Progress Energy

June 4, 2010

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Mrs. Renne Vance
Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4325

Re: NCUC Docket No. E-100, Sub 124

Dear Ms. Vance:

Pursuant to North Carolina Utilities Commission Rule R8-55, Carolina Power & Light Company, d/b/a Progress Energy Carolinas, Inc. ("PEC") notifies the Commission that effective January 1, 2009, PEC changed the Maximum Dependable Capacity (MDC) of Brunswick Unit 2 from 937 megawatts (MW) to 920 MW and effective January 1, 2010 PEC changed the MDC of Robinson Unit 2 from 710 MW to 724 MW. Enclosed with this letter is a copy of the supporting documentation for the MDC changes. Please contact me if you have any questions about this filing.

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Gruber
2 PSeco
3 PSlegal
3 PSAccts
4 Pselect

Enclosures

Very truly yours,

Len S. Anthony
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Progress Energy Service Company, LLC
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STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 124

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:

Investigation of Integrated Resource Planning in NC - 2009	))	CERTIFICATE OF SERVICE

I, Len S. Anthony, hereby certify that Progress Energy Carolinas, Inc.'s MDC Notification Letter has been served on all parties of record either by hand delivery or by depositing said copy in the United States mail, postage prepaid, addressed as follows this the 4th day of June, 2010:

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SYSTEM# 5005, 5040
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NUCLEAR GENERATION GROUP

RNP-B/TURB-1000
(Calculation #)

RNP Maximum Dependable Capacity (MDC)
(Title including structures, systems, components)

☐ BNP UNIT ____

☐ CR3 ☐ HNP ☒ RNP ☐ NES ☐ ALL

APPROVAL

REV	PREPARED BY	REVIEWED BY	SUPERVISOR
0	Signature	Signature	Signature
	Name Tim Surma	Name	Name
	Date	Date	Date
1	Signature	Signature	Signature
	Name Tim Surma	Name	Name
	Date	Date	Date
2	Signature	Signature	Signature
	Name Tim Surma	Name Thomas Freeman	Name Robert Ludwick
	Date 11/17/2009	Date 12/01/2009	Date 12/09/2009

LIST OF EFFECTIVE PAGES

PAGE	REV	PAGE	REV
Cover Sheet	2		
1-10	2		

ATTACHMENTS

Number	Rev	Number of Pages
A	2	1
B	2	1
C	2	1
D	2	1

AMENDMENTS

Letter	Rev	Number of Pages

TABLE OF CONTENTS

Rev. #	Revision Summary (list ECs incorporated)
0	Initial Issue. 2007 MDC Test
1	2008 MDC Test
2	2009 MDC Test

1. PURPOSE:

The purpose of this calculation is to document the **Maximum Dependable Capacity (MDC), Gross and Net Summer Continuous Capability, Gross and Net Winter Continuous Capability, and Gross and Net Reactive Capability** for the Robinson Nuclear Plant (RNP). Data collection and analysis are performed in accordance with EGR-NGGC-0107, Facility Ratings – Nuclear Plant Real and Reactive Power Capacity.

2. REFERENCES:

2.1. EGR-NGGC-0107, Facility Ratings – Nuclear Plant Real and Reactive Power Capacity, Revision 1.
2.2. Memo, dated 11/9/09, from Chris Georgeson to NGG Thermal Performance Engineers, Subject: FW: When was the Peak Transmission System Load last Winter?

3. CALCULATION

3.1. Definitions

3.1.1. Test Duration

The 24 hour period encompassing the "data point of interest". The data point of interest is either the Highest Hourly Average Circulating Water Inlet Temperature or the Peak Transmission System Load for the Winter Season. Data is collected 11 hours before and 12 hours after the data point of interest encompassing a 24 hour period.

3.1.2. Maximum Dependable Capacity (MDC)

MDC – In a nuclear power reactor, dependable main-unit gross generating capacity less the normal station service loads, winter or summer, whichever is smaller. The dependable capacity varies because the unit efficiency varies during the year due to temperature variations in cooling water. MDC is measured during the most restrictive seasonal conditions (usually summer). The MDC at RNP is determined from a 24 hour period encompassing the highest hourly average circulating water inlet temperature for the year.

