NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy		
Plant	J.C. Weadock	Unit No	Unit No. 7

Date of Test	March 18, 2004	Time of Test	Begin	8:00:00 AM	End	15:00:00 PM

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	162.00	7.00	155.00
2nd Hour	162.00	8.00	154.00
3rd Hour	162.00	8.00	154.00
4th Hour	163.00	7.00	156.00
5th Hour	162.00	7.00	155.00
6th Hour	164.00	8.00	156.00
7th Hour	163.00	7.00	156.00
8th Hour	162.00	7.00	155.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				155.25 MW
Prior Net Demonstrated Capability				154.7 MW
Throttle Pressure				2024 psia
Steam Temp	Main	1028 deg F	1st RH	988 deg F
Back Pressure				0.90 in Hg
Circulating Water Inlet Temperature				36.6 deg F
Ambient Air Temperature				33.1 deg F

Net Demo Cap	Seasonal Derating

Remarks: (including load limiting conditions and deviations from normalconditions)

The plant is requesting the NDC for the unit be assigned 155 Mws. No seasonal load limiting.

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	J.C. Weadock	Unit No	Unit No. 8				
Date of Test	March 18, 2004	Time of Test	Begin	8:00	End	15:00:00 PM	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	162.00	8.00	154.00
2nd Hour	164.00	9.00	155.00
3rd Hour	164.00	9.00	155.00
4th Hour	165.00	9.00	156.00
5th Hour	164.00	9.00	155.00
6th Hour	164.00	9.00	155.00
7th Hour	165.00	9.00	156.00
8th Hour	164.00	9.00	155.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				155.1 Mw
Prior Net Demonstrated Capability				152.7 Mw
Throttle Pressure				2041.5 psia
Steam Temp	Main	1033 deg F	1st RH	1004 deg F
Back Pressure				1.1 in Hg
Circulating Water Inlet Temperature				35 .7 deg F
Ambient Air Temperature				33 .1 deg F

Net Demo Cap	Seasonal Derating

Remarks: (including load limiting conditions and deviations from normalconditions)

The plant is requesting the NDC for the unit be assigned according to the following:
Jan - May: 155 Mw, June: 153 Mw, Jul - Sept: 151 Mw, Oct: 153 Mw, Nov - Dec: 155 Mw

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J.R.Whiting
Date of Test: 10-14-04

Reported By: JA Reithel
Unit No: 1
Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	108	MW	6	MW	102	MW
2nd Hour	109	MW	7	MW	102	MW
3rd Hour	105	MW	6	MW	99	MW
4th Hour	108	MW	6	MW	102	MW
5th Hour	107	MW	6	MW	101	MW
6th Hour	108	MW	6	MW	102	MW
7th Hour	108	MW	6	MW	102	MW
8th Hour	108	MW	7	MW	101	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 101.4 MW
Prior Net Demonstrated Capability 102 MW
Throttle Pressure 1450 psia
Steam Temp. - Main 1000 °F, 1st R.H. 1000 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 56.0 °F
Ambient Air Temperature 52 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
102	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain rating at 102.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J.R.Whiting
Date of Test: 10-23-04

Reported By: JA Reithel
Unit No: 2
Time of Test; Begin 1000, End 1600

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	107	MW	6	MW	101	MW
2nd Hour	107	MW	6	MW	101	MW
3rd Hour	108	MW	6	MW	102	MW
4th Hour	107	MW	6	MW	101	MW
5th Hour	108	MW	6	MW	102	MW
6th Hour	108	MW	6	MW	102	MW
7th Hour	108	MW	6	MW	102	MW
8th Hour	107	MW	5	MW	102	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 101.6 MW
Prior Net Demonstrated Capability 102 MW
Throttle Pressure 1420 psia
Steam Temp. - Main 980 °F, 1st R.H. 1000 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 55 °F
Ambient Air Temperature 56 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
102	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain rating at 102.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J.R.Whiting
Date of Test: 10-23-04

Reported By: JA Reithel
Unit No: 3
Time of Test; Begin 1000, End 1700

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	133	MW	8	MW	125	MW
2nd Hour	133	MW	8	MW	125	MW
3rd Hour	129	MW	8	MW	121	MW
4th Hour	133	MW	7	MW	126	MW
5th Hour	133	MW	8	MW	125	MW
6th Hour	132	MW	8	MW	124	MW
7th Hour	133	MW	9	MW	124	MW
8th Hour	132	MW	8	MW	124	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 124.3 MW
Prior Net Demonstrated Capability 124.0 MW
Throttle Pressure 1450 psia
Steam Temp. - Main 1000 °F, 1st R.H. 1000 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 56 °F
Ambient Air Temperature 52 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
124	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain rating at 124.

