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June 15, 2001

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Dresden Nuclear Power Station, Units 2 and 3  
Facility Operating License Nos. DPR-19 and DPR-25  
NRC Docket Nos. 50-237 and 50-249

Quad Cities Nuclear Power Station, Units 1 and 2  
Facility Operating License Nos. DPR-29 and DPR-30  
NRC Docket Nos. 50-254 and 50-265

Subject: Additional Instrumentation and Controls Information Supporting the License  
Amendment Request to Permit Up-rated Power Operation

Reference: Letter from R. M. Krich (Commonwealth Edison Company) to U. S. NRC,  
"Request for License Amendment for Power Up-rate Operation," dated December  
27, 2000

In the referenced letter, Commonwealth Edison (ComEd) Company, now Exelon Generation Company (EGC), LLC, submitted a request for changes to the operating licenses and Technical Specifications (TS) for Dresden Nuclear Power Station (DNPS), Units 2 and 3, and Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2, to allow operation at up-rated power levels. In a discussion between EGC and Mr. L. W. Rossbach and other members of the NRC on May 16, 2001, the NRC requested additional information regarding these requested changes. The attachment to this letter provides the requested information.

Should you have any questions related to this information, please contact Mr. Allan R. Haeger at (630) 657-2807.

Respectfully,



R. M. Krich  
Director – Licensing  
Mid-West Regional Operating Group

Accl

June 7, 2001  
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Attachments:

Affidavit

Additional Instrumentation and Controls Information Supporting the License Amendment Request  
to Permit Upgraded Power Operation

cc:           Regional Administrator – NRC Region III  
              NRC Senior Resident Inspector – Dresden Nuclear Power Station  
              NRC Senior Resident Inspector – Quad Cities Nuclear Power Station  
              Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

STATE OF ILLINOIS )  
COUNTY OF DUPAGE )  
IN THE MATTER OF )  
EXELON GENERATION COMPANY, LLC ) Docket Numbers  
DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3 ) 50-237 AND 50-249  
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2) 50-254 AND 50-265

**SUBJECT:** Additional Instrumentation and Controls Information Supporting the License Amendment  
Request to Permit Upgraded Power Operation

**AFFIDAVIT**

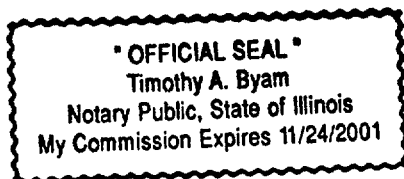
I affirm that the content of this transmittal is true and correct to the best of my  
knowledge, information and belief.


  
\_\_\_\_\_  
R. M. Krich  
Director – Licensing  
Mid-West Regional Operating Group

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 15<sup>th</sup> day of

June, 2001.



  
\_\_\_\_\_  
Notary Public

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
**Quad Cities Nuclear Power Station, Units 1 and 2**  
**Additional Instrumentation and Controls Information**  
**Supporting the License Amendment Request to Permit Up-rated Power Operation**

Question

1. *Table 5.1 of NEDC-32962P and NEDC-32961P provide changes in the analytical limit for certain plant parameters for the current and power uprate condition. The justification for these changes is based on the assumption that they do not increase the probability and consequences of postulated accidents, or reduce significantly the margin of safety. In order for the staff to complete their review, provide instrument setpoints and allowable values at both the current and uprate power conditions for the instrumentation identified in Table 5-1.*

Response:

The attached Tables 1 and 2 provide the instrument setpoint and allowable value information requested for both Dresden Nuclear Power Station (DNPS) and Quad Cities Nuclear Power Station (QCNPS). The functions listed correspond to the items in the referenced letter, Attachment E, "Power Uprate Safety Analysis Report," (PUSAR) Table 5-1, "Analytical Limits for Setpoints." Abbreviations for the tables are contained in Table 9 of this attachment.