3.1.3. Continuous Capability

Gross – The gross sustained real power output (generally stated as megawatts, MW) at the generator terminals under the expected seasonal operating conditions. This may be stated as a seasonal value such as Gross Summer Continuous Capability or Gross Winter Continuous Capability.

Net – The Gross Continuous Capability adjusted for both the Auxiliary System Load and the appropriate portion of the Common Service Load necessary to operate the unit at the Gross Continuous Capability. This may be stated as a seasonal value such as Net Summer Continuous Capability or Net Winter Continuous Capability. Net Summer Continuous Capability is equivalent to MDC.

Summer Gross and Net Continuous Capability are determined from a 24 hour period encompassing the highest hourly average circulating water inlet temperature for the preceding year. The Winter Gross and Net Continuous Capability are determined from a 24 hour period encompassing the Peak Transmission System Load for the preceding Winter Season.

3.1.4. Reactive Capability

Gross – The maximum sustained overexcited and under excited reactive output at the generator terminals, at the Gross Continuous Capability under the expected seasonal operating conditions.

Net – The Gross Reactive Capability adjusted for both the Auxiliary System Load (including Main Transformer excitation losses) and the appropriate portion of the Common Service Load.

In accordance with EGR-NGGC-0107, the Gross and Net Reactive Capability are obtained from EGR-NGGC-0107.

3.2. Assumptions:

3.2.1. Operation logs will be reviewed to verify that no activities are in progress that might have a significant affect (>2 MW's) on plant efficiency over the test periods.

3.2.2. Source data from June, July, August, and September was used to determine the highest circulating water temperature.

3.3. Collection of Test Data

3.3.1. MDC – The highest hourly average circulating water inlet temperature was determined to have occurred at 18:00 hours on 6/28/09 using PI data point CWT0001 (see Attachment A). The MDC data set includes Net MW data from PI (ELQ0330H) and reactor power from PI (NPU3020).

3.3.2. Summer Continuous Capability (Gross and Net) - This data corresponds to the highest hourly average circulating water temperature determined for the MDC. In addition to the data collected for MDC, Gross MW data is listed in Attachments A. Gross MW is calculated by summing Net MW data(ELQ0330H) and Station Load data (ELQ3310A and ELQ3300A).

3.3.3. Winter Continuous Capability (Gross and Net) – the Peak Transmission System Load occurred at 08:00 hours on 1/17/09 (Reference 2.2). The data includes Circulating Water temperature (CWT0001) and reactor power from PI (NPU3020). Plant data is listed in Attachments B.

3.3.4. Reactive Capability (Gross and Net) – Data is obtained from EGR-NGGC-0107.

3.3.5. PI Data Nomenclature:

CWT0001	AVERAGE CONDENSOR CW INLET TEMP
NPU3020	ONE MIN AVG FWUFM POWER
CWT2400A	TE-3091A COND A CW INLET TEMP
CWT2401A	TE-3091B COND A CW INLET TEMP
CWT2402A	TE-3091C COND A CW INLET TEMP
CWT2420A	TE-3092A COND B CW INLET TEMP
CWT2421A	TE-3092B COND B CW INLET TEMP
CWT2422A	TE-3092C COND B CW INLET TEMP
ELQ0330H	UNIT GENERATOR NET MW (1 HR AVG)
ELQ3310A	STARTUP TRANSFORMER MW
ELQ3300A	AUXILARY TRANSFORMER MW

3.4. Data Analysis

3.4.1. MDC

3.4.1.1. The highest hourly average circulating water inlet temperature was determined to be 92.5°F (CWT0001) and occurred at 18:00 hours on 6/28/09. This temperature was confirmed by observing the CWT0001 averaging inputs (CWT2400A, CWT2401A, CWT2402A, CWT2420A, CWT2421A, and CWT2422A) for the summer months and the test duration.

3.4.1.2. The minimum reactor power during the test duration was 99.9% which exceeds the minimum requirement of EGR-NGGC-0107 (>99%); therefore, data analysis using curve fitting is not required.

3.4.1.3. No "off-normal" activities or conditions were observed during the test duration that would have a significant effect on plant efficiency.

3.4.1.4. The average Net MW value for the test duration was calculated as **724 MW**.

3.4.2. Gross Summer Continuous Capability

3.4.2.1. The Gross Summer Continuous Capability was determined during the same test duration and requirements as MDC and was calculated as **753 MW**.

