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KNPP/NRC Meeting Covering:

Licensing Submittals for
Fuel Transition and
Power Uprates (MUR and Stretch)

August 8, 2002
Rockville, MD

ENCLOSURE 2

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Participants

- KNPP Participants
  - Jerry Riste - Licensing Manager
  - Harv Hanneman - Power Uprate Project Manager
  - John Holly - Analytical Lead for AST, Fuel Transition, and Power Uprate
  - Lynne Gunderson - Power Uprate Licensing Lead
  - Ted Maloney – Licensing Engineer
- NRC Participants

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Agenda

- Purpose
- Overview
- Submittals Associated with Power Uprate
  - Alternate Source Term (AST) Submittal Status
  - Core Operating Limits Report (COLR) Status
  - Fuel Transition Status
  - Gothic 7.0 Containment Analysis Methodology
  - Measurement Uncertainty Recapture (MUR) Uprate
  - Stretch Uprate
- License Amendment Schedules/Interdependencies
- Summary/Wrap-Up

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Purpose

- Update the NRC Staff on recent and planned submittals that support power uprates including:
  - AST, COLR, and Fuel Transition (already submitted)
  - Gothic 7.0, MUR, and Stretch (proposed submittals)
- Discuss individual submittal contents and proposed schedule
- Discuss the integrated analyses, schedule, and interdependencies
- Obtain NRC feedback

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Overview

- Transition to Westinghouse Fuel (April 2003)
- T_{ave} increase (April 2003)
- KNPP originally designed for higher power
- A 7.4% Power Uprate in two steps
  - Measurement Uncertainty Recapture Uprate (1.4%)
    - Submittal December 2002
    - Implementation May 2003
  - Stretch Power Uprate (additional 6%)
    - Submittal February 2003
    - Implementation December 2003
- Submittals/analyses interdependencies

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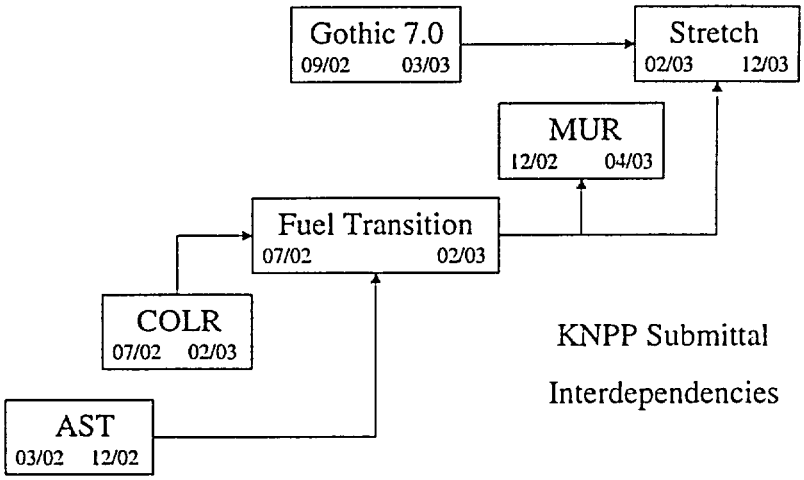
Overview



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AST Submittal

- Overview of submittal
  - Original submittal sent 03/19/02
  - Selective Implementation
  - RAI Responses
  - Approval needed by 12/02
- Links to other submittals/schedule:
  - Fuel transition radiological analyses based on AST
  - MUR uprate will use the same AST analyses
  - AST analyses will be evaluated/reperformed for Stretch

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COLR Submittal

- Overview of submittal
  - LAR 185 submitted 07/26/02
  - Standard COLR format
  - Approval needed by 02/03
- Links to other submittals/schedule:
  - Fuel transition assumed COLR was approved
  - COLR to be used for Cycle 26
  - MUR and Stretch LARs will also assume COLR

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Fuel Transition Submittal

- Overview of Submittal
  - LAR 187 submitted 07/26/02
  - Fuel transition from FRA-ANP to Westinghouse 422V+
  - Reload Transition Safety Report (RTSR)
  - Fuel Analysis (100.6% of 1772 MWt with T_{ave} band of 556.3°F – 573.0°F)
  - LOCA and non-LOCA accident analyses performed at 7.4% uprate (100.6% of 1772 MWt with T_{ave} band)

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Fuel Transition Submittal

- Overview of Submittal
  - Radiological accident analyses use AST (102% of 1650 MWt)
  - Technical Specification and COLR changes
  - Actual Cycle 26 Reload Safety Evaluation and COLR need to be completed prior to 2003 Refueling Outage
  - Approval needed by 02/03

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Fuel Transition Submittal

- Links to other submittals
  - Requires approval of AST and COLR
  - Provides the LOCA and non-LOCA accident analyses for MUR and Stretch Uprates
  - The LAR 187 LOCA and non-LCOA accident analyses will be referenced in the MUR and Stretch Uprate submittals

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Gothic 7.0 Submittal

- Overview of Proposed Submittal
  - Gothic 6.0 containment evaluation model approved for KNPP DBA's, LOCA, and MSLB
  - Gothic 7.0 with MDLM required for power uprate containment analysis
  - Submittal planned for 09/02
  - Approval needed by 03/03
- Links to other submittals/schedule:
  - Required for stretch uprate containment analysis only

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Gothic 7.0 Submittal

- Technical Discussion Points
  - Mist Diffusion Layer Model (MDLM) used for heat and mass transfer
  - MDLM validated against 8 data sets from 5 different test facilities
  - KNPP containment analysis DBA's are covered by the validation database
  - Conservative factor applied to MDLM based on 95/95 statistics