Supplemental ECAR Test Data

Plant:	Karn 3&4 Plant	Unit #	3	Date of Test: 5/18/2004
Time of Test:	Begin	1300		
	End	1700		

Average Test Capability (Uncorrected): 638.25

Ambient Conditions	Avg Winter	Avg Summer	Avg During Test
Air Temperature (°F)	26.5	85	72
Relative Humidity (%)			
Circ Water Inlet Temp (°F)	77	92	81

Steam Flow (lbs/hr) *optional*:

Corrections for Normalizing to Winter Capability (NDC)

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950		
Throttle Pressure (psig)	1,800		
Reheat Temperature (°F)	950		
Back Pressure (in Hg)	3.0		
Reheat Spray (lb/hr)	10,000		
Superheat Spray (lb/hr)	10,000		
Combustion Air Heat (lb/hr)	360,000		
Plant Heating (lb/hr)	0		
Other	0		

Total Correction (MW)= 0

Normalized Winter Capability (MW)= 638 (Avg of Test + Corrections)

Corrections for Normalizing to Summer Capability

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950	939	1.25
Throttle Pressure (psig)	1,800	1803	
Reheat Temperature (°F)	950	935	1.25
Back Pressure (in Hg)	4.0	3.7	-3.0
Reheat Spray (lb/hr)	10,000	10,000	
Superheat Spray (lb/hr)	10,000	10,000	
Combustion Air Heat (lb/hr)	245,000	218,500	-0.2
Plant Heating (lb/hr)	0	0	
Other	0	0	

Total Correction (MW)= -0.7

Normalized Summer Capability (MW)= 637.55 (Avg of Test + Corrections)

Net Demonstrated Capability Test

Company: **Consumers Energy** **Unit #** 3

Plant: Karn 3&4 **Time of Test** **Begin** 1300
End 1700

Date of Test: 5/18/2004

Time	Integrated Gross Generation	Integrated Aux Power	Net Generation
1400	663	24	639
1500	663.5	24.5	639
1600	663	26	637
1700	663	25	638

4 Hour Summary

Net Generation 4 Hour Average for Test (MW)=	638.25
Prior Demonstrated Capability (MW)=	638
Throttle Pressure (psig)=	1803
Steam Temperature (°F)	
Main Steam=	946
North Reheat Steam=	928
South Reheat Steam=	943
Back Pressure	3.7
A Zone=	4.5
B Zone=	2.9
Circulating Water Inlet Temperature (°F)=	81
Ambient Air Temperature (°F)=	72

Seasonal Derating

Jan	Feb	Mar	Apr	May	Jun

July	Aug	Sept	Oct	Nov	Dec

Remarks: (Include Load Limiting Conditions and Deviations from Normal Operation)

Supplemental ECAR Test Data

Plant:	Karn 3&4 Plant	Unit #	4	Date of Test: 5/13/2004
Time of Test:	Begin	1400		
	End	1800		

Average Test Capability (Uncorrected): 639.5

Ambient Conditions	Avg Winter	Avg Summer	Avg During Test
Air Temperature (°F)		85	69
Relative Humidity (%)			
Circ Water Inlet Temp (°F)		92	87

Steam Flow (lbs/hr) *optional*:

Corrections for Normalizing to Winter Capability (NDC)

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950		
Throttle Pressure (psig)	1,800		
Reheat Temperature (°F)	950		
Back Pressure (in Hg)	3.0		
Reheat Spray (lb/hr)	10,000		
Superheat Spray (lb/hr)	10,000		
Combustion Air Heat (lb/hr)	360,000		
Plant Heating (lb/hr)	0		
Other	0		