Reference

Letter from R. M. Krich (Commonwealth Edison Company) to U. S. NRC, "Request for License Amendment for Power Uprate Operation," dated December 27, 2000

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
**Quad Cities Nuclear Power Station, Units 1 and 2**  
**Additional Instrumentation and Controls Information**  
**Supporting the License Amendment Request to Permit Up-rated Power Operation**

**Table 1: DNPS - Setpoints, Allowable Values, and Analytical Limits for PUSAR Table 5-1**

		Setpoint	Allowable Value	Analytical Limit
<b>APRM Calibration Basis</b>	Current	NA	NA	2527 MWt
	Uprate	NA	NA	2957 MWt
<b>APRM Scram</b>				
TLO Flow Biased (% RTP)	Current	0.58Wd+60.6	0.58Wd+63.5	0.58Wd+67
	Uprate	0.56Wd+66	0.56Wd+67.4	0.56Wd+71.6
TLO Clamped	Current	116.5 % RTP	120 % RTP	125 % RTP
	Uprate	118.9 % RTP	122 % RTP	125 % RTP
SLO Flow Biased (% RTP)	Current	0.58Wd+56.5	0.58Wd+59.2	0.58Wd+63.5
	Uprate	0.56Wd+61	0.56Wd+63.2	0.56Wd+67.6
SLO Clamped	Current	115.4 % RTP	118.5 % RTP	121.5 % RTP
	Uprate	115.4 % RTP	118.5 % RTP	125 % RTP
<b>APRM Rod Block</b>				
TLO Flow Biased (% RTP)	Current	0.58Wd+48.6	0.58Wd+51.5	0.58Wd+55
	Uprate	0.56Wd+54	0.56Wd+55.4	0.56Wd+59
SLO Flow Biased (% RTP)	Current	0.58Wd+44.5	0.58Wd+47.2	0.58Wd+51.5
	Uprate	0.56Wd+49	0.56Wd+51.2	0.56Wd+55.6
<b>APRM Neutron Flux Scram</b>	Current	116.5 % RTP	120 % RTP	125 % RTP
	Uprate	118.9 % RTP	122 % RTP	125 % RTP
<b>Rod Block Monitor (% RTP)</b>		No Change	No Change	No Change
<b>Rod Worth Minimizer</b> % RTP – based on FW and steam flow (Note 1)	Current	FW 20 % STM 14 %	10 % RTP	10 % RTP
	Uprate	FW 11.59 % STM 13.76 %	10 % RTP	10 % RTP
<b>Vessel High Pressure Scram</b>		No Change	No Change	No Change
<b>High Pressure ATWS RPT</b>		No Change	No Change	No Change
<b>SRV set pressure</b>		No Change	No Change	No Change
<b>SSV set pressure</b>		No Change	No Change	No Change
<b>SRV relief function</b>		No Change	No Change	No Change
<b>RV setpoints</b>		No Change	No Change	No Change
<b>TSV and TCV Scram Bypass</b> based on Turbine First Stage Pressure (Note 1)	Current	279.6 psig	45 % RTP (294 psig)	45 % RTP
	Uprate	231 psig	38.5 % RTP (245.1 psig)	38.5 % RTP
<b>Condenser Vacuum – Low</b>	Current	22.4 "Hg vac	21.15 "Hg vac	21 "Hg vac
	Uprate	22.2 "Hg vac	21.4 "Hg vac	21 "Hg vac
<b>Main Steam Line High Flow</b> (Analytical limit is defined in % of rated steam flow. Instruments measure psid. Both psid and % steam flow are provided.)	Unit 2 Current	135 psid	160.5 psid	120 % (170.8 psid)
	Unit 2 Uprate	250 psid (118.8%)	259.2 psid (120%)	125 % (303.9 psid)
	Unit 3 Current	110 psid	117.1 psid	120 % (123.4 psid)
	Unit 3 Uprate	243 psid (133.3 %)	252.6 psid (134.8 %)	140 % (292.5 psid)
<b>Feedwater Flow/Recirculation Cavitation Interlock</b>		No Change	No Change	No Change
<b>Low Steam Line Pressure</b>		No Change	No Change	No Change
<b>IC System Steam Line Flow</b>		No Change	No Change	No Change
<b>IC System Condensate Line Flow</b>		No Change	No Change	No Change
<b>HPCI Steam Line Flow</b>		No Change	No Change	No Change
<b>Main Steam Line Tunnel High Temperature Isolation</b>		No Change	No Change	No Change
<b>Reactor Low Water Level</b>	Current	13.62 "RWL	10.24 "RWL	8 "RWL
	Uprate	6.02 "RWL	2.65 "RWL	0 "RWL

Note 1: The Technical Specifications permissive or operability requirement is an Allowable Value which is conservatively treated as an Analytical Limit.

