March 18, 1988

Docket No. 50-247

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LICENSEE: Consolidated Edison Company of New York, Inc.

FACILITY: Indian Point Nuclear Generating Unit No. 2

SUBJECT: MEETING SUMMARY CONCERNING FEBRUARY 9, 1988 MEETING TO DISCUSS CONSOLIDATED EDISON'S INTENTION TO SUBMIT AN AMENDMENT APPLICATION FOR POWER UPRATE

A meeting was held on February 9, 1988 to discuss Consolidated Edison's intention to submit an amendment application to increase the Indian Point Nuclear Generating Unit No. 2 power rating. A list of meeting attendees, the meeting agenda and the handouts are attached.

The purpose of the meeting was to discuss the review process involved to support the amendment application which Consolidated Edison is considering submitting in the summer of 1988. The review process includes systems reviews, equipment reviews, accident analyses and balance of plant reviews.

The utility indicated that if it submits the amendment application, it is requesting an approximate seven month turn-around.

Marylee M. Slosson, Project Manager
Project Directorate I-1
Division of Reactor Projects, I/II

Enclosures:
As stated

cc: See next page

PDI-1 MS
MSlosson
3/18/88

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Regional Administrator, Region I
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LIST OF ATTENDEES

MEETING HELD FEBRUARY 9, 1988

Name	Organization
Marylee M. Slosson	NRC/NRR
M. J. Campagnone	NUS Corp.
Paul Malick	ConEd
R. H. McFetridge	Westinghouse
Roy Kim	Westinghouse

NRC/IP-2 STRETCH RATING MEETING AGENDA

1. Brief overview of previous NRC approved stretch ratings
2. Timing and Chronology of IP-2 Uprating
   - NRC submittal date -- 8/88
   - Requested NRC approval date -- 3/89
3. Design Parameter Review
   - Systems Impact
   - Equipment Impact
   - Accident Analysis
   - BOP
4. Licensing Process

Upratings

Bob McFetridge

UPRATINGS PROVIDE INCREMENTAL ELECTRIC GENERATION IN A COST EFFECTIVE MANNER

- 5% to 10% increases are feasible
- Primarily analytical effort
- Relatively low capital investment
- Increased power on-line in less than three years

Westinghouse Has Provided Upratings Equal to a 2-Loop Plant

13 Units Uprated for 1855 MWt or 620 MWe

1160 GG23233.013

13 WESTINGHOUSE PLANTS HAVE IMPLEMENTED UPRATINGS (2.2% to 26.3%)

Plant	Uprate From (MWt)	Uprate To (MWt)	When?
Yankee Rowe	485	600	After commercial operation
San Onofre 1	1210	1351	During design
Haddam Neck	1425	1800	After commercial operation
Point Beach 1	1395	1518	During design
R.E. Ginna	1320	1520	After commercial operation
Turkey Point 3 & 4	2100	2200	During design
H.B. Robinson 2	2200	2300	After commercial operation
D.C. Cook 2	3250	3403	During design/licensing
Sena	905	1040	After commercial operation
Salem 1	3350	3423	After commercial operation
North Anna 1&2	2785	2905	After commercial operation

710D010753.041

UPRATING EVALUATION AND IMPLEMENTATION CONTRACTS SINCE 1980

ENGINEERING EVALUATIONS			APPROX. MWe INCREASE
(1980) TURKEY POINT 3 & 4	2208 MWt/785 psia	→ 2500 MWt/829 psia	94
(1980) NORTH ANNA 1 & 2	2785 MWt/850 psia	→ 2787 MWt/900 psia	5
(1982) NORTH ANNA 1 & 2	2787 MWt/900 psia	→ 2910 MWt/850 psia	32
(1983) SALEM 1	3350 MWt/805 psia	→ 3423 MWt/805 psia	24
(1984) RINGHALS 2	2440 MWt/870 psia	→ 2660 MWt/850 psia	69
(1984) SURRY 1 & 2	2441 MWt/785 psia	→ 2554 MWt/785 psia	36
(1985) CALLAWAY 1	3425 MWt/1000 psia	→ 3579 MWt/950 psia	48