Total Correction (MW)=

Normalized Winter Capability (MW)= (Avg of Test + Corrections)

Corrections for Normalizing to Summer Capability

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950	935	1.2
Throttle Pressure (psig)	1,800	1809	
Reheat Temperature (°F)	950	938	1.2
Back Pressure (in Hg)	4.5	4.3	-3.0
Reheat Spray (lb/hr)	10,000	6,800	-0.2
Superheat Spray (lb/hr)	10,000	6,800	
Combustion Air Heat (lb/hr)	245,000	240,690	-0.2
Plant Heating (lb/hr)	0	0	
Other	0	0	

Total Correction (MW)= -1.0

Normalized Summer Capability (MW)= 638.5 (Avg of Test + Corrections)

Net Demonstrated Capability Test

Company: **Consumers Energy** **Unit #** 4

Plant: Karn 3&4 **Time of Test** **Begin** 1400
End 1800

Date of Test: 5/13/2004

Time	Integrated Gross Generation	Integrated Aux Power	Net Generation
1500	662	23	639
1600	663	24	639
1700	663	23	640
1800	663	23	640

4 Hour Summary

Net Generation 4 Hour Average for Test (MW)=	639.5
Prior Demonstrated Capability (MW)=	638
Throttle Pressure (psig)=	1809
Steam Temperature (°F)	
Main Steam=	948
North Reheat Steam=	930
South Reheat Steam=	947
Back Pressure	4.3
A Zone=	5.1
B Zone=	3.5
Circulating Water Inlet Temperature (°F)=	87
Ambient Air Temperature (°F)=	69

Seasonal Derating

Jan	Feb	Mar	Apr	May	Jun

July	Aug	Sept	Oct	Nov	Dec

Remarks: (Include Load Limiting Conditions and Deviations from Normal Operation)

SUPPLEMENTAL ECAR TEST DATA
(See Reverse Side For Instructions)

Plant: J H Campbell
Date of Test: 3-11-03

Unit No: 1
Time of Test: Begin 0700 End 1500

Average Test Capability (Uncorrected): 260.3

AMBIENT CONDITIONS:	Avg Winter	Avg Summer	Avg During Test
Air Temp °F	20	70	30
Circ Water Inlet Temp °F	45	65	46

STEAM FLOW: _____ lbs/Hr (Optional)

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value		Test Value		Correction	
Throttle Temperature	1050	°F	1055	°F	+0.15	MW
Throttle Pressure	2415	psia	2404	psia	0	MW
Reheat Temperature	1000	°F	996	°F	+0.56	MW
Back Pressure	1.00	in Hg	1.26	in Hg	+0.75	MW
Reheat Spray	25	Klb/hr	35	Klb/hr	-1.2	MW
Superheat Spray	30	Klb/hr	45	Klb/hr	-0.3	MW
Combustion Air Heat	0	Klb/hr	0	°F	0	MW
Plant Heating		Klb/hr		Klb/hr		MW
Total Correction					-0.04	MW

Normalized Winter Capability = 260.26 net MW (Avg for test + corrections)

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY (NDC):

Parameter	Normal Value		Test Value		Correction	
Throttle Temperature		°F		°F		MW
Throttle Pressure		psia		psia		MW
Reheat Temperature		°F		°F		MW
Back Pressure		in Hg		in Hg		MW
Reheat Spray		Klb/hr		Klb/hr		MW
Superheat Spray		Klb/hr		Klb/hr		MW
Cold End Temperature		°F		°F		MW
Plant Heating		Klb/hr		Klb/hr		MW
Outdoor Air Temperature		°F		°F		MW
Total Correction						MW

Normalized Summer Capability = _____ net MW (Avg for test + corrections)

