

***NRC/FENOC MEETING
BEAVER VALLEY FULL
POTENTIAL PROGRAM***

AUGUST 8, 2000



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DESIRED OUTCOME

- Understanding of focus, scope, and strategy of Beaver Valley's Full Potential Program
- Understanding of relationship of reactor vessel issues to Full Potential Program

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AGENDA

- Full Potential Program
 - William R. Kline
- Reactor vessel issues
 - Dennis Weakland
- Concluding remarks
 - William R. Kline

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***FULL POTENTIAL PROGRAM
OVERVIEW***

WILLIAM R. KLINE
MANAGER
LIFECYCLE MANAGEMENT
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FULL POTENTIAL PROGRAM

- Overview
- Goals
- Individual projects
- Strategy
- Key NRC interfaces

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OVERVIEW

- Integrated FENOC/Westinghouse program
- Comprehensive long-term integrated plan
- Increase generation through
 - Power uprates
 - Improved capacity factor performance
- Maximize asset potential
- Extend licensed operating life
- Optimize refueling outage duration
- Replace Unit 1 steam generators

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GOALS

- Improve plant safety, reduce operating costs through risk informed technologies
- Improve capacity factor at least 15%
- Increase Mwe output at least 6%
- Convert to atmospheric containment
- Convert to Improved Standard Technical Specifications
- Extend operating license period 20 years
- Reliable steam generator operation
- Replace Unit 1 steam generators

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7

INDIVIDUAL PROJECTS

- Steam generator management
- Uprates/Atmospheric containment
- Improved Standard Technical Specifications
- Capacity factor/outage improvements
- Steam generator replacement
- License renewal
- Asset management
- Fuel management

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8

FULL POTENTIAL PROGRAM STRATEGY

- Phased implementation
 - Efficiency
 - Revenue generation
- Long term focus
 - Improve/preserve assets
 - Extend life

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9

KEY NRC INTERFACES

- Licensing processes based on precedents
 - Revised Thermal Design Procedure (RTDP)
 - Upratings
 - License renewal
 - Replacement steam generators
 - Improved standard tech specs
- Beaver Valley/industry initiatives
 - Reactor vessel
 - Risk-informed ISI

10

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KEY SUBMITTAL TIMING

- 2000
 - RTDP
 - 1.4% power uprate
- 2001
 - Reactor vessel analyses (Master Curve)
- 2002
 - 5% nominal power uprate
 - Containment pressure analyses
 - Improved Standard Technical Specification conversion
- 2004
 - License renewal
- 2007
 - Steam generator replacement (10 CFR 50.59)

11

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REACTOR VESSEL ISSUES AND STATUS

DENNIS WEAKLAND
SUPERVISOR LIFE CYCLE
MANAGEMENT
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12

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REACTOR VESSEL ISSUES

- Status
- Relationship to Full Potential Program
- Initiatives

13

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CURRENT VESSEL STATUS

- | | |
|------------------------------------|--|
| • Unit 1 | • Unit 2 |
| - RTpts = 267.8 deg. F | - RTpts = 151.6 deg. F |
| - Plate limited | - Plate limited |
| - Acceptable through EOL | - Acceptable through EOL/license renewal |
| - EOL EFPY 27.1 years | - EOL EFPY 32 years |
| - Capsule removed 1R13 (14.3 EFPY) | - Capsule removal in 2R08 (9.8 EFPY) |

14

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MITIGATIVE ACTIONS

- | | |
|--|---------------------------|
| • Unit 1 | • Unit 2 |
| - Mitigative actions | - Mitigative actions |
| • Low leakage core design | • Low leakage core design |
| • Insertion of flux suppression (hafnium) rods | |

15

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HAFNIUM ROD REMOVAL

- Hafnium rod removal
 - Analysis to determine impact
 - Capacity factor and uprate sensitivity shows RTpts limit has limited impact
- Intent to remove rods in next fuel cycle
 - Reinsertion possible at later date if necessary

16

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INITIATIVES

- Beaver Valley is and has been an active participant in industry initiatives
 - Annealing Demonstration Project chair
 - Master Curve Initiative participant
 - PTS Re-evaluation Project participant

17

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RELATIONSHIP TO LICENSE RENEWAL

- Current regulatory approach and limits
- Options to obtain Unit 1 license extension
 - Application of Master Curve methodology
 - Change to current regulatory limits

18

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PTS SCREENING LIMIT

- PTS Screening limit change
 - Methodology currently in regulations
 - 10CFR50.61 defines method
 - Screening limit being reevaluated by NRC Research
 - Correlations also being reevaluated by NRC Research
 - Timing of regulatory change uncertain
 - Impact of correlation change and screening limit uncertain

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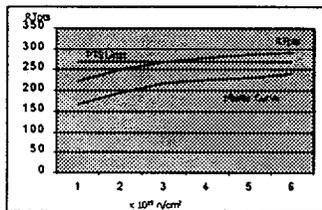
MASTER CURVE

- Master Curve Methodology
 - Methodology has been Codified
 - ASTM E1921-97
 - Code Case N-629 (Unirradiated)
 - Code Case N-631 (Irradiated)
 - RT_{To} measured directly from unirradiated and irradiated surveillance specimens
 - Kewanee Nuclear Power Plant submittal to apply this methodology is under active review by NRR

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PRELIMINARY MASTER CURVE RESULTS

- Master Curve methodology
- PTS screening criteria increase of 30°F



EOL = 3.21
x 10¹⁹ n/cm²

EOL = 5.2
x 10¹⁹ n/cm²

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SUMMARY ACTIONS

- Beaver Valley is working with the EPRI MRP ITG on Reactor Vessel Integrity and NRC Research on the assessment of the current PTS screening methodology and limits
- Beaver Valley is performing fracture toughness testing to a Master Curve approach
- Short term actions, if necessary, to reach EOL
 - Apply a Reg Guide 1.154 analysis
 - Reinsert Hafnium rods at a later date
- Success paths exist for attainment of EOL and license renewal

22

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SUMMARY ACTIONS

- Master Curve considered feasible option
- Submit exemption request for Master Curve methodology
 - Submit by 1st Qtr 2001
 - Request NRC approval by mid 2002

23

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CONCLUDING REMARKS

WILLIAM R. KLINE
MANAGER
LIFECYCLE MANAGEMENT
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24

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CONCLUDING REMARKS

- Full Potential Program
 - Comprehensive, integrated plan
 - Maximize asset potential
 - Showcase of deregulated nuclear generation
- Success paths exist for reactor vessel issues

25

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