IMPLEMENTATION PROGRAMS			
(1981) NORTH ANNA 1 & 2	2785 MWt/850 psia	→ 2787 MWt/900 psia	5
(1983) NORTH ANNA 1 & 2	2787 MWt/900 psia	→ 2910 MWt/850 psia	32
(1984) SALEM 1	3350 MWt/805 psia	→ 3423 MWt/805 psia	24
(1986) CALLAWAY 1	3425 MWt/1000 psia	→ 3579 MWt/950 psia	48
(1987) SURRY 1 & 2	2441 MWt/785 psia	→ 2554 MWt/785 psia	36

GENERIC UPRATING LICENSING DOCUMENT

Purpose

- Have established NRC ground rules for uprating
  - Provide uprating methodology
  - Power related aspects will be reviewed
  - Plant's current licensing criteria, codes and standards apply
  - Analysis will utilize current analytical techniques

Benefits

- Utility's exposure on current operating license limited
- Provides positive licensing environment for uprating

Status

- Submitted to NRC February, 1983, (WCAP-10263)
- NRC reviewed without specific docket
- First presentation to staff on October 4, 1983
- Numerous subsequent presentations
- NRC has licensed uprating based on approach

WHAT IS THE TYPICAL UPRATING PROCESS ?

- DEVELOP TARGET PLANT CONFIGURATION

  - ESTABLISH NEEDS
  - CUSORY ASSESSMENT OF AVAILABLE MARGINS & UTILIZATION
  - SELECT PRELIMINARY PARAMETERS/CONFIGURATION

