

Indian Point Unit 2
Stretch Power Uprate



License Amendment Request
NRC – Entergy Review Meeting

March 9, 2004



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Agenda

Introductions

- Meeting Objective
- Project Objectives
- Project Overview
- LAR Organization and Content
- Tech Spec and Bases Changes
- NSSS Analysis Assumptions
- Methodology and Analyses Highlights
- Summary of Modifications
- Plant Operations – Human Factors
- NRC Feedback
- Wrap-Up



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Meeting Objective

Support NRC efforts to review and approve the Indian Point Unit 2 Stretch Power Uprate LAR – prior to power ascension from 2R16.



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Project Objectives

- Safely implement a 3.26% increase in the licensed core thermal power from 3114.4 MWt to 3216 MWt at IP2 for the start of CY17 in November 2004.
- Support Entergy's strategy of providing additional electricity to the Northeast Region.
- Maintain and enhance the integrity of the IP2 plant design basis.



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Project Overview

Key Perspectives

- Small “Stretch” increase of 3.26% to 3216 MWt.
- SPU will be no greater than the *original* Engineered Safeguards Design Rating (ESDR).
- “Defense in Depth” approach to quality.
- Design and licensing bases acceptance criteria continue to be met for IP2 systems, components, and safety analyses.
- No Significant Hazards per 10CFR50.92.



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Project Overview

Background

- Expert Panel reviews – Spring 2002
- Feasibility and Scoping analyses and evaluations – Summer 2002
- Vendor contracts; Full Implementation project start – November 2002
- Initial meeting with NRC – February 2003
- LAR Submitted to NRC on 1/29/04



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LAR Organization and Content

Submittal Development

- Used Feedback from 2/13/03 NRC Meeting.
- Correlated to Most Recent LAR Packages.
- Considered Previous NRC RAIs.
- Considered NRC MUR Guidance (RIS 2002-03) and NRC EPU Guidance (RS-001).



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LAR Organization and Content

Analysis Reconciliation

- Affected and Unaffected Systems, Components, Analyses.

Unaffected: Those (systems, components, and safety analyses) having current design and licensing bases analyses and calculations that bound the potential effects of the uprate



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Tech Spec and Bases Changes

- RPS and ESFAS Allowable Values
- RCS Minimum Flow
- Pressurizer Water Level Limit
- Accumulator and RWST Limits
- Power Limit for Inoperable MSSVs

Key IP2 NSSS Analyses Assumptions

Parameter	Current Value	SPU Value
Licensed Reactor Thermal Power	3114.4 MWt	3216 MWt
Power Calorimetric Uncertainty	0.6%	2.0%
Reactor Vessel Tavg Analysis Range	549.4°F - 579.2°F	549.0°F - 572.0°F
Actual Full-Power Programmed Tavg (a few analyses done at actual operating point)	562°F	562°F
Assumed Maximum SG Tube Plugging	20%	10%
Maximum Steam Flow (lbm/hr)	13.48E06 - 13.56E06	14.01E06 - 14.07E06
ITS RWST Boron Concentration	2000ppm - 2500ppm	2400ppm - 2600ppm

Methodology & Analyses Highlights

SUMMARY OF KEY NSSS METHODS AND RESULTS			
Item	Current	SPU	Results
Non-LOCA Transient Code	LOFTRAN	RETRAN/LOFTRAN	ADVANCED METHOD
BE LBLOCA Code / Approach	WCOBRA-TRAC Analysis	WCOBRA-TRAC Evaluation	2137 °F PCT
SBLOCA Evaluation Model	EM	EM + COSI	1028 °F PCT
Operator Action for LONF/LOAC	Not Credited	10 Minutes	NO PRZ FILL
Containment Peak Pressure - LOCA	COCO	COCO	45.7 psig
Containment Peak Pressure - MSLB	COCO	COCO	38.9 psig
HLSO Time	Generic	Specific	6.5 HRS
Radiological Dose Analysis	AST Draft RG 1081 "Plus"	AST Final RG 1.183	< TEDE Limits



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Summary of Modifications

- Iso-phase Bus Duct Cooling Upgrade
- Power Uprate Setpoint changes
- Control Room Net Megawatt Meter
- High Pressure Turbine Optimization
- Moisture-Separator Re-Heater (MSR) Internals (Chevron)
- Main Power Transformer Online Monitoring
- RCS RTD Replacement



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Plant Operations - Human Factors

Procedures

- Operating Procedures
- Emergency Operating Procedures

Operator Training

- Training will be conducted prior to implementing the SPU.
- Plant Simulator changes will be made to support Operator training prior to implementing the SPU.

Plant Computer



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Plant Operations - Human Factors

Power Ascension

- Special Evolution controlled by a Temporary Operating Instruction.
- Vibration monitoring.
- Monitoring of selected plant parameters and equipment.

Plant Programs



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NRC Feedback

RAI Process Discussion

Comments

Questions and Answers