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
**Quad Cities Nuclear Power Station, Units 1 and 2**  
**Additional Instrumentation and Controls Information**  
**Supporting the License Amendment Request to Permit Up-rated Power Operation**

**Table 2: QCNPS - Setpoints, Allowable Values, and Analytical Limits for PUSAR Table 5-1**

		<b>Setpoint</b>	<b>Allowable Value</b>	<b>Analytical Limit</b>
<b>APRM Calibration Basis</b>	Current	NA	NA	2511 MWt
	Uprate	NA	NA	2957 MWt
<b>APRM Scram</b>				
TLO Clamped	Current	119 % RTP	120 % RTP	125 % RTP
	Uprate	119 % RTP	122 % RTP	125 % RTP
TLO Flow Biased (% RTP)	Current	0.58Wd+60.6	0.58Wd+63.4	0.58Wd+67
	Uprate	0.56Wd+66	0.56Wd+67.4	0.56Wd+71.6
SLO Flow Biased (% RTP)	Current	0.58Wd+56.4	0.58Wd+59.1	0.58Wd+63.5
	Uprate	0.56Wd+61	0.56Wd+63.2	0.56Wd+67.6
SLO Clamped	Current	115.2 % RTP	118.4 % RTP	121.5 % RTP
	Uprate	115.2 % RTP	118.4 % RTP	125 % RTP
<b>APRM Rod Block</b>				
TLO Flow Biased (% RTP)	Current	0.58Wd+48.6	0.58Wd+51.4	0.58Wd+55
	Uprate	0.56Wd+54	0.56Wd+55.4	0.56Wd+59
SLO Flow Biased (% RTP)	Current	0.58Wd+44.4	0.58Wd+47.1	0.58Wd+51.5
	Uprate	0.56Wd+49	0.56Wd+51.2	0.56Wd+55.6
<b>APRM Neutron Flux Scram</b>	Current	119 % RTP	120 % RTP	125 % RTP
	Uprate	119 % RTP	122 % RTP	125 % RTP
<b>Rod Block Monitor (% RTP)</b>		No Change	No Change	No Change
<b>Rod Worth Minimizer</b> % RTP – based on FW and Steam flow (Note 1)	Current	FW 18.7 % STM 15.5 %	10 % RTP	10 % RTP
	Uprate	FW 16.6 % STM 14.2 %	10 % RTP	10 % RTP
<b>Vessel High Pressure Scram</b>		No Change	No Change	No Change
<b>High Pressure ATWS RPT</b>		No Change	No Change	No Change
<b>SRV set pressure</b>		No Change	No Change	No Change
<b>SSV set pressure</b>		No Change	No Change	No Change
<b>SRV relief function</b>		No Change	No Change	No Change
<b>RV setpoints</b>		No Change	No Change	No Change
<b>TSV and TCV Scram Bypass</b> based on Turbine First Stage Pressure (Note 1)	Current	316 psig	45 % RTP (350 psig)	45 % RTP
	Uprate	221.5 psig	38.5 % RTP (244.8 psig)	38.5 % RTP
<b>Condenser Vacuum – Low</b>	Current	23 "Hg vac	21.8 "Hg vac	21 "Hg vac
	Uprate	22.2 "Hg vac	21.6 "Hg vac	21 "Hg vac
<b>Main Steam Line High Flow</b> (Analytical limit is defined in % of rated steam flow. Instruments measure psid. Both psid and % steam flow are provided.)	Current	144 psid (133%)	138 % (157.5 psid)	140 % (163.4 psid)
	Uprate	242 psid (133%)	254.3 psid (135%)	140 % (292.5 psid)
<b>Feedwater Flow/Recirculation Cavitation Interlock</b>		No Change	No Change	No Change
<b>Low Steam Line Pressure</b>		No Change	No Change	No Change
<b>RCIC Steam Line Flow</b>		No Change	No Change	No Change
<b>HPCI Steam Line Flow</b>		No Change	No Change	No Change
<b>Main Steam Line Tunnel High Temperature Isolation</b>		No Change	No Change	No Change
<b>Reactor Low Water Level</b>	Current	14.6 "RWL	11.8 "RWL	8 "RWL
	Uprate	6.6 "RWL	3.8 "RWL	0 "RWL

Note 1: The Technical Specifications permissive or operability requirement is an Allowable Value which is conservatively treated as an Analytical Limit.