- PERFORM LIMITING ANALYSES/EVALUATIONS

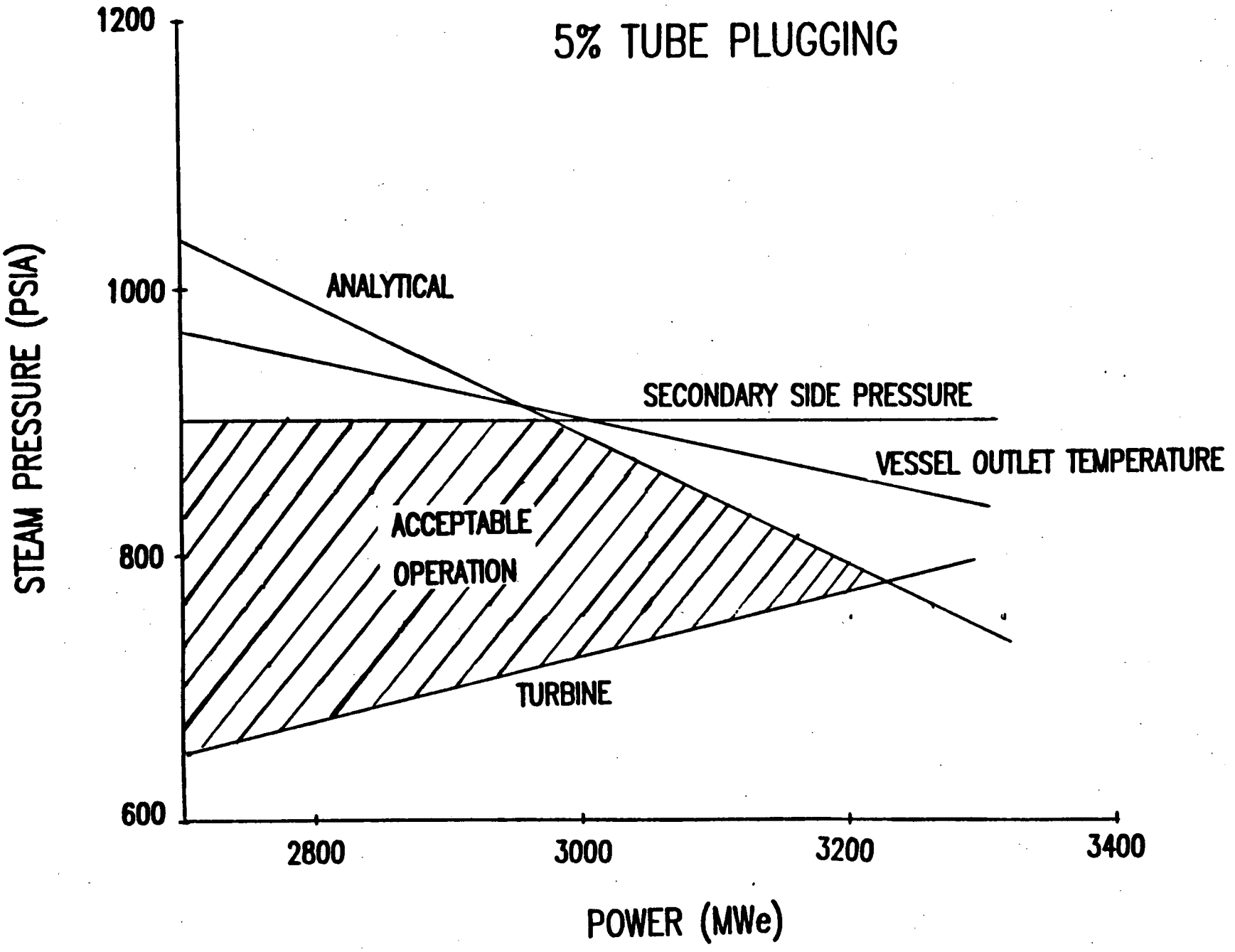
  - ACCIDENTS
  - SYSTEMS
  - COMPONENTS
  - BOP INTERFACES

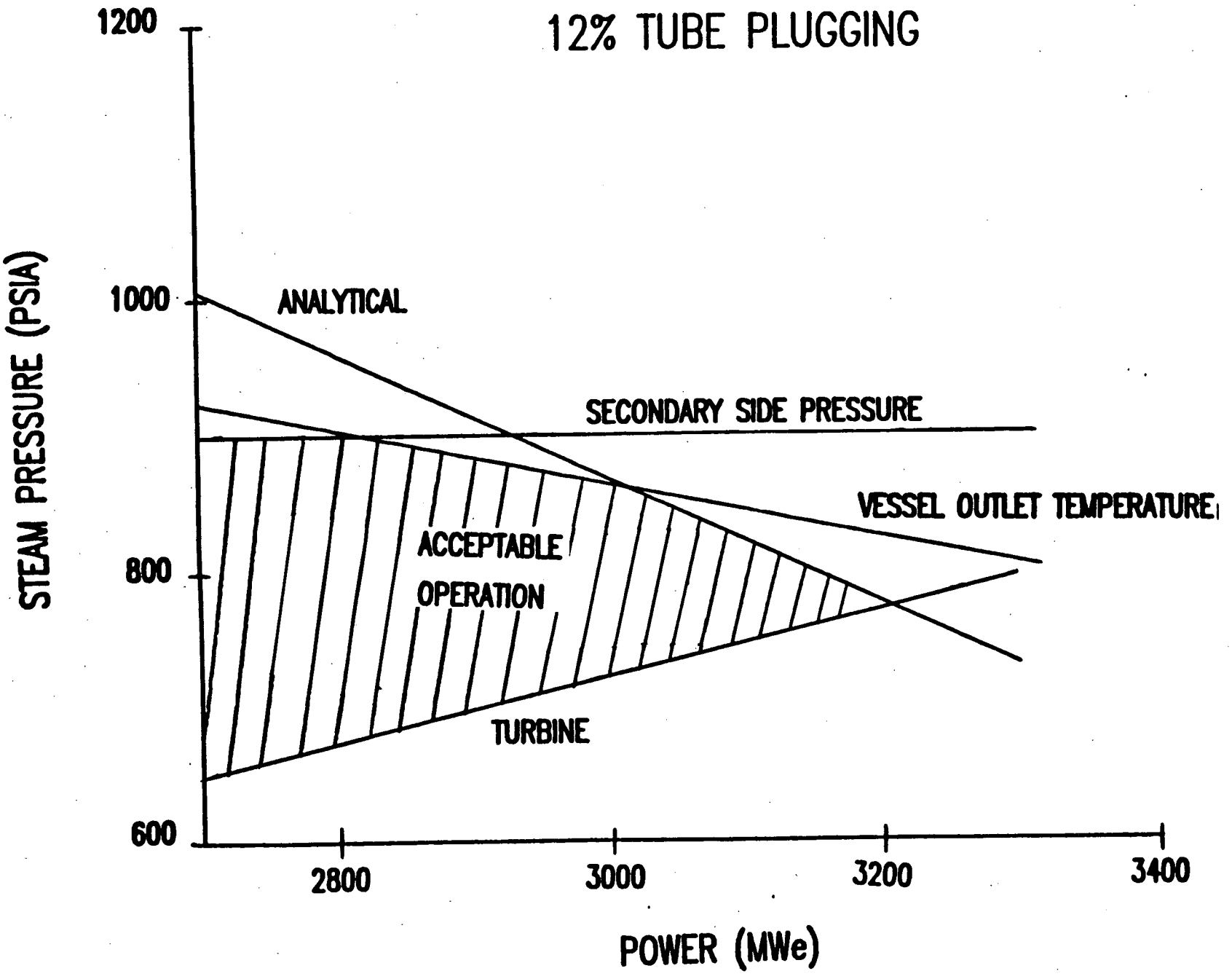
- PERFORM NON LIMITING ANALYSES/EVALUATIONS