3.4.3. Net Summer Continuous Capability

3.4.3.1. The Net Summer Continuous Capability is equivalent to the MDC which was calculated as **724 MW**.

3.4.4. Net Winter Continuous Capability

3.4.4.1. The highest peak transmission system load for the Winter Season occurred at 08:00 hours on 1/17/09 (Reference 2.2). The Net Winter Continuous Capability was determined during the same test duration and requirements as Gross Winter Continuous Capability and was calculated as **765 MW**.

3.4.4.2. No "off-normal" activities or conditions were observed during the test duration that would have a significant effect on MW output.

3.4.5. Gross Winter Continuous Capability

3.4.5.1. The Gross Winter Continuous Capability was determined during the same test duration and requirements as Net Winter Continuous Capability and was calculated as **795 MW**. The difference between the hourly Gross and Net MW for the Winter season is listed as the Station Loads (ELQ3310A and ELQ3300A) in Attachment C and was determined to be 29 MW.

3.4.6. Gross Reactive Capability

3.4.6.1. The Gross Reactive Capability obtained from EGR-NGGC-0107 is **210 MVar**.

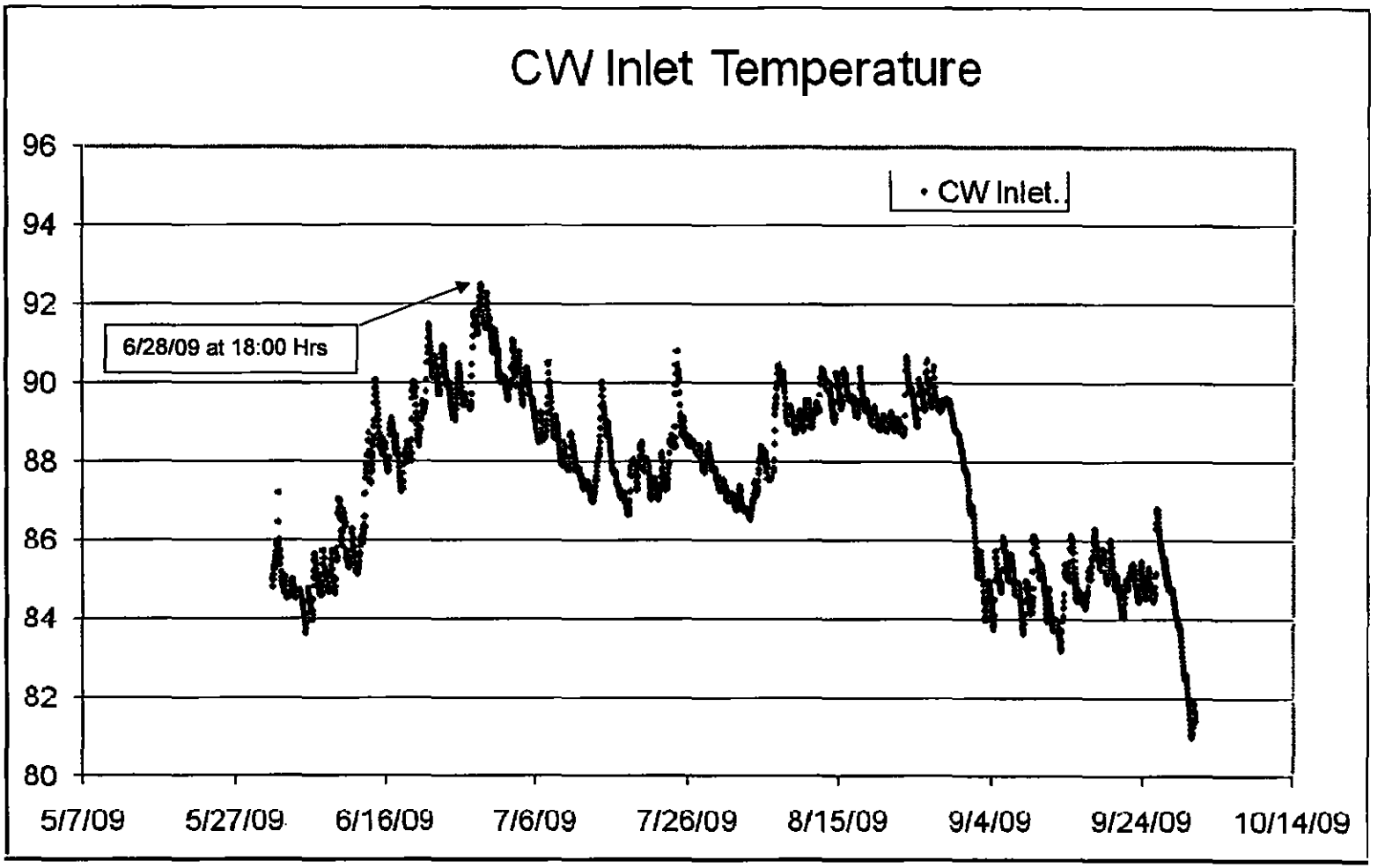
3.4.7. Net Reactive Capability

3.4.7.1. The Net Reactive Capability obtained from EGR-NGGC-0107 is **195 MVar**.

3.5. Conclusion

The calculated facility rating values for MDC, Gross and Net Summer Continuous Capability, Gross and Net Winter Continuous Capability, Gross and Net Reactive Capability are listed below. Since there is a less than 1% difference between the calculated values and the previously approved values, no changes to the approved facility rating values are required.

Test	Calculated Value	Previous Approved Value	Difference
MDC	724 MW	710 MW	1.97%
Gross Summer Continuous Capability	753 MW	751 MW	0.27%
Net Summer Continuous Capability	724 MW	710 MW	1.97%
Gross Winter Continuous Capability	795 MW	791 MW	0.51%
Net Winter Continuous Capability	765 MW	758 MW	0.92%
Gross Reactive Capability	210 MVar	210 MVar	N/A
