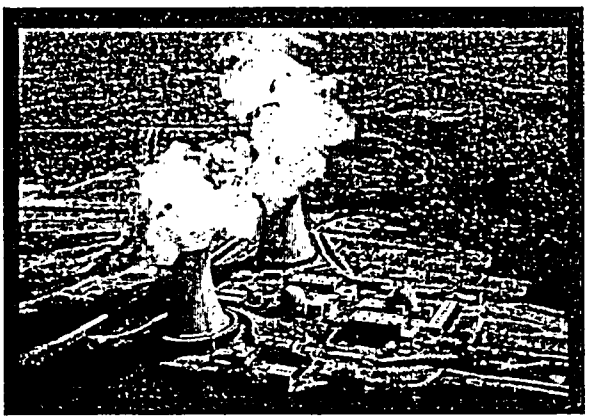
Beaver Valley Power Station
Unit 1 Replacement Steam Generator Project



Replacement Steam Generator License Amendment Request

March 23, 2005

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Desired Outcome

- Provide NRC with overview of replacement steam generator license amendment request
- Provide NRC with overview of proposed project approach and schedule

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Agenda

- Background
- Issue description
- Overview of approach, timing, and schedule
- Concluding remarks/questions

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Background

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Background

- **BVPS Full Potential Program**
  - Containment Conversion
    - Submitted June 2004
  - Best Estimate LOCA (BELOCA)
    - Submitted October 2004
  - Extended Power Uprate (EPU)
    - Submitted October 2004

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Background

- **BVPS Full Potential Program cont'd**
  - Improved Standard Technical Specifications (ITS)
    - Submitted February 2005
  - License Renewal
    - Submitted February 2005
  - Steam Generator Replacement (RSG)
    - February 2006 outage (1R17)

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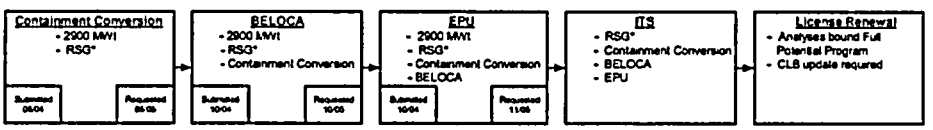
Full Potential Program

Roadmap (Pre-January 2005)



* BVPS Unit 1

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Issue Description

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Issue Description

- RSG project dependent on NRC approval of Containment Conversion, BELOCA, and EPU LARs
- NRC approval of EPU LAR not expected in time for RSG outage

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Issue Description

- EPU acceptance review letter received January 2005
  - additional information required in six areas
    - ➢ five of six items responded to February 2005
    - ➢ sixth item (PSA) response June 2005

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Issue Description

- Various options explored for obtaining needed approvals of the technical specification and methodology changes necessary for RSG
- Options evaluated from schedule and resource perspective (FENOC and NRC)

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Issue Description

- Option selected is RSG LAR based on EPU analyses
  - RSG focus
  - Eight technical specification changes
    - ➢ reduction of 15 from EPU LAR

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Issue Description

- **Most efficient use of NRC and FENOC resources**
  - No additional analyses required
  - Analyses currently under NRC review
  - All methodologies previously accepted by NRC
- **Allows most time for NRC review prior to steam generator replacement outage**

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Overview of Approach, Timing, and Schedule

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Overview

- **LAR will submit only the technical specification and methodology changes needed:**
  - RSG specific
  - Required to use EPU analyses as basis for RSG

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Overview

- **Licensing report will contain the portions of the EPU analyses needed to support the eight changes**
  - No additional analyses
- **Additional information on RSG component included as separate enclosure**

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Overview

- **Technical specification change numbering consistent with EPU LAR**
  - Ease of cross-referencing
- **Licensing report format and numbering consistent with EPU licensing report (LR)**
  - Portions of EPU LR not included designated as "EPU section"
  - Text of retained EPU LR sections maintained with minimal editing
- **Provide NRC with opportunity to optimize synergy with EPU**

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Overview

- **LAR will be submitted April 2005**
- **Approval requested January 2006 to support steam generator replacement outage schedule**
- **EPU RAI responses applicable to RSG LAR will be submitted as applicable to both EPU and RSG LARs**

