

**NMC**

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*Committed to Nuclear Excellence*

# Pre-application Meeting for Monticello Extended Power Uprate (EPU)

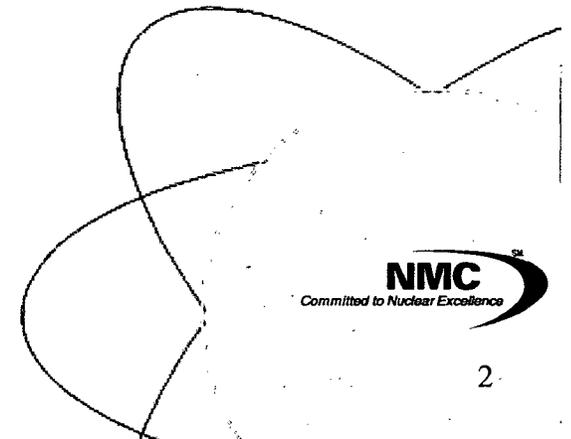
June 5, 2007

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# Agenda

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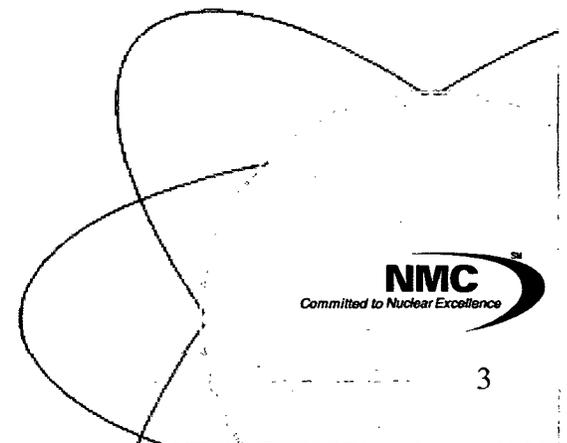
- Introductions
- Objectives
- Background
- Project Overview
- License Amendment Request
- Power Range Neutron Monitoring System
- Future Plans
- Project Time Line
- Summary and Conclusions



# Objectives

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- Discuss:
  - Unit operational strategy
  - EPU project strategy
  - Submittal format
  - One concurrent submittal
  - Obtain NRC feedback
    - Submittal format
    - Concurrent submittal



# Background

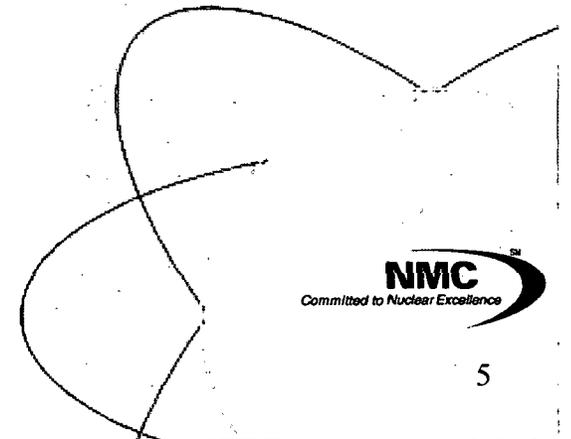
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- Initial License (1970)
  - 1670 MWt Original Licensed Thermal Power (OLTP)
- Extended Power Uprate (1998)
  - 1775 MWt (106.3% of OLTP)
  - First EPU in the industry
- Extended Power Uprate (2009)
  - Constant Pressure Power Uprate (CPPU)
  - 2004 MWt (120% of OLTP)

# Unit Operational Strategy

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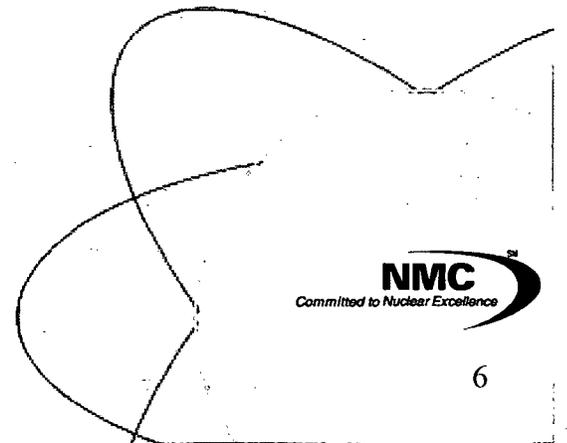
- Renewed Operating License
- Dry Fuel Storage
- Life Cycle Management (LCM)
- Extended Power Uprate (EPU)



