuclear Safety – Emergency AC Power



- EDG Collector Rings
- Switchyard Breaker/Panel/Relay Replacements
- 27SX-1 Relay
- UV/DUV Relays
- Switchyard Insulator Coatings
- Air Start Modification
- 14 Day LCO EDG

LAR Overview - Proposed Change

- Extend Technical Specification Diesel Generator (DG) Completion Time (CT) from 7 days to 14 days

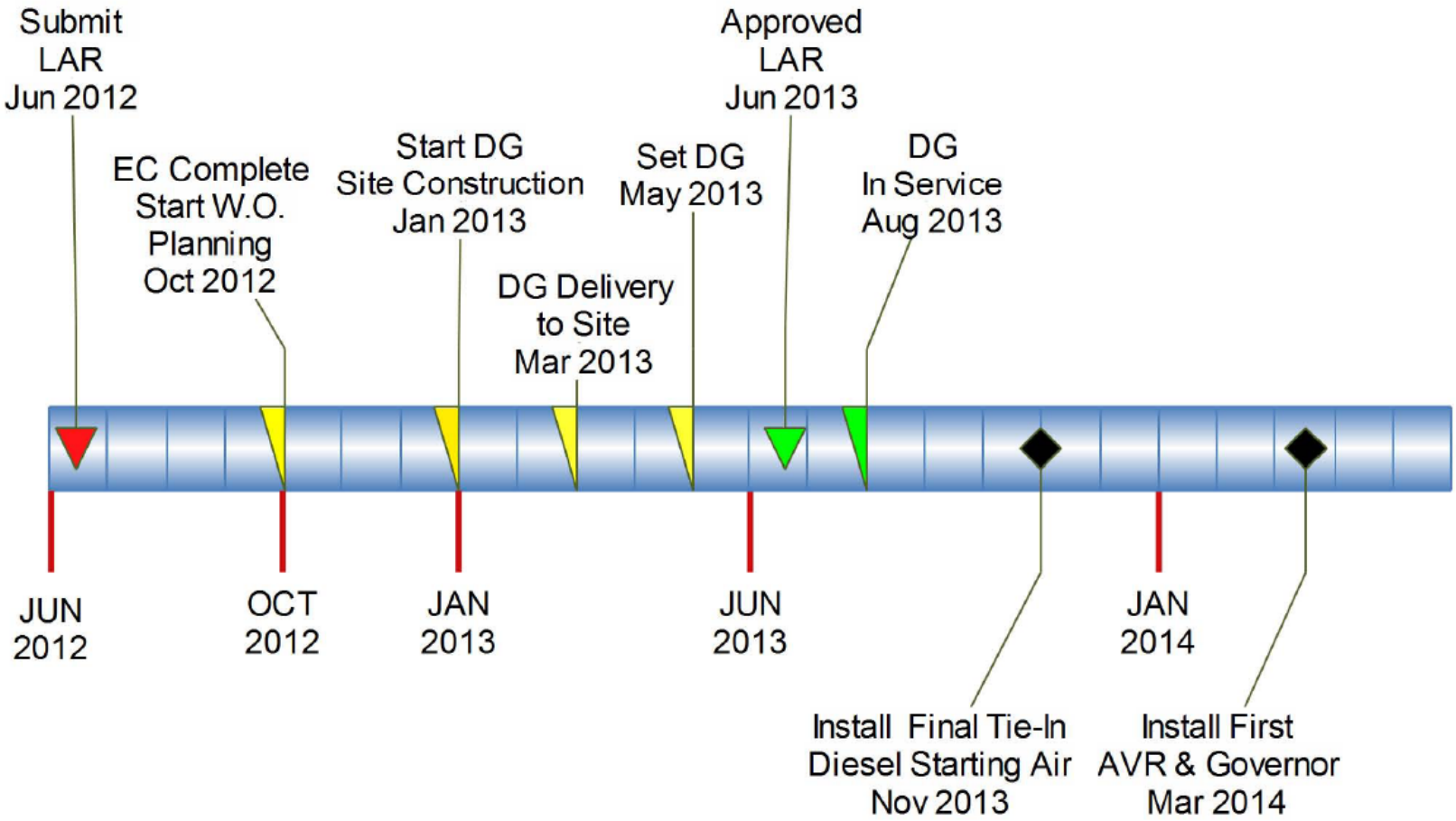
- Branch Technical Position (BTP) 8-8
  - LAR supported by PRA
  - BNP installing a 4MW non-safety Supplemental DG (SUPP-DG)
    - Capacity to bring affected unit to Cold Shutdown
    - Capable of powering E-bus within 1 hour of SBO event
  - Technical Specifications include:
    - Verify availability of SUPP-DG before entering extended CT
    - Availability of SUPP-DG checked once per shift
    - Action should SUPP-DG become unavailable during extended CT
  - Monthly Test

