

RIC 2003

License Renewal / Power Upgrades

Session W7

Exelon Experience with Extended Power Upgrades

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Exelon Experience with Extended Power Uprates



Dresden Station



Quad Cities Station



Clinton Station

Background

	<u>Dresden</u>	<u>Quad Cities</u>	<u>Clinton</u>
NSSS design/containment	BWR 3/Mark I	BWR 3/Mark I	BWR 6/Mark III
Original LTP (MW _{th})	2527	2511	2894
Post-EPU LTP (MW _{th})	2957	2957	3473
EPU percent increase	117	117.8	120
Per-unit MW _e increase	105	105	85 / 73
Number of stages for EPU	1	1	2
Operational perf. package	MELLLA	MELLLA	MELLLA+

Major Modifications

	<u>D/QC</u>	<u>C</u>
High pressure turbine	X	X
Isolated phase bus duct cooling	X	X
Pipe supports	X	X
Condensate treatment systems	X	X
Steam dryer	X	
Feedwater heaters	X	
Recirculation pump runback	X	
Moisture separator-reheater		X
Main power transformer		X
Switchyard breakers / relays		X
Turbine auxiliaries		X
Misc. instrument setpoint changes	X	X

Plant Limitations

- All units are now generator limited
- Clinton is ultimately limited by physical size
 - High pressure turbine
 - Main generator
- Dresden and Quad Cities may experience summer derates due to condenser size

Operating Experience

- Overall solid plant performance post-uprate
- Small impact to daily plant operations
- Stations challenged by pre-existing material condition issues
- Opportunities to learn from Quad Cities 2
 - MS drain line vibration failure
 - Steam dryer cover plate failure
 - Iso. phase bus duct cooling

Conclusion

- EPU provided cost-effective expansion
- Overall results are positive
- Significant lessons learned – applied to other units
- Positions stations for extended life consideration