  - ACCIDENTS
  - SYSTEMS
  - COMPONENTS
  - BOP INTERFACES

- OBTAIN REGULATORY APPROVAL

- OPERATE AT UPRATED CONDITIONS


INDIAN POINT UNIT NO. 2 UPRATING POTENTIAL
5% TUBE PLUGGING
1200
1000
800
600
STEAM PRESSURE (PSIA)
ANALYTICAL
SECONDARY SIDE PRESSURE
VESSEL OUTLET TEMPERATURE
ACCEPTABLE
OPERATION
TURBINE
2800
3000
3200
3400
POWER (MWe)


INDIAN POINT UNIT NO. 2 UPRATING POTENTIAL
12% TUBE PLUGGING
1200
1000
800
600
STEAM PRESSURE (PSIA)
ANALYTICAL
SECONDARY SIDE PRESSURE
VESSEL OUTLET TEMPERATURE
ACCEPTABLE
OPERATION
TURBINE
2800
3000
3200
3400
POWER (MWe)

FIRST ORDER PERFORMANCE SENSITIVITIES SUPPORT INITIAL "OPERATING WINDOW" DEVELOPMENT

PERFORMANCE

- 1°F Tavg =7.5 psi steam
- 4% S/G plugging =1% primary flow
- 5% S/G plugging =1.5°F Tavg
- 10 psi steam pressure =1% steam volume change