Net Reactive Capability	195 MVar	70 MVar	178.57%


CW Inlet Temperature
96
94
92
90
88
86
84
82
80
• CW Inlet.
6/28/09 at 18:00 Hrs
5/7/09
5/27/09
6/16/09
7/6/09
7/26/09
8/15/09
9/4/09
9/24/09
10/14/09

MDC, Gross and Net Summer Continuous Capability Test Data

6/28/2009	CWT0001	NPU3020	CWT2400A	CWT2401A	CWT2402A	CWT2420A	CWT2421A	CWT2422A	Power (%)	ELQ0330H	ELQ3310A	ELQ3300A
7:00	91.3	2337.4	91.7	91.7	91.0	90.8	91.0	91.6	99.9	724.8	1.4	28.1
8:00	91.3	2337.8	91.6	91.7	90.9	90.8	90.9	91.6	99.9	724.8	1.4	28.1
9:00	91.3	2337.6	91.7	91.7	91.0	90.8	91.0	91.6	99.9	724.8	1.4	28.1
10:00	91.5	2337.1	91.9	91.9	91.2	91.0	91.2	91.8	99.9	724.7	1.4	28.1
11:00	91.7	2337.7	92.1	92.2	91.4	91.3	91.5	92.1	99.9	724.4	1.4	28.1
12:00	91.9	2337.9	92.3	92.3	91.6	91.4	91.6	92.2	100.0	724.1	1.4	28.1
13:00	91.9	2337.8	92.3	92.4	91.6	91.4	91.6	92.2	100.0	723.7	1.4	28.2
14:00	92.1	2337.0	92.4	92.5	91.8	91.6	91.8	92.4	99.9	723.4	1.4	28.1
15:00	92.2	2337.2	92.6	92.7	91.9	91.7	91.9	92.5	99.9	723.1	1.4	28.1
16:00	92.2	2336.9	92.5	92.7	91.9	91.7	91.9	92.5	99.9	722.8	1.4	28.1
17:00	92.4	2338.1	92.7	92.8	92.0	91.9	92.1	92.7	100.0	722.8	1.4	28.1
18:00	92.5	2338.6	92.9	93.0	92.2	92.0	92.2	92.8	100.0	722.8	1.4	28.1
19:00	92.5	2338.4	92.9	93.0	92.2	92.1	92.2	92.8	100.0	722.8	1.4	28.1
20:00	92.5	2338.1	92.9	93.0	92.2	92.0	92.2	92.8	100.0	722.9	1.4	28.1
21:00	92.4	2337.8	92.8	92.9	92.1	92.0	92.1	92.8	100.0	722.9	1.4	28.1
22:00	92.3	2337.6	92.7	92.8	92.0	91.8	92.0	92.6	99.9	722.9	1.4	28.0
23:00	92.2	2336.9	92.5	92.6	91.8	91.7	91.8	92.5	99.9	722.9	1.4	28.0
0:00	92.0	2336.8	92.3	92.4	91.7	91.5	91.6	92.3	99.9	723.0	1.4	28.1
1:00	91.8	2337.4	92.2	92.3	91.5	91.3	91.5	92.1	99.9	723.3	1.4	28.2
2:00	91.7	2337.4	92.1	92.1	91.4	91.2	91.4	92.0	99.9	723.6	1.4	28.2
3:00	91.6	2337.1	92.0	92.0	91.3	91.1	91.3	91.9	99.9	723.8	1.4	28.2
4:00	91.5	2336.8	91.9	91.9	91.2	91.1	91.2	91.8	99.9	724.1	1.4	28.2
5:00	91.5	2337.6	91.8	91.9	91.2	91.0	91.2	91.8	99.9	724.3	1.4	28.2
6:00	91.5	2337.5	91.8	91.9	91.1	91.0	91.2	91.8	99.9	724.5	1.4	28.2
										Avg Gross	Avg Net	Avg Sta
										753.1	723.6	29.5