NET DEMONSTRATED CAPABILITY TEST

Company: Consumers Energy Plant : J H Campbell Unit No. 1

Date of Test: 3-11-03 Time of Test Begin 0700 End 1500

	Integrated Gross Gen		Integrated Aux. Power		Net Generation	
1st Hour	273.6	MW	13.43	MW	260.17	MW
2nd Hour	274.2	MW	13.48	MW	260.72	MW
3rd Hour	274.0	MW	13.35	MW	260.65	MW
4th Hour	273.6	MW	13.32	MW	260.28	MW
5th Hour	273.3	MW	13.44	MW	259.86	MW
6th Hour	273.5	MW	13.41	MW	260.09	MW
7th Hour	273.7	MW	13.45	MW	260.25	MW
8th Hour	273.4	MW	13.45	MW	259.95	MW

Seven Hour Summary

Net Generation Seven Hour Average for Test 260.30 MW
Prior Net Demonstrated Capability 260.0 MW
Throttle Pressure 2389 + 15 = 2404 psia
Steam Temp. - Main 1055 °F, 1st R.H. 996 °F, 2nd R.H. - °F
Back Pressure 1.262 "Hg
Circulating Water Inlet Temperature 46 °F
Ambient Air Temperature 30 °F

Net Demo Cap	SEASONAL DERATING											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Remarks: (Including load limiting conditions and deviations from normal operation)

1A GMW METER	132.8	133.4	133.0	132.6	132.6	132.6	132.4	132.4
1B GMW METER	140.8	140.8	141.0	141.0	140.7	140.9	141.3	141.0
#1 BANK X 10 1A	6.57	6.56	6.54	6.52	6.50	6.51	6.51	6.49
1B	4.74	4.84	4.73	4.73	4.76	4.72	4.77	4.85
#7 BANK/10 X .4	0.26	0.22	0.22	0.21	0.32	0.32	0.31	0.25
#1 DWD	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
TIE AIR	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
WWP	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
TIE STM	0	0	0	0	0	0	0	0
GROSS	273.6	274.2	274.0	273.6	273.3	273.5	273.7	273.4
AUX	13.43	13.48	13.35	13.32	13.44	13.41	13.45	13.45
NET GEN	260.17	260.72	260.65	260.28	259.86	260.09	260.25	259.95

SUPPLEMENTAL ECAR TEST DATA
(See Reverse Side For Instructions)

Plant: J H Campbell
Date of Test: 3-11-03

Unit No: 2
Time of Test: Begin 0700 End 1500

Average Test Capability (Uncorrected): 359.7

AMBIENT CONDITIONS:	Avg Winter	Avg Summer	Avg During Test
Air Temp °F	20	70	30
Circ Water Inlet Temp °F	45	65	42

STEAM FLOW: _____ lbs/Hr (Optional)

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value		Test Value		Correction	
Throttle Temperature	1000	oF	975	oF	-0.4	MW
Throttle Pressure	3515	psia	3514	psia	0	MW
Reheat Temperature	1000	oF	973	oF	+4.2	MW
Back Pressure	1.00	in Hg	1.03	in Hg	+0.15	MW
Reheat Spray	40	Klb/hr	87.77	Klb/hr	-4.8	MW
Superheat Spray	0	Klb/hr	0	Klb/hr	0	MW
Cold End Temperature	170	Klb/hr	195	oF	+0.75	MW
Plant Heating	0	Klb/hr	0	Klb/hr	0	MW
Outdoor Air Temperature	20	oF	30	oF	-0.52	MW
Total Correction					-0.62	MW

Normalized Winter Capability = 359.08 net MW (Avg for test + corrections)

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY (NDC):

Parameter	Normal Value		Test Value		Correction	
Throttle Temperature		oF		oF		MW
Throttle Pressure		psia		psia		MW
Reheat Temperature		oF		oF		MW
Back Pressure		in Hg		in Hg		MW
Reheat Spray		Klb/hr		Klb/hr		MW
Superheat Spray		Klb/hr		Klb/hr		MW
Cold End Temperature		oF		oF		MW
Plant Heating		Klb/hr		Klb/hr		MW
Outdoor Air Temperature		oF		oF		MW
Total Correction						MW

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NET DEMONSTRATED CAPABILITY TEST