DNB

- 1°F Tin =1% DNB
- 1% primary flow =1% DNB
- 1% power =2% DNB

LOCA

- 1% S/G plugging =0.01 reduction in FQ limit

PLUGGING

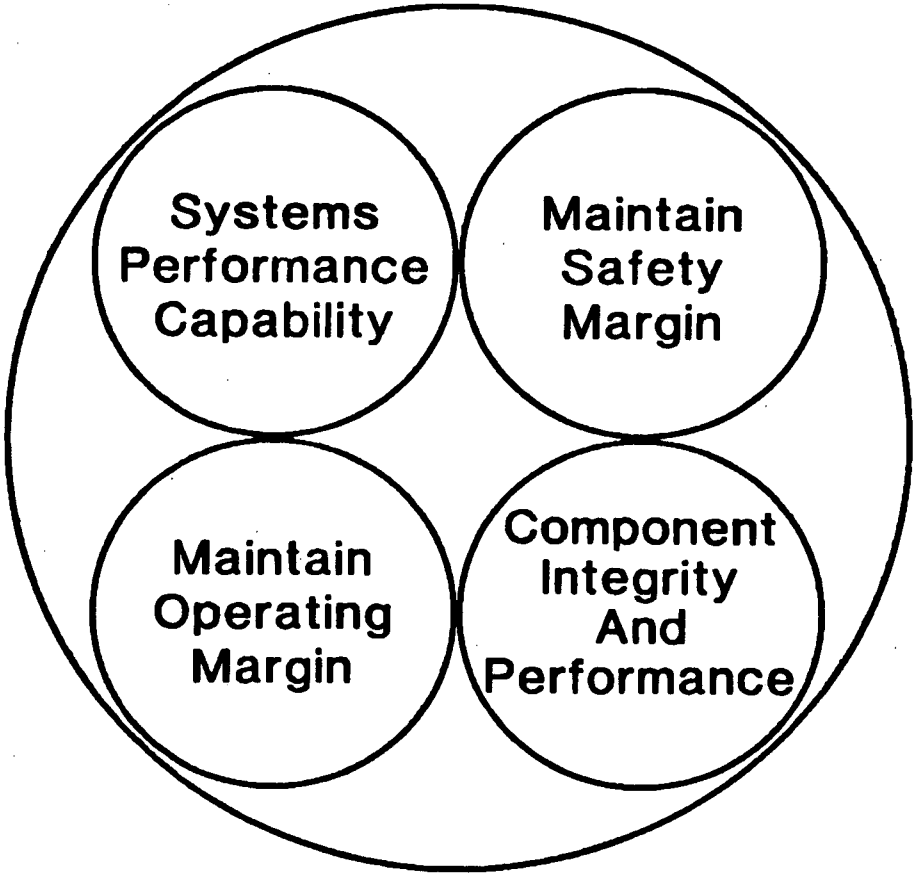
- 1 S/G tube plug =Approx. 20 S/G tube sleeves

INDIAN POINT UNIT 2 3083.4 MWt STRETCH RATING
BOUNDING PARAMETERS FOR INPUT TO
REPLACEMENT STEAM GENERATOR LOCA ANALYSIS

	ORIGINAL	UPRATED	
		LOW TEMP.	HIGH TEMP.
STEAM GENERATOR	EXISTING	EXISTING 44	REPLACEMENT 44F
NSSS POWER (MWt)	2758	3083.4	3083.4
THERMAL DESIGN FLOW (gpm/loop)	89,700	80,700	80,700
STEAM PRESSURE (psia)	776	578*	768*
REACTOR COOLANT TEMPERATURES (°F)			
VESSEL OUTLET	596.0	582.2*	611.7*
VESSEL AVERAGE	569.5	549.0*	579.7*
VESSEL INLET	543.0	515.8*	547.7*
TUBES PLUGGED (%)	0.0	25.0	25.0

*NOTE: The design parameters in the table are based on the minimum T-cold and maximum T-hot extremes which bound a range of conditions to be used for analysis purposes. These parameters do not reflect anticipated actual operating conditions.

UPRATING ENCOMPASSES ALL ASPECTS OF THE NSSS



UPRATING - NSSS SYSTEMS IMPACT

- Establish final plant parameters
- Verify adequacy of steam dumps & S/G valving
- Verify adequacy of pressurizer valving
- Verify adequacy of CVCS & RHR systems
- Provide NSSS heat loads on component cooling water system

UPRATING - NSSS SYSTEMS IMPACT

- Revise RCS loop analysis
- Gamma heating/neutron fluence of reactor vessel/ internals
- Normal radiation sources & accident releases
- Establish RCS control & protection systems setpoints
- Evaluate transient performance
- Prepare technical specifications

UPRATING - NSSS EQUIPMENT IMPACT

Verify structural integrity of components at uprated conditions:

- Steam Generators
- Reactor Vessel/Internals
- Reactor Coolant Pumps
- Reactor Coolant Loop Piping
- Pressurizer
- Control Rod Drive Mechanism
- CVCS (Heat Exchangers, etc.)
- RHR (Heat Exchangers, Pumps, etc.)
- SIS (Pumps, Tanks, etc.)
- Other NSSS Auxiliary Systems Components