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Gothic 7.0 Submittal

- Technical Discussion Points
  - Code version upgrade has minimal impact on results
  - MDLM has a small impact on LOCA results and reduces MSLB peak pressure by 2 psi
  - MDLM conceptual model similar to that used in AP600 containment model

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Proposed MUR Uprate Submittal

- Submittal to consider RIS 2002-03, MUR power uprate guidance
- AMAG Crossflow Ultrasonic Flow Measuring Device (UFMD):
  - Clamp on system (no spool piece)
  - Electronics Unit takes/receives data and calculates correction factors for venturi-measured FW flow and FW temperature.
  - Input to the PPCS for RTO calculation
  - Supports a power measurement uncertainty of ±0.6% allowing a 1.4% increase in licensed RTP from 1650 MWt to 1673 MWt

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Proposed MUR Uprate Submittal

- Technically supported by CENPD-397-P-A, which was approved March 20, 2000, and is referenced in the following approved MUR uprates:
  - Salem SER 05/25/01
  - SONGS SER 07/06/01
  - Hope Creek SER 07/30/01

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Proposed MUR Uprate Submittal

- Accident and Transient Analyses
  - Non-LOCA transients will reference Fuel Transition submittal (100.6% of 1772 MWt)
  - LOCA will reference Fuel Transition submittal (100.6% of 1772 MWt)
  - Radiological analyses will reference AST submittal (102% of 1650 MWt)
  - Containment Integrity analysis will reference RSG (50.59) (102% of 1650 MWt)

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Proposed MUR Uprate Submittal

- Component Integrity and Design
  - New analyses supporting the 7.4% uprate and will bound the MUR
- Electrical Equipment Design
  - Evaluated for 7.4% uprate and will bound the MUR
  - Grid loading and stability studies performed by ATC for 7.4% uprate and will bound the MUR
  - No electrical equipment changes expected for MUR

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Proposed MUR Uprate Submittal

- System Design
  - Evaluated for 7.4% uprate and will bound the MUR
- Other
  - Operations procedure and training changes
  - Simulator changes
  - Changes to protection system settings and emergency settings

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Proposed MUR Uprate Submittal

- Expected License and Technical Specification Changes:
  - Operating License, Maximum Power Level will change to 1673 MWt
  - Definition of Rated Power will change to 1673 MWt
  - Methods for the COLR will include CENPD-397-P-A

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Conclusion MUR Uprate

- Summary and conclusion for MUR
  - A 1.4% increase to a rated power of 1673 MWt
  - Achieved using AMAG Crossflow UFMD that has an NRC approved topical report
  - RIS 2002-03 guidance will be considered
  - Links to other submittals
    - Relies on analyses from AST and Fuel Transition
    - Assumes the COLR is approved

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Conclusion MUR Uprate

- MUR Uprate Schedule
  - LAR submittal in December 2002
  - UFMD installation and commissioning complete by March 2003
  - Approval needed by April 2003 for implementation in May 2003

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Stretch Power Uprate Overview

- Increase RTP by 6.0% from 1673 MWt to 1772 MWt

- Links to previous submittals:
  - AST (uses methodology)
  - Fuel Transition (LOCA and non-LOCA Accident Analysis)
  - Gothic 7.0 (uses methodology)

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Stretch Power Uprate Overview

- Minimal Plant Modifications
  - FW valve trim change
  - I&C setpoint/range changes
  - Certain turbine bolting changes
- Proposed submittal content
  - Standard Westinghouse format for submittal (e.g. Byron/Braidwood)
  - References AST, Fuel Transition, and Gothic 7.0 analyses and methodologies
  - New analyses for systems/components, containment integrity, and radiological analyses

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Stretch Power Uprate Overview

- Stretch Uprate Schedule
  - LAR submittal in February 2003
  - Approval needed by November 2003 to support implementation in December 2003

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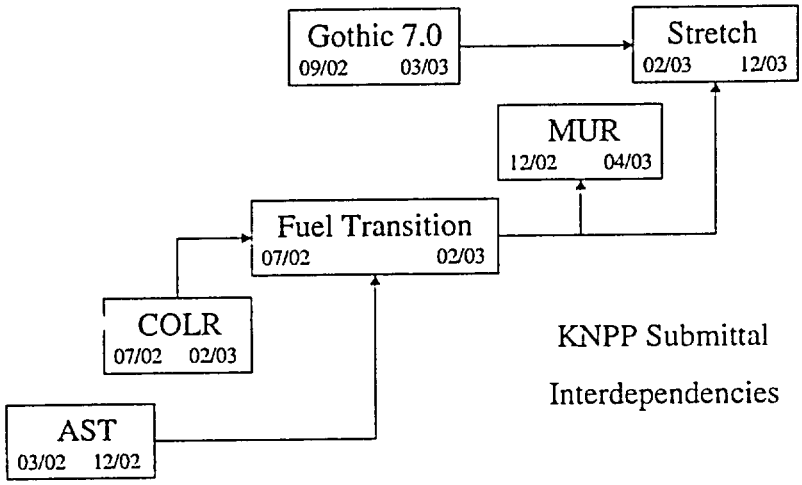
Summary/Wrap-up



KNPP Submittal

Interdependencies

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Summary/Wrap-up

- Several submittal interdependencies
- Timely reviews and approvals needed to meet power uprate schedules
- NRC Feedback