Gross and Net Winter Continuous Capability

	NPU3020	CWT0001	ELQ0330H	ELQ3310A	ELQ3300A		Power (%)
1/16/09 21:00	2336.5	58.0	765.7	1.2		28.3	99.9
1/16/09 22:00	2336.5	57.9	765.6	1.2		28.3	99.9
1/16/09 23:00	2336.4	57.8	765.6	1.2		28.3	99.9
1/17/09 0:00	2336.6	57.6	765.5	1.2		28.3	99.9
1/17/09 1:00	2336.3	57.5	765.5	1.2		28.3	99.9
1/17/09 2:00	2336.3	57.4	765.5	1.2		28.3	99.9
1/17/09 3:00	2336.7	57.3	765.5	1.2		28.3	99.9
1/17/09 4:00	2337.4	57.2	765.5	1.2		28.3	99.9
1/17/09 5:00	2337.0	57.1	765.4	1.2		28.3	99.9
1/17/09 6:00	2319.0	57.0	763.0	1.2		28.3	99.1
*1/17/09 7:00	2312.5	56.9	757.9	1.2		28.2	98.9
*1/17/09 8:00	2311.0	56.9	757.2	1.2		28.1	98.8
*1/17/09 9:00	2309.5	56.8	756.7	1.2		28.1	98.7
*1/17/09 10:00	2310.3	56.7	756.3	1.2		28.2	98.8
1/17/09 11:00	2325.0	56.7	758.9	1.2		28.3	99.4
1/17/09 12:00	2334.4	56.8	763.1	1.2		28.3	99.8
1/17/09 13:00	2338.0	56.8	765.2	1.3		28.3	100.0
1/17/09 14:00	2337.5	56.9	766.2	1.3		28.2	99.9
1/17/09 15:00	2336.4	56.9	766.3	1.3		28.0	99.9
1/17/09 16:00	2336.7	56.9	766.1	1.3		28.0	99.9
1/17/09 17:00	2336.7	56.9	766.0	1.3		28.2	99.9
1/17/09 18:00	2337.1	56.8	765.9	1.3		28.2	99.9
1/17/09 19:00	2337.0	56.7	765.7	1.3		28.3	99.9
1/17/09 20:00	2336.3	56.7	765.6	1.3		28.3	99.9
				Avg Gross	Avg Net		Avg Sta
*Data excluded (<99%)				794.6	765.1		29.5

Document Indexing Table

Document Type (e.g. CALC, DWG, TAG, PROCEDURE, SOFTWARE)	**ID Number** (e.g., Calc No., Dwg. No., Equip. Tag No., Procedure No., Software name and version)	**Function** (i.e. IN for design inputs or references; OUT for affected documents)	**Relationship to Calc.** (e.g. design input, assumption basis, reference, document affected by results)	**Action** (specify if Doc. Services or Config. Mgt. to Add, Deleted or Retain) (e.g., CM Add, DS Delete)
Procedure	EGR-NGGC-0107	IN	Reference	CM Add

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