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Overview

- **RSG design improvements require technical specification changes**
  - RSG narrow-range span larger than current generators
    - 212 versus 144 inches
  - Other improvements
    - tubing materials
    - tube support plate design
    - tube-to-tubesheet joint

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Overview

- **Narrow-range span technical specification changes**
  - Reactor trip system (Table 3.3-1)
    - steam generator water level low-low setpoint
  - ESF actuation system (Table 3.3-3)
    - steam generator water level high-high and low-low setpoints
  - Reactor coolant system - shutdown (4.4.1.3)
    - minimum secondary side narrow range level

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Overview

- **RSG improvement technical specification changes**
  - Steam generators (4.4.5)
    - ➢ deletion of non-applicable methodologies
      - ◆ e.g., voltage based repair criterion
    - ➢ deletion of single cycle approvals
    - ➢ clarification of inservice inspection schedule for RSGs
      - ◆ separate TSTF 449 submittal

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Overview

- **Methodologies and computer codes consistent with CLB except for:**
  - BELOCA for large break LOCA
  - VIPRE code for non-LOCA and fuel hydraulic DNBR
  - WRB-2M correlation for DNBR (RFA fuel assemblies)

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Overview

- **Methodologies and computer codes consistent with CLB except for (cont'd):**
  - 1979 ANS decay heat + two sigma decay heat model
    - main steamline break mass and energy release outside containment
  - Selective implementation of alternative source term

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Overview

- **Analyses technical specification changes**
  - Safety limits DNB correlation limits (2.1.1.1)
    - WRB-2M DNB correlation limit applicable to Robust Fuel Assemblies
  - Core Operating Limits Report approved methods (6.9.5)
    - adds VIPRE code and WRB-2M correlation to list of approved methodologies

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Overview

- **Analyses technical specification changes (cont'd)**
  - Overtemperature/Overpressure Delta T reactor trip setpoint equations (Table 3.3-1)
    - functions added for Delta T and T_{avg} lag compensation

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Overview

- **Analyses technical specification changes (cont'd)**
  - Reactor coolant seal injection flow (3/4.5.5)
    - Increased minimum seal line resistance
      - Additional charging flow credited for small break LOCA analysis

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Overview

- **RSG submittal dependency**
  - Relies on Containment Conversion analyses and modifications submitted in Containment Conversion LAR
  - Relies on large break LOCA methodology included in BELOCA LAR

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Overview

- **Amendment issuance sequence**
  - Containment Conversion (original)
    - Request approval by June 2005
  - BELOCA (original)
    - Request approval by October 2005
  - RSG (new)
    - Request approval by January 2006

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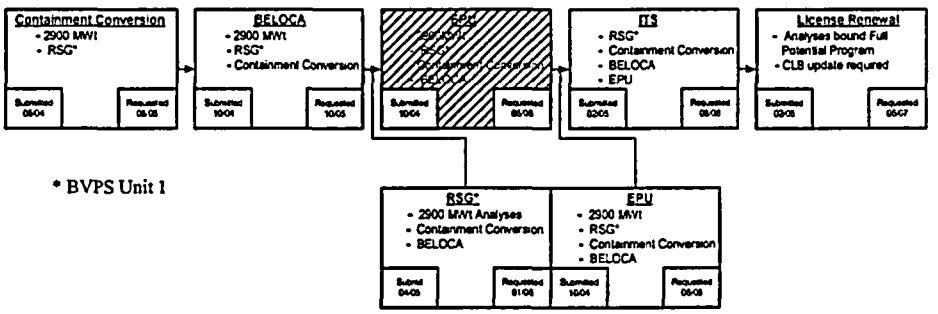
Full Potential With RSG

Roadmap (Post-January 2005)



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Concluding Remarks

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Concluding Remarks

- **Submittal of independent RSG LAR based on EPU analyses considered best overall option**
  - Most time for NRC review
  - Most efficient use of NRC and FENOC resources
- **RSG LAR content and format intended to provide NRC with opportunity to optimize synergy with EPU**

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Concluding Remarks

- **Submittal will be provided April 2005**
- **Approval requested January 2006**
- **Dependent on approval of Containment Conversion and BELOCA LARs**

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Comments/Questions

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