Company: Consumers Energy Plant : J H Campbell Unit No. 2

Date of Test: 3-11-03 Time of Test Begin 0700 End 1500

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	376.9	MW	16.92	MW	359.98	MW
2nd Hour	375.7	MW	16.81	MW	358.89	MW
3rd Hour	376.3	MW	16.94	MW	359.36	MW
4th Hour	377.1	MW	17.01	MW	360.09	MW
5th Hour	376.8	MW	17.00	MW	359.80	MW
6th Hour	376.4	MW	16.84	MW	359.56	MW
7th Hour	376.6	MW	16.90	MW	359.70	MW
8th Hour	376.4	MW	16.72	MW	359.68	MW

Seven Hour Summary

Net Generation Seven Hour Average for Test 359.7 MW
Prior Net Demonstrated Capability 360.0 MW
Throttle Pressure 3499 + 15 = 3514 psia
Steam Temp. - Main 975 °F, 1st R.H. 973 °F, 2nd R.H. -- °F
Back Pressure 1.03 "Hg
Circulating Water Inlet Temperature 42 °F
Ambient Air Temperature 30 °F

Net Demo Cap	SEASONAL DERATING											
	JAN	FEB	MAR	APR	MAY	JUN	JUL 5	AUG 5	SEP 5	OCT	NOV	DEC

Remarks: (Including load limiting conditions and deviations from normal operation) - **975/975 temperatures will be in effect for approximately the next six years.**

#2 Gen Meter	376.9	375.7	376.3	377.1	376.8	376.4	376.6	376.4
2A Aux	8.13	8.10	8.17	8.20	8.12	8.03	80.6	8.04
2B Aux	5.74	5.71	5.76	5.82	5.74	5.67	5.70	5.64
#7 Bank	0.38	0.33	0.34	0.32	0.47	0.47	0.47	0.37
#2 DWD	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
Tie Air	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05
WWP	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Tie Stm	0	0	0	0	0	0	0	0
Gross	376.9	375.7	376.3	377.1	376.8	376.4	376.6	376.4
Aux	16.92	16.81	16.94	17.01	17.00	16.84	16.9	16.72
Net Gen	359.98	358.89	359.36	360.09	359.8	359.56	359.7	359.68

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Consumers Energy Memorandum

SUPPLEMENTAL ECAR TEST DATA

PLANT: JHCAMPBELL		UNIT NO: 3	
DATE OF TEST: 05/15/03	TIME OF TEST:	BEGIN: 0900	END: 1700
AVERAGE TEST CAPABILITY (UNCORRECTED): 825.3			
AMBIENT CONDITIONS:			
	AVG WINTER	**AVG SUMMER**	**AVG DURING TEST**
AIR TEMP °F	20	70	**51**
RELATIVE HUMIDITY%			
CIRC WATER INLET TEMP°F	45	65	**49**
STEAM FLOW: 5,997,550 lbs/Hr (Optional) Feedwater Flow 5,835,460			

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

PARAMETER	NORMAL VALUE	TEST VALUE	CORRECTION
Throttle Temperature	1000 °F	997 °F	+0.9 MW
Throttle Pressure	2415 psia	2412 psia	0 MW
Reheat Temperature	1000 °F	982 °F	+5.4 MW
Back Pressure	1.5 in Hg	1.91 in Hg	+2.2 MW
Reheat Spray	0 Klb/Hr	31 Klb/Hr	-3.1 MW
Superheat Spray	0 Klb/Hr	209 Klb/Hr	-1.3 MW
Cold End Temperature	155 °F	183 °F	0 MW
Plant Heating	30000 lb/Hr	15741 lb/Hr	-1.4 MW
Comb air Heating	20 °F	51°F	-3.1 MW
TOTAL CORRECTION			-0.4 MW
Normalized Winter Capability - 824.9		(Avg for test + corrections)	

CORRECTIONS FOR NORMALIZING SUMMER CAPABILITY:

PARAMETER	NORMAL VALUE	TEST VALUE	CORRECTION
Throttle Temperature	°F	°F	MW
Throttle Pressure	psia	psia	MW
Reheat Temperature	°F	°F	MW
Back Pressure	in Hg	in Hg	MW
Reheat Spray	lb/Hr	lb/Hr	MW
Superheat Spray	lb/Hr	lb/Hr	MW
Plant Heating	lb/Hr	lb/Hr (SO3 System)	MW
*Combustion Air Heating	Glycol ON		MW
TOTAL CORRECTION			MW
Normalized Summer Capability =		(Avg for test and corrections)	

* Summer ambient air temp is not a penalty unless glycol usage is required.