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
**Quad Cities Nuclear Power Station, Units 1 and 2**  
**Additional Instrumentation and Controls Information**  
**Supporting the License Amendment Request to Permit Upgraded Power Operation**

Question

2. *Attachment G for both Dresden and Quad Cities states that "various instruments will require scaling/setpoint changes."*
- A) List the instruments which will require scaling changes;*
  - B) Confirm that all the instruments which require setpoint changes are included in the submittal;*
  - C) List the instruments which will be replaced to accommodate the extended power uprate.*

Response:

The attached tables define the instruments that require scaling changes (i.e., Tables 3 and 4), additional setpoint changes that were not discussed in the license amendment request (i.e., Tables 5 and 6), and instruments being replaced in conjunction with Extended Power Uprate (i.e., Tables 7 and 8). Abbreviations for the tables are contained in Table 9 of this attachment.

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
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**TABLE 3: DNPS SCALING CHANGES REQUIRED FOR EXTENDED POWER UPRATE**

<b>Device / Parameter</b>	<b>Current</b>	<b>Uprate</b>
Main Steam Line Flow Transmitters & Control Room Indicators	0 – 3 Mlb/hr	0 – 3.5 Mlb/hr
Main Steam Total Flow Control Room Recorders & Computer Points (Note 1)	0 – 12 Mlb/hr	0 – 14 Mlb/hr
Feedwater Pump Flow Transmitters, Control Room Indicators, & Computer Points	0 – 6 Mlb/hr	0 – 7 Mlb/hr
Feedwater Total Flow Control Room Recorders & Computer Points (Note 1)	0 – 12 Mlb/hr	0 – 14 Mlb/hr
Turbine First Stage Shell Pressure (preliminary)	0 – 1080 psig	0 – 1010 psig
Turbine Steam Flow Control Room Recorder	0 – 12 Mlb/hr	0 – 14 Mlb/hr
Turbine Intermediate Pressure - Power Load Unbalance	0 – 236.8 psia	0 – 288 psia
Other Turbine related changes, e.g., Generator Rated Current for Power Load Unbalance and Turbine Differential Expansion Detector (Note 2)	In accordance with turbine manufacturer's recommendation	

Note 1: Feedwater Control System loop logic being revised for 14 Mlb/hr span as required.

Note 2: Turbine manufacturer's recommendations have not been finalized.

**TABLE 4: QCNPS SCALING CHANGES REQUIRED FOR EXTENDED POWER UPRATE**

<b>Device / Parameter</b>	<b>Current</b>	<b>Uprate</b>
Main Steam Line Flow Transmitters & Control Room Indicators	0 – 3 Mlb/hr	0 – 3.5 Mlb/hr
Main Steam Total Flow Control Room Recorders & Computer Points (Note 1)	0 – 12 Mlb/hr	0 – 14 Mlb/hr
Feedwater Pump Flow Transmitters, Control Room Indicators, & Computer Points	0 – 6 Mlb/hr	0 – 7 Mlb/hr
Feedwater Total Flow Control Room Recorders & Computer Points (Note 1)	0 – 12 Mlb/hr	0 – 14 Mlb/hr
Turbine First Stage Shell Pressure (preliminary)	0 – 1110 psig	0 – 1010 psig
Turbine Steam Flow Control Room Recorder	0 – 12 Mlb/hr	0 – 14 Mlb/hr
Power Load Unbalance – Turbine Intermediate Pressure	0 – 236.8 psia	0 – 288 psia
Other Turbine related changes, e.g., Generator Rated Current for Power Load Unbalance and Turbine Differential Expansion Detector (Note 2)	In accordance with turbine manufacturer's recommendation	

Note 1: Feedwater Control System loop logic being re-calibrated for 14 Mlb/hr span as required.

Note 2: Turbine manufacturer's recommendations have not been finalized.



**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
**Quad Cities Nuclear Power Station, Units 1 and 2**  
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**TABLE 5: ADDITIONAL DNPS SETPOINT CHANGES FOR EXTENDED POWER UPRATE**

