



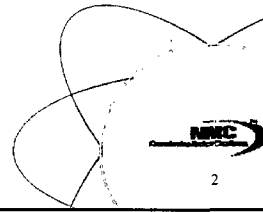
Monticello Extended Power Uprate (EPU) License Amendment Request

May 14, 2008



Agenda

- Objectives
- EPU Project Background
- License Amendment Request Format
- Items of interest
 - Requested Change to Power
 - Grid Stability Evaluation
 - Containment Analysis
 - Containment Overpressure (COP)
 - High Energy Line Breaks (HELB)
 - Steam Dryer Evaluation
 - Startup Test Plan
- Monticello Schedule
- Open Discussion
- DVD Demonstration



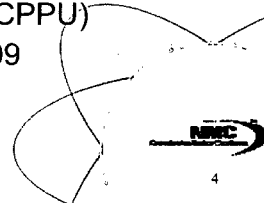
Objectives

- Clarify requested license power versus EPU rated thermal power analysis
- Review items of interest in the submittal
- Demonstrate linked DVD



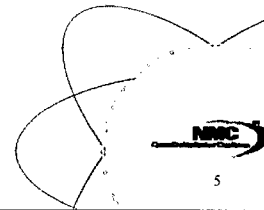
EPU Project Background

- Monticello Background
 - Initial License (1970)
 - 1670 MWt Original Licensed Thermal Power (OLTP)
 - Extended Power Uprate (1998)
 - 1775 MWt (~106% of OLTP)
 - License Renewal Approved (November 8, 2006)
 - Extended Power Uprate
 - Constant Pressure Power Uprate (CPPU)
 - 1870 MWt (~112% of OLTP) in 2009
 - 2004 MWt (120% of OLTP) in 2011



EPU Project Background

- EPU Project Goals
 - Maintain or improve safety and risk profile
 - Improve or enhance equipment reliability



License Amendment Request Format

- NMC EPU PUSAR* Format
 - General Electric (GE) PUSAR reformatted to NRC Review Standard RS-001
 - Regulatory evaluation and conclusion sections of the RS-001 safety evaluation templates are within the PUSAR
 - Plant-specific licensing bases sections provided

*PUSAR is Power Uprate Safety Analysis Report



License Amendment Request Format

- Cover Letter
- Enclosures:
 - 1 - Evaluation of Proposed Changes
 - 2 - Proposed TS Markups
 - 3 - Proposed TS Bases Changes (for information)
 - 4 - Environmental Assessment
 - 5, 6, 7 - PUSAR (Proprietary, Affidavit, Non-Proprietary)
 - 8 - Planned List of Modifications
 - 9 - Startup Test Plan
 - 10 - Piping Flow Induced Vibration Monitoring Program
 - 11, 12, 13 - Steam Dryer Dynamic Stress Evaluation (Proprietary, Affidavit, Non-Proprietary)
 - 14 - Grid Stability Evaluation Summary
 - 15 - Identification of Risk Implications Due to EPU



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Items of Interest

- Requested Change to Power
- Grid Stability Evaluation
- Containment Analysis
- Containment Overpressure (COP)
- High Energy Line Breaks (HELB)
- Steam Dryer Evaluation
- Startup Test Plan

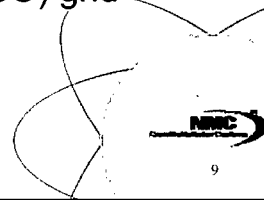


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Items of Interest

Requested Change to Power

- Licensed power of 1870 MWt
- Rated Thermal Power (RTP) redefined to cover analysis and plant operating parameters (2004 MWt)
- Submittal for 2004 MWt when Midwest Independent System Operator (MISO) grid stability complete



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Items of Interest

Grid Stability Evaluation

- Results of the independent evaluation at 2004 MWt provided in LAR
- Results of the first MISO evaluation to NRC by June 30, 2008 (commitment)
- Working with MISO for the second evaluation to 2004 MWt



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Items of Interest

Containment Analysis

- Credits the presence of passive containment heat sinks
- Varies residual heat removal (RHR) heat exchanger capability as a function of inlet fluid temperature
- Assumes mechanistic heat and mass transfer from the suppression pool surface to the wetwell airspace



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Items of Interest

Containment Analysis

- Long-term containment analyses current license basis performed using the GE SHEX code (with exception of station blackout (SBO))
- EPU long-term containment analyses performed with GE SHEX code including SBO