Emergency Diesel Generator Improvement Actions

EDG Actions												
Action	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
EDG #2 Exhaust Bellows										Completed		
Allen Bradley Relays										Working		
Jacket Water TCV's										Scheduled		
SAMG DG's												
Capacitor Leakage												
EDG PM Evaluations												
Ultra Low Sulfur Fuel												
Latent Design Issues												
Human Performance Issues												
High Quality Potentiometers												
GEMCO Control Switches												
Clean Fuel Tanks												
Refurbish JW Coolers												
Voltage Reg Replacement						Eng/Procure	Planning	Install	Install	Install	Install	
Air Start Configuration						Eng/Plan/Install	Install					
Collector Ring Replacement												
Governor Replacement						Eng/Planning	Eng/Planning	Install	Install	Install		
14 Day EDG LCO						Eng/Planning	Install					
EDG PM Optimization												
Rebuild Turbo												
Critical Spare Parts (Identify)												
Spare Generator						Procure	Fab	Receive				
Generator Inspection						Eng/Planning	Eng/Planning	Inspect	Inspect			
Data Acquisition						Eng/Planning	Eng/Planning	Install				
Digital Relays						Study		Eng/Planning	Install	Install		
Replace FO Buried Piping						Eng/Planning	Install					
New Safety Maintenance DG						Spec Dvpmt	Hold. Pending Fukishima recommendation resolution.					
Loadbank to Support Online LOOP/LOCA Equivalent								Eng/Planning	Install			

Project Overview

- Project Status & Schedule



Note: Automatic Voltage Regulator (AVR)

PRA Overview

- PRA Includes: Internal Events, Internal Flooding, External Events, High Winds, External Flooding, Fire
- All Completed Peer Reviews against ANS/ASME PRA Standard and RG 1.200 R2
- Seismic has qualitative assessment

PRA Overview

- Results of Emergency Diesel Generator (EDG) Allowed Outage Time (AOT) Risk Evaluation

Risk Metric	Risk Metric Results	
	Unit 1	Unit 2
Total CDF	4.2E-05	4.1E-05
Total Δ CDF	8.5E-07	8.3E-07
Total LERF	3.7E-06	2.5E-06
Total Δ LERF	4.8E-09	6.2E-09
Total ICCDP	4.3E-07	4.1E-07
Total ICLERP	2.0E-09	3.5E-09

PRA Overview

- Brunswick Nuclear Plant (BNP) Internal Events
  - Peer Review June 2010
  - All Supporting Requirements (SR) Reviewed
  - Resolved to Capability Category (CC) II except for 7 Findings and Observations (F&Os)
    - 4 Documentation issues
    - 3 LERF SRs at CCI

PRA Overview

- BNP External Events
  - High Winds/External Flooding
    - Peer Review January 2012
  - All Supporting Requirements Reviewed
  - High Winds
    - 3 F&Os remain on documentation
  - External Flooding
    - All F&Os resolved

PRA Overview

- Significant External Events Conservatisms
  - High Winds/ External Flooding
  - Some Operator Actions could be Credited

Fire PRA

- Fire PRA Overview
- Important Fire Areas and Scenarios
- Fire PRA Peer Review
- Current Status

Fire PRA Overview

- Methods Similar to Harris Nuclear Plant (HNP) Application
  - NUREG 6850
  - Used Accepted Alternatives (e.g., FAQ 08-0046)
  - RG 1.200 Peer Review Process
- Methods Beyond NUREG/CR-6850
  - The BNP Fire PRA calculates using:
    - ✓ A Severity Factor 0.1, Where 90% of the Fires are Contained Within the Motor Control Centers (MCC)
    - ✓ Heat Release Rate (HRR) Severity Factors are Treated Independently, Similar to Other Cabinets
  - Method was Used to Address RAI 5-32 for the HNP NFPA-805 Application

Fire PRA Overview

- Significant Efforts
  - Bus Ducts and Below Ground Cable Ducts
  - Electrical Coordination of PRA Components
  - Walkdowns and Related Documentation

- Significant Conservatism
  - No Credit taken for Flame Retardant Coating Installed on Thermoset Cable
    - Cable Spread Room (CSR)
    - Diesel Generator Building Basement

Fire PRA Overview

- Incipient Detection
  - Main Control Boards – Credit per FAQ 08-0046
  - CSR Area Wide – Normal Detection Credit
- Crediting Existing Solid Bottom Trays to Delay Damage
  - Per NUREG/CR-6850

Important Fire Areas and Scenarios

- Cable Spread Room
- Control Room Abandonment
  - Detailed Human Reliability Analysis (HRA)
- Control Room
- Turbine Building
- Battery Rooms
- Switchgear Rooms

Fire PRA Peer Review

- Fire PRA Peer Review
  - Peer Review December 2011
  - Performed by Boiling Water Reactor Owner's Group per NEI 07-12 Process
- Incorporated Findings Resulted in Improved Core Damage Frequency
  - Greater than 50% improvement

Fire PRA Status

- One Modification Credited
- Additional Fire Modeling
  - Diesel Generator Building Basement
  - Main Control Room
  - Cable Spread Room

Questions