# EPU Project Goals

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

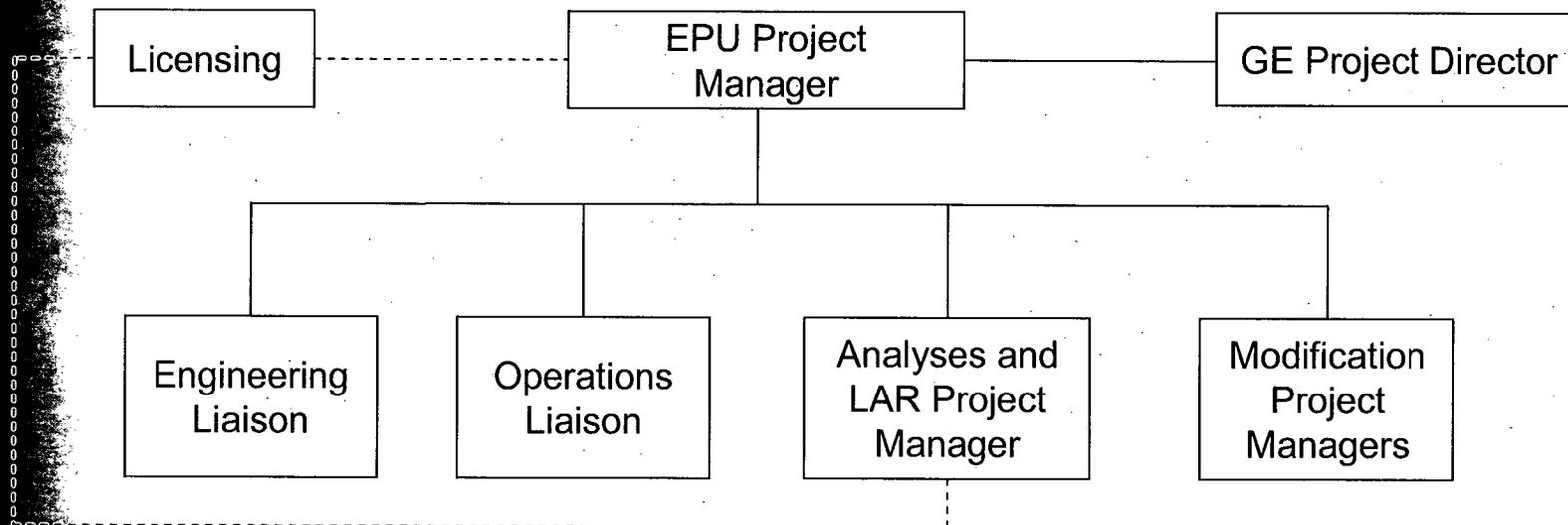


# EPU Project Principles

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- Follow existing regulatory processes
- Use industry operating experience
- Coordinate with License Renewal and Life Cycle Management projects
- Minimize the impact on day-to-day operation
- Extract the value from standardization, economies of scale, with minimal duplication

# Project Organization



# Project Implementation

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- Phased power increase over two operating cycles:

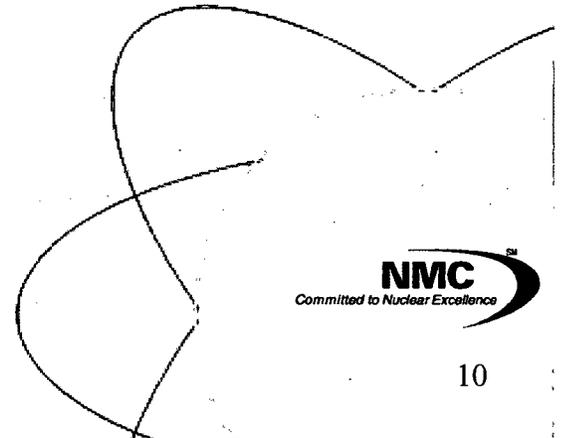
Phase I (2009): Operate to electrical generator limits

