
ComEd Status Update

*Transition to GE 14 Fuel and
Extended Power Uprate at Dresden and
Quad Cities Nuclear Power Stations*

November 16, 2000

Introduction and Agenda

- EPU & Fuel Transition Project Scope
- Fuel Transition Status
- EPU Status
- EPU Changes to Design and License
- Results of Selected Studies
- Schedule Considerations

EPU and Fuel Transition Scope

- GE 14 fuel transition for Dresden and Quad Cities
- LaSalle transition to Siemens ATRIUM-10
- Power increase to 2957 MWt
 - MELLA - to achieve desired power level
 - ARTS power and flow dependent limits
 - Bounding Unit 5 concept
- Implement in October, 2001 for Dresden Unit 2

Fuel Transition Status

- Completed licensing submittals - Dresden/Quad Cities
 - License Amendment Request - September 29, 2000
 - GE Topical Report for treatment of mixed core - September 26, 2000
 - ComEd letter requesting approval to use GEXL in SPC code - August 2, 2000
- Schedule for routine MCPR safety limit submittals
 - Dresden 2 - May, 2001
 - Quad Cities 2 - October, 2001
- Additional submittal expected to address results of LOCA evaluations

Fuel Transition Schedule Considerations

- Requested approval dates
 - Dresden - September 14, 2001
 - Quad Cities - January 3, 2002
- Supporting approvals needed
 - GE LTR for mixed core
 - ComEd use of GEXL in SPC code

EPU Project Status

- Engineering evaluations nearly complete
- LAR preparation on track to support December submittal
- Environmental assessment reports nearly complete
- Modifications in detailed design

EPU Changes to Design and License

- Plant modifications
- Technical Specifications changes
- Conformance to ELTRs

Modifications

- Constant steam dome pressure
- Increased steam flow/feedwater flow
- Run all 3 FW pumps and 4 condensate/booster pumps to provide the flow
- Changes to power generation equipment to accommodate the higher steam flow

Modifications - Electrical and I&C

- Modifications to accommodate additional pumps
 - Increase rate of recirc runback on loss of FW or CD pump to maintain current design capability
 - Staggered RFP trips on low suction pressure (Quad Cities only)
 - Tripping of 4th CD pump on LOCA
 - Fault current limiting arrangement to maintain short-circuit rating after loss of an auxiliary transformer
 - Additional 125VDC cable (Dresden only)

Modifications - Electrical and I&C

- Flow related modifications
 - Additional steam line resonance compensator card in EHC to filter 3rd harmonic
- Various instrument scaling changes

Modifications - Mechanical

- Flow Related Modifications
 - New HP turbine rotor
 - Turbine cross-around relief valve alterations
 - HD valve normal drain trim replacement
 - FW heater relief valve adjustments
 - Condenser tube staking
 - Addition of condensate prefilters/demineralizer
 - Addition of cooling towers (Dresden only)

Modifications - Other

Various support and piping modifications due to increased temperature in torus attached piping and increased temperature and flow in MS and FW piping.

Significant Technical Specifications Changes

- Increase rated thermal power from 2527/2511 MWt (D/Q) to 2957 MWt
- Revise APRM flow-biased scram equation (MELLLA)
- Delete APRM gain and setpoint adjustment with high peaking (ARTS)

Other License/Technical Specifications Changes

- Reduce bypass power level from 45% to 38.5%
- Lower reactor vessel low water level scram setpoint by 8 inches
- Revise main steam line high flow isolation - Dresden only
- Revise isolation condenser time delay from 17 seconds to 15 seconds - Dresden only
- Revise required number of operable safety valves from 8 to 9 - Dresden Unit 3 only
- Revise credited containment overpressure

Deviations from ELTRs

- **Similar to Hatch and Duane Arnold, the only deviation from the ELTR being considered is major plant transient testing**
 - Operating history shows previous transients within expected values
 - EPU identified no new limiting events
 - Adequate data collection capability exists for transients that do occur
 - Unnecessary challenge to plant systems outweighs the benefit of these tests

Selected Studies and Results

- Reactor vessel neutron fluence
- Risk assessment
- Environmental assessment

Reactor Vessel Neutron Fluence

- P-T curves do not change for EPU
- EPU does not result in any new limiting materials
- Fluence is evaluated for EPU using methods consistent with NEDC-32980P, “GE Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluations,” submitted September 2000
- Consistent with BWROG, request approval by February, 2000

Risk Analysis

- Evaluated using the guidelines of Reg. Guide 1.174, An Approach for Using PRA in Risk-Informed Decisions
- Minimal increase in CDF, primarily due to reduced operator action time
- EPU has minimal impact on external event sequences (e.g., fire)
- Minimal overall CDF impact - region III of the Reg. Guide

Environmental Assessment

- NPDES operating permits
 - No limit changes
 - No increase in circulating water flow
 - Construction permit for cooling towers (Dresden)
 - Monitoring schedule change (Quad Cities)
- Air operating permits
 - Construction permit for new cooling towers (Dresden)

Environmental Assessment

- Open Cycle Agreement (Quad Cities)
 - Stakeholder discussions favorable to EPU, maintaining current environmental stewardship
- Terrestrial impacts limited to cooling tower construction (Dresden)
- Aquatic impacts bounded by NPDES permits

Environmental Assessment

- Expected gaseous effluents will be < 1% of FES
- Expected resin volume increase proportional to EPU
- Offsite dose for normal operation remains significantly below standards

Schedule Considerations - EPU

- LAR submitted by December 29, 2000
- Modifications complete in Dresden Unit 2 Refuel Outage 17 (begins Oct 20, 2001)
- Request approval by October 15, 2001
- Supporting approval needed for GE Fluence LTR
- Proposals to facilitate review
 - Early post-submittal meeting
 - Develop review milestone dates

Abbreviations

ADS - Automatic Depressurization System

APRM - Average Power Range Monitor

ARTS - APRM RBM Tech Specs

BOP - Balance of Plant

CD - Condensate System

CDF - Core Damage Frequency

EFPY - Effective Full Power Years

EHC - Electrohydraulic Control

ELTR - Extended Power Uprate LTR

EPU - Extended Power Uprate

FES - Final Environmental Statement

FW - Feedwater System

HD - Heater Drain System

HP - High Pressure

LAR - License Amendment Request

LOCA - Loss of Coolant Accident

LTR - Licensing Topical Report

MCPR - Minimum Critical Power Ratio

MELLLA - Maximum Extended Load Limit Line Analysis

MS - Main Steam System

NPDES - National Pollutant Discharge Elimination System

P-T - Pressure-Temperature

RBM - Rod Block Monitor

RFP - Reactor Feed Pump

SPC - Siemens Power Corporation