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K:\RESULTS\WORD\Net Dem Cap 05 15 03

NET DEMONSTRATED CAPABILITY TEST

COMPANY: Consumers Energy		
PLANT: JHC	UNIT NO. 3	DATE OF TEST: 5/15/03
TIME OF TEST:	BEGIN: 0900	END 1700

	Integrated Gross Gen MW	Integrated Aux Power MW	Net Generation on MW
1st HOUR	858.4	35.3	823.1
2nd HOUR	860.5	34.7	825.8
3rd HOUR	862.2	35.8	826.4
4TH HOUR	861.9	35.6	826.3
5th HOUR	861.7	35.3	826.4
6th HOUR	860.6	36.0	824.6
7th HOUR	860.3	35.3	825.0
8th HOUR	860.7	34.9	825.8

SEVEN HOUR SUMMARY

Net Generation Seven Hour Average for Test: 825.3 MWN

Prior Net Demonstrated Capability : 820 MWN

Throttle Pressure: 2397 + 15 = 2412 psia

Steam Temp. – Main: 997 °F | 1st R.H. 982 °F | 2nd R.H. N/A

Back Pressure: 1.91 in Hg

Circulating Water Inlet Temperature: 49 °F

Ambient Air Temperature: 51 °F

NET
DEMO CAP SEASONAL DERATING

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

REMARKS: (Including load limiting conditions and deviations from normal operation)

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K:\RESULTS\WORD\Net Dem Cap 05 15 03

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: B.C. Cobb
Date of Test: 5-14-03

Reported By: A D. Coombs
Unit No: 4
Time of Test; Begin 0820, End 1620

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	171 MW	9.20 MW	161.8 MW
2nd Hour	171 MW	9.35 MW	161.65 MW
3rd Hour	170 MW	9.25 MW	160.75 MW
4th Hour	171 MW	9.40 MW	161.6 MW
5th Hour	171 MW	9.20 MW	161.8 MW
6th Hour	171 MW	9.25 MW	161.75 MW
7th Hour	171 MW	8.30 MW	161.7 MW
8th Hour	171 MW	9.40 MW	161.6 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 161. 6 MW
Prior Net Demonstrated Capability 160.0 MW
Throttle Pressure 2018 psia
Steam Temp. - Main 1049 °F, 1st R.H. 1000 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 58 °F
Ambient Air Temperature 62 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
160	0	0	0	0	0	2	4	4	4	2	0	0

Remarks: (including load limiting conditions and deviation from normal operations
Turbine limited. Governor valves wide open and ID fan dampers at 100%.

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 4				
Date of Test	May 14, 2003	**Time of Test**	**Begin**	820	**End**	1620	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	171.00	9.20	161.80
2nd Hour	171.00	9.35	161.65
3rd Hour	170.00	9.25	160.75
4th Hour	171.00	9.40	161.60
5th Hour	171.00	9.20	161.80
6th Hour	171.00	9.25	161.75
7th Hour	171.00	9.30	161.70
8th Hour	171.00	9.40	161.60

Seven Hour Summary

Net Generation Seven Hour Average for Test				161.6 MW
Prior Net Demonstrated Capability				160 MW
Throttle Pressure				2018 psia
Steam Temp	**Main**	1049 deg F	**1st RH**	1000 deg F
Back Pressure				1.6 in Hg
Circulating Water Inlet Temperature				58 deg F
Ambient Air Temperature				62 deg F

Net Demo Cap	Seasonal Derating
160	2 MW for June and October. 4 MW for July, August and September.

Remarks: (Including load limiting conditions and deviations from normal operation)

Turbine limited. Governor valves wide open, and ID Fan Dampers at 100%.