Phase II (2011): Upgrade the electrical generator

# Planned Phase I Modifications

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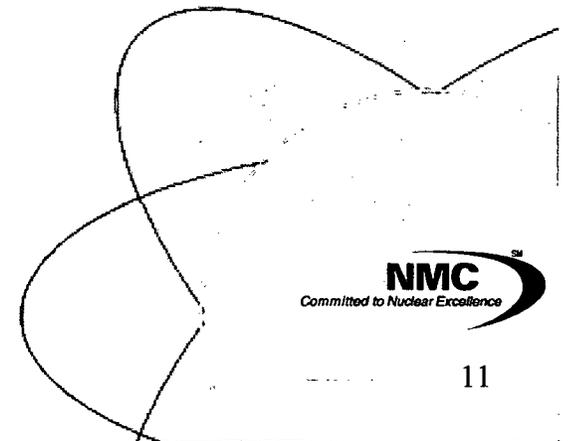
- Steam dryers (if required)
- Power Range Neutron Monitoring System
- Instrumentation and setpoints
- Various BOP modifications to be identified in License Amendment Request



# Planned Phase II Modifications

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- Various BOP Modifications to be identified in the License Amendment Request



# Steam Dryer Evaluations

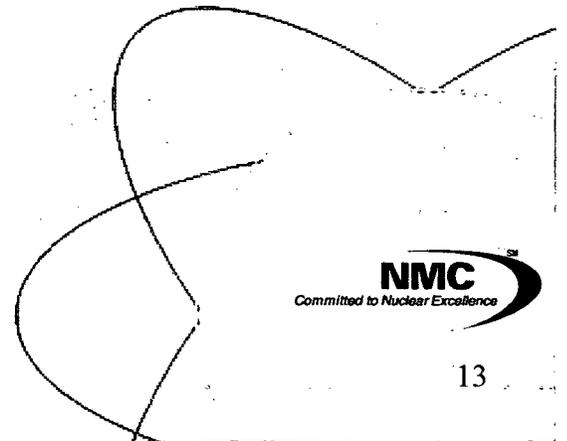
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- April 2007 visual inspection results satisfactory
- Strain gauges installed during 2007 refueling outage
- Steam dryer vibration monitoring using the guidance of the BWR Vessel and Internals Project (BWRVIP)
- Guidance from Regulatory Guide 1.20

# Containment Overpressure Credit

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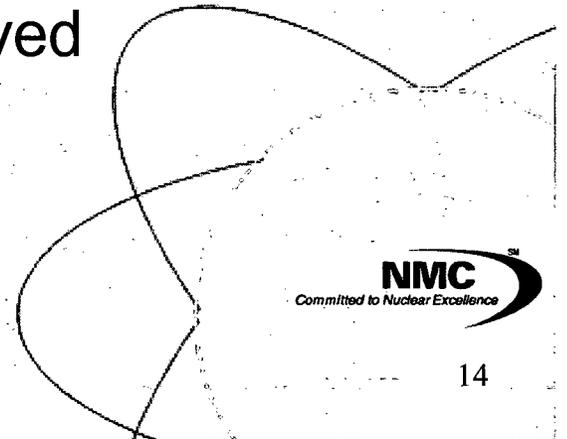
- Currently licensed for containment overpressure credit
- EPU analysis will be consistent with recent BWR EPUs



# License Amendment Request

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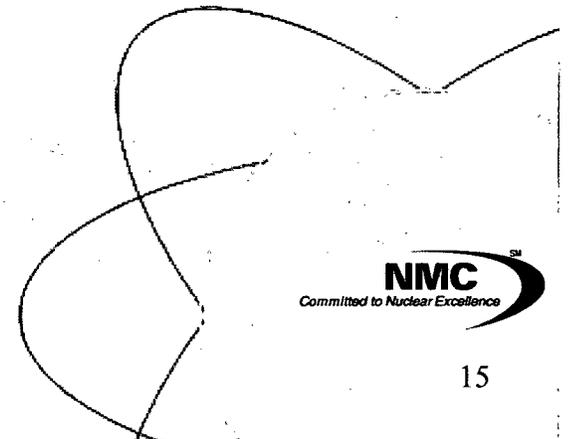
- Based on GE licensing topical report
  - NEDC-33004P-A, “Constant Pressure Power Uprate Licensing Topical Report,” July 2003 (CPPU or CLTR)
  - No increase in maximum steam dome pressure
  - Not pursuing concurrent changes specifically excluded in topical
  - Alternate Source Term already approved