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Items of Interest

Containment Overpressure

- Emergency core cooling system (ECCS) low pressure pumps continue to require COP credit to satisfy pump net positive suction head (NPSH) requirements at EPU
- Requesting a 0.84 psi increase in maximum COP credit
 - from 20.36 psia to 21.2 psia (5.66 psig to 6.5 psig)
 - single value upper limit to bound all design and licensing basis events



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Items of Interest

High Energy Line Breaks

- EPU analysis provides bounding results
- Steam line breaks unchanged per CPPU methodology
- Liquid line break results are greater than a typical EPU due to methodology changes
- Affected equipment will be reanalyzed, requalified or replaced

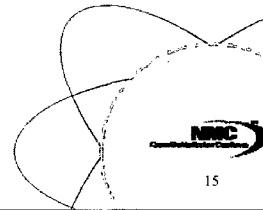


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Items of Interest

Steam Dryer Evaluation

- Background
 - GE Square Hood Dryer
 - Licensing basis accident is main steam line break outside of containment
 - Inspections per BWRVIP 139

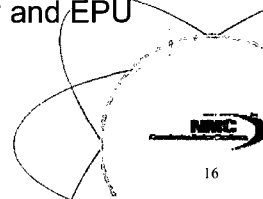


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Items of Interest

Steam Dryer Evaluation

- Evaluation Approach
 - Screening of susceptibility to acoustic excitation validated by scale model tests
 - Strain gage measurements of current licensed thermal power (CLTP) main steam line acoustics
 - Acoustic circuit model of steam dome
 - Finite element model of dryer at CLTP and EPU conditions
 - Limit curves for power ascension

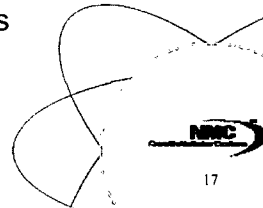


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Items of Interest

Steam Dryer Evaluation

- Evaluation conclusions:
 - Scale model tests are consistent with calculated results
 - Acceptable stress ratio
 - Highest stresses occur in the cover plate to hood welds as expected
 - Startup test plan with dryer limit curves

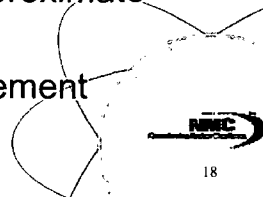


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Items of Interest

Startup Test Plan

- Standard Review Plan (SRP) 14.2.1 and GE licensing topical reports (LTRs) used as guides
- Performed after each EPU implementation outage (2009 & 2011)
- Baseline data taken at 90% and 100% CLTP, followed by power ascension in approximate 2.5% increments
- Data will be evaluated at each increment



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Items of Interest

Startup Test Plan

- Major Test Evolutions
 - TS instrument surveillances
 - Feedwater and reactor level and pressure control systems
 - Steam dryer performance (moisture carryover) and integrity (structural)
 - Main steam and feedwater vibration monitoring
 - Plant walk downs



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Items of Interest

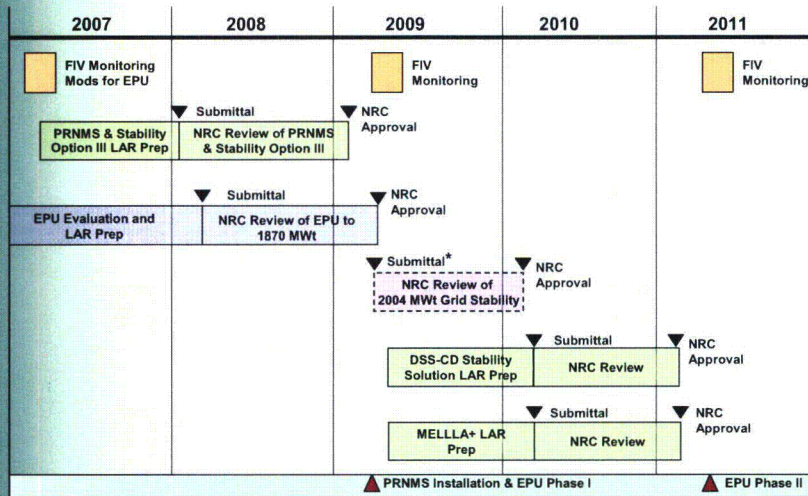
Startup Test Plan

- Major Test Evolutions (continued)
 - Radiation measurement
 - Other power dependent parameters
 - Post modification operational testing integrated into the plan
 - Large transient testing not required



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Monticello Schedule



▲ = Implementation

* Schedule is still being determined.

Open Discussion

- Questions
- Feedback



DVD Demonstration

- Facilitate review
- Precedent
- Demonstration