<b>Parameter</b>	<b>Current Nominal Setpoint</b>	<b>Uprate Nominal Setpoint</b>
APRM Flow Biased Rod Block – Clamp	None	108 % RTP
Off Gas Condenser Outlet Hi Temp Alarm	150 °F	165 °F
Condenser Low Vacuum Alarms ("Hg vacuum)	24.5 / 24.5	24 / 23.5
Isolation Condenser Initiation Time Delay (Note 1)	15 seconds	13 seconds
LPCI Swing Bus Time Delay	20 seconds	17 seconds
Stator Water Cooling Low Flow / Pressure Alarm	472 gpm	526 gpm
Stator Water Cooling Low Flow / Pressure Runback	448 gpm	496 gpm
Stator Between Bar High Temperature Alarm	78 °C	83 °C
Reactor Recirculation MG Set High / High-High Temp Alarms	210 °F / 230 °F	215 °F / 230 °F
Turbine Differential Expansion Alarm	Manufacturer's	recommendation

Note 1: Isolation Condenser Initiation Time Delay change discussed in PUSAR Section 3.8. Value provided is the nominal time delay setpoint.

**TABLE 6: ADDITIONAL QCNPS CITIES SETPOINT CHANGES FOR EXTENDED POWER UPRATE**

<b>Parameter</b>	<b>Current Nominal Setpoint</b>	<b>Uprate Nominal Setpoint</b>
APRM Flow Biased Rod Block – Clamp	None	108 % RTP
Off Gas Condenser Outlet High Temperature Alarms	140 °F	165 °F
Condenser Low Vacuum Alarms ("Hg vacuum)	24 / 24.5	24.5 / 24.5
LPCI Swing Bus Time Delay	20 seconds	17 seconds
Stator Water Cooling Low Flow / Pressure Alarm	472 gpm	526 gpm
Stator Water Cooling Low Flow / Pressure Runback	448 gpm	496 gpm
Stator Between Bar High Temperature Alarm	78 °C	83 °C
Reactor Recirculation MG Set High / High - High Temp Alarm	210 °F / 221 °F	215 °F / 230 °F
Turbine Over-Speed Trip – Mechanical (Note 1)	110 %	110.8 %
Turbine Backup Electrical Over-Speed Trip (Note 1)	110.5 %	111.5 %
Turbine Differential Expansion Alarm	Manufacturer's	recommendation

Note 1: Revised setpoints are consistent with Turbine manufacturer's recommendations and current Dresden over-speed setpoints.

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
**Quad Cities Nuclear Power Station, Units 1 and 2**  
**Additional Instrumentation and Controls Information**  
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**TABLE 7: DNPS INSTRUMENTS BEING REPLACED FOR EXTENDED POWER UPRATE**

<b>Device / Parameter</b>	<b>Uprate Change</b>
Main Steam Line High Flow Differential Pressure Indicating Switches	Uprate setpoint exceeds current span – 200 psid switches being replaced with 400 psid switches
APRM Flow Control Trip Reference Card	Clamp function added for APRM Flow Biased Rod Block
Off Gas Condenser Outlet Gas Temperature Switches	Uprate setpoint exceeds current span – 150 °F switch being replaced with 250 °F switch
Isolation Condenser Time Delay Relay	Replacement of obsolete time delay relay in conjunction with uprate setpoint change

**TABLE 8: QCNPS INSTRUMENTS BEING REPLACED FOR EXTENDED POWER UPRATE**

<b>Device / Parameter</b>	<b>Uprate Change</b>
Main Steam Line High Flow Differential Pressure Switches	Uprate setpoint exceeds current span – 200 psid switches being replaced with 400 psid switches
APRM Flow Control Trip Reference Card	Clamp function added for APRM Flow Biased Rod Block
Off Gas Condenser Outlet Gas Temperature Switches	Uprate setpoint exceeds current span – 150 °F switch being replaced with 250 °F switch

**Attachment**  
**Dresden Nuclear Power Station, Units 2 and 3**  
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**Table 9: Abbreviations for Tables 1-8**

APRM	Average Power Range Monitor
ATWS RPT	Anticipated Transient Without Scram Recirculation Pump Trip
FW	Feed Water
HPCI	High Pressure Coolant Injection
IC	Isolation Condenser
LPCI	Low Pressure Coolant Injection
MG	Motor Generator
MWt	Megawatts Thermal
Mlb	Million pounds
RCIC	Reactor Core Isolation Cooling
RTP	Rated Thermal Power
RV	Relief Valve
RWL	Reactor Water Level
SLO	Single Loop Operation
SRV	Safety/Relief Valve
SSV	Spring Safety Valve
STM	Steam
TCV	Turbine Control Valve
TLO	Two Loop Operation
TSV	Turbine Stop Valve
W <sub>d</sub>	Percent of rated reactor recirculation drive flow