# License Amendment Request

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- GE plant specific Power Uprate Safety Analysis Report (PUSAR)
  - Technical report summarizing generic or plant specific analyses for EPU
  - PUSAR follows licensing topical report format



# License Amendment Request

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- BWR EPU License Amendment Request format after RS-001
  - PUSAR in licensing topical report format
  - RS-001 matrices mark-up with plant licensing basis
  - RS-001 safety evaluation template mark-up
  - Matrix cross-referencing RS-001 topics to PUSAR

# License Amendment Request

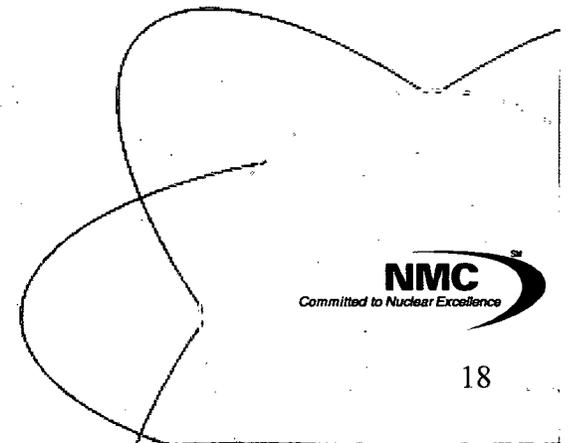
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- Planned NMC EPU LAR format
  - PUSAR reformatted to RS-001
  - Regulatory evaluation and conclusion sections of the RS-001 safety evaluation templates will be within the PUSAR
  - Specific Monticello licensing bases section provided (Monticello is not a GDC plant)
  - NMC intends to request exception to the large transient test requirements

# License Amendment Request

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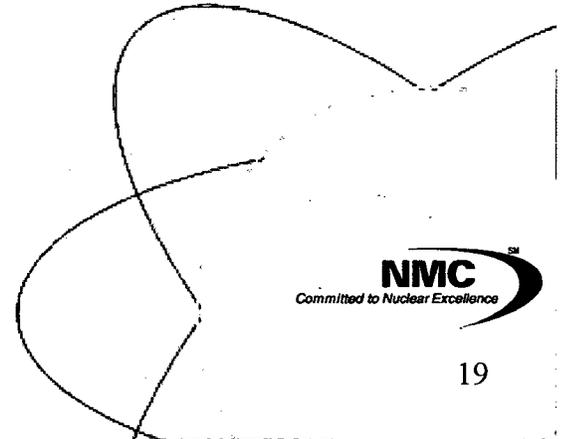
- Potential benefits of planned format
  - Eliminates safety evaluation template mark-up
  - Eliminates RS-001 to PUSAR topic cross reference
  - Provides complete information for reviewer



# Power Range Neutron Monitoring

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- GE Standard Nuclear Measurement Analysis and Control (NUMAC) Power Range Neutron Monitoring (PRNM) System
- Digital replacement for original Average Power Range Monitor (APRM) equipment
- Includes the stability Option III Oscillation Power Range Monitor (OPRM)