UPRATING - NSSS ACCIDENT ANALYSES

- Perform all required non-LOCA analyses for FSAR chapter 15
- Perform spectra of large and small break LOCA analyses
- Perform S/G tube rupture analysis
- Perform LOCA & steamline break mass/energy release analyses

UPRATING ALSO CONSIDERS NSSS/BOP INTERFACES

Secondary Systems
- Main steam and steam dumps
- Condensate and feedwater
- Circulating water
- Condenser
- Moisture separator/reheater and feedwater heaters
- Heater drains

Plant Cooling Water Systems
- Intake cooling water
- Turbine plant cooling water
- Component cooling water

Auxiliary Feedwater System

Ventilation Systems
- Containment ventilation and cooling
- Plant ventilation

UPRATING ALSO CONSIDERS NSSS/BOP INTERFACES

Electrical System
- Motors
- Switchgear
- Transformers
- I&C

Containment Integrity
- LOCA
- Steamline Break

Turbine - Generator
- Steam Turbine
- Electrical Generator

SYNERGY IS ACHIEVED BY COMBINING PROGRAMS

		THOT REDUCTION	TUBE PLUGGING	UPRATING	FUEL CHANGE	PLEX
1.	PRIMARY/SECONDARY PLANT PARAMETERS	★★★	★★	★★★	★	
2.	LOGA ANALYSES	★★	★★★	★★★	★★	
3.	NON-LOCA ACCIDENT ANALYSES	★	★	★★★	★★	
4.	MASS/ENERGY RELEASES	★★	★	★		
5.	LOCA HYDRAULIC FORCING FUNCTIONS	★★	★	★	★★	
6.	TECHNICAL SPECIFICATIONS	★	★	★★	★	
7.	COMPONENT DESIGN TRANSIENTS	★★★	★	★★	★	★★★
8.	CONTROL/PROTECTION SYS. SETPOINTS	★★	★	★	★	
9.	FUEL	★	★★	★★★	★★	
10.	STEAM GENERATOR	★★★	★★	★★	★	★★★
11.	REACTOR VESSEL	★★	★	★★	★	★★★
12.	REACTOR INTERNALS	★	★	★★	★★	★★
13.	CRDM	★	★	★	★	★★
14.	PRESSURIZER AND VALVES	★★★	★	★★		★★★
15.	REACTOR COOLANT PUMP	★	★	★	★	★★
16.	REACTOR COOLANT PIPING	★★	★	★	★	★★
17.	PIPING AND EQUIPMENT SUPPORTS	★★★	★	★	★	★★
18.	AUXILIARY EQUIPMENT	★	★	★	★	★★
19.	INSTRUMENTATION	★★	★	★	★	★★★
20.	S/G MOISTURE CARRYOVER	★★	★★	★★★		
21.	STEAM TURBINE	★★	★★	★★		★★★
22.	ELECTRICAL GENERATOR			★★		★★★
23.	FEEDWATER SYSTEM	★	★	★★		★★
24.	STEAM SYSTEMS AND VALVING	★★	★	★★		★★
25.	CONDENSATE SYSTEM	★	★	★★		★★
26.	BOP ELECTRICAL SYSTEMS			★★		★★★
27.	DOSE ANALYSES			★★		
28.	ENVIRONMENTAL IMPACT STATEMENT			★		★
29.	ENVIRONMENTAL QUALIFICATION	★	★	★		★★★

★ *MINOR IMPACT* ★★ *MODERATE IMPACT* ★★★ *MAJOR IMPACT*

Utilities Are Actively Pursuing Upratings

- 13 Westinghouse plants have implemented upratings (2.2% to 26.3%)
- Westinghouse took the lead to establish uprating ground rules (WCAP-10263)
- The NRC is proactive on uprating
- North Anna 1 & 2 and Salem 1 achieved upratings during 1986
- Callaway 3579 Mwt Approval expected in 1988
- Adds 30 to 60 MWe of Generation
  - Low Capital
  - 2 to 3 Years