# Power Range Neutron Monitoring

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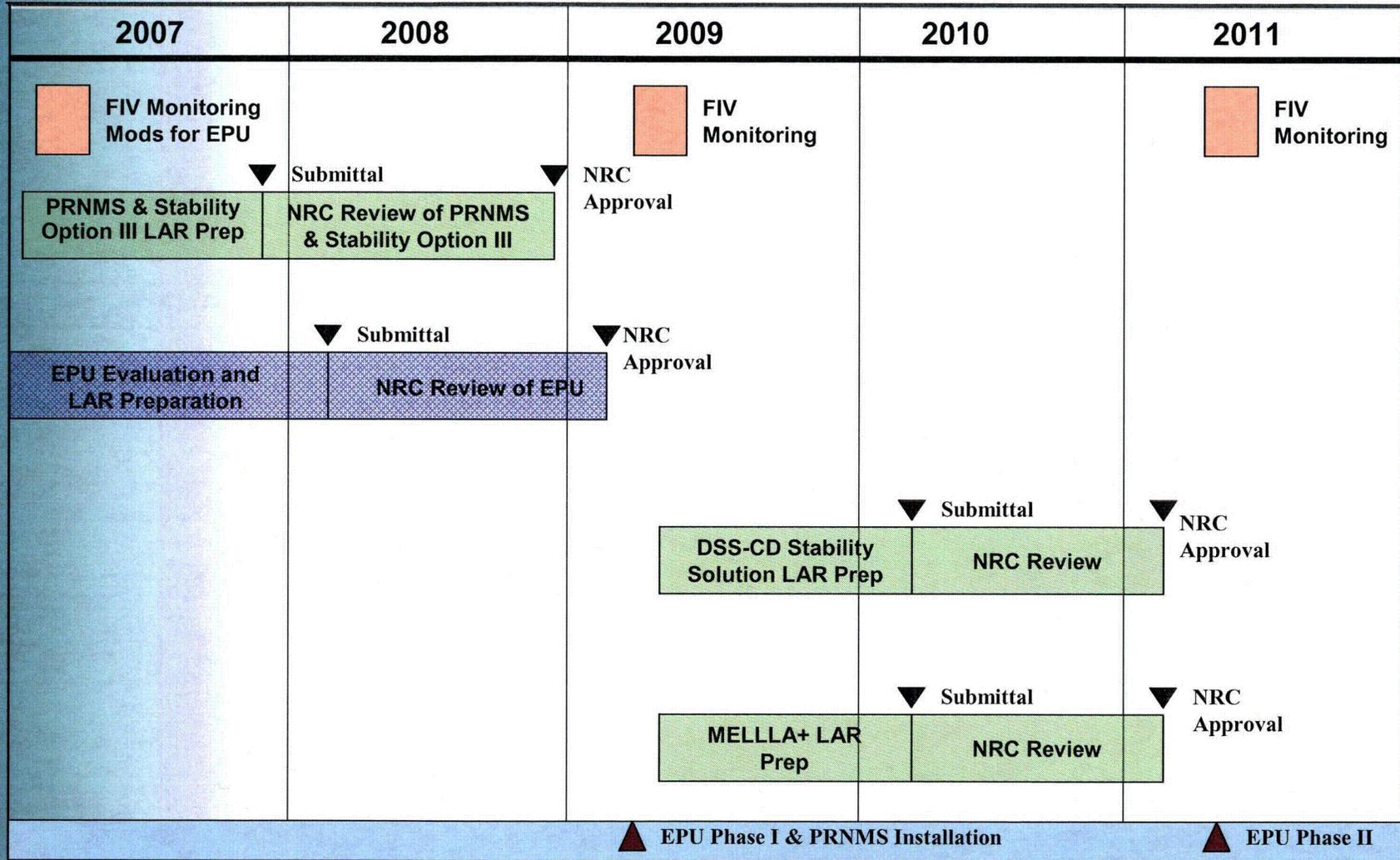
- Stability Option III OPRM trip capabilities
  - SER for NEDC-32410P-A:
    - OPRM function monitored for one cycle with trips deactivated
    - Based on lack of industry experience
  - NMC plans to activate OPRM trip capabilities at start up from March 2009 outage
  - Precedent exists for activating OPRM trip functions at first startup

# Future Plans

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- Submittals following EPU approval:
  - Maximum Extended Load Line Limit Analysis Plus (MELLLA+)
    - GE Topical in NRC review
  - Detect and Suppress Solution – Confirmation Density (DSS-CD)
    - GE Topical approved November 2006

# Project Time Line



 = Implementation

# Summary and Conclusions

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- EPU Strategy
  - PRNMS submittal last quarter 2007
  - EPU submittal first quarter 2008
    - RS-001 Format
  - Implementation in two phases (2009, 2011)
  
- Questions/Discussion