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	Unit No	Cobb 4	May 14, 2003

Average Test Capability (Uncorrected): 161.6 MW

Ambient Conditions:	Avg Winter	Avg Summer	Avg During Test
Air Temp deg F	26.3	68.3	62.0
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	58.0
Steam Flow:	-	-	1147000

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040 deg F	1049 deg F	-0.5
Throttle Pressure	2000.0 psia	2018.0 psia	-
Reheat Temperature	990 deg F	1000 deg F	-0.83
Back Pressure	1.20 in Hg	1.58 in Hg	1.84
Reheat Spray	5000	17525	-1.01
Superheat Spray	5000	3610	0.02
Combustion Air Heat	-	-	-
Plant Heating	-	-	-
Other	-	-	-
Total Correction			-0.5 MW

Normalized Winter Capability = 161.1 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040 deg F	1049 deg F	-0.5
Throttle Pressure	2000.0 psia	2018.0 psia	
Reheat Temperature	990 deg F	1000 deg F	-0.83
Back Pressure	2.20 in Hg	1.58 in Hg	-3
Reheat Spray	5000	17525	-1.01
Superheat Spray	5000	3610	0.02
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			-5.3

Normalized Summer Capability = 156.3

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: B.C. Cobb
Date of Test: 5-14-03

Reported By: A D. Coombs
Unit No: 5
Time of Test; Begin 0820, End 1620

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	172	MW	11.0	MW	161.0	MW
2nd Hour	173	MW	11.05	MW	161.95	MW
3rd Hour	173	MW	10.95	MW	162.05	MW
4th Hour	174	MW	11.2	MW	162.8	MW
5th Hour	174	MW	11.0	MW	163.0	MW
6th Hour	173	MW	11.05	MW	161.95	MW
7th Hour	174	MW	11.1	MW	162.9	MW
8th Hour	172	MW	11.0	MW	161.0	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 162.3 MW
Prior Net Demonstrated Capability 160.0 MW
Throttle Pressure 2033 psia
Steam Temp. - Main 1052 °F, 1st R.H. 994 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 56 °F
Ambient Air Temperature 62 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
160	0	0	0	0	0	2	4	4	4	2	0	0

Remarks: (including load limiting conditions and deviation from normal operations
Steam flow limited.

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 5				
Date of Test	May 14, 2003	**Time of Test**	**Begin**	820	**End**	1620	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	172.00	11.00	161.00
2nd Hour	173.00	11.05	161.95
3rd Hour	173.00	10.95	162.05
4th Hour	174.00	11.20	162.80
5th Hour	174.00	11.00	163.00
6th Hour	173.00	11.05	161.95
7th Hour	174.00	11.10	162.90
8th Hour	172.00	11.00	161.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				162.240 MW
Prior Net Demonstrated Capability				160.000 MW
Throttle Pressure				2033 psia
Steam Temp	**Main**	1052 deg F	**1st RH**	994 deg F
Back Pressure				1.7 in Hg
Circulating Water Inlet Temperature				56 deg F
Ambient Air Temperature				62 deg F

Net Demo Cap	Seasonal Derating
160	2 MW for June and October. 4 MW for July, August and September.

Remarks: (Including load limiting conditions and deviations from normal operation)
Steam Flow Limited.

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	Unit No	Cobb 5	May 14, 2003

Average Test Capability (Uncorrected): 162.240 MW

Ambient Conditions:	Avg Winter	Avg Summer	Avg During Test
Air Temp deg F	26.3	68.3	62
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	56
Steam Flow:	-	-	1155000

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040 deg F	1052 deg F	-0.57
Throttle Pressure	2000 psia	2033 psia	-
Reheat Temperature	990 deg F	994 deg F	-0.17
Back Pressure	1.2 in Hg	1.7 in Hg	1.81
Reheat Spray	5000	8753	-0.4
Superheat Spray	5000	15488	-0.21
Combustion Air Heat	-	-	
Plant Heating	-	-	-
Other	-	-	-
Total Correction			0.5 MW

Normalized Winter Capability = 162.7 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040	1052 deg F	-0.57
Throttle Pressure	2000	2033 psia	
Reheat Temperature	990	994 deg F	-0.17
Back Pressure	2.2	1.7 in Hg	-1.81
Reheat Spray	5000	8753	-0.4
Superheat Spray	5000	15488	-0.21
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			-3.2

Normalized Summer Capability = 159.1

-

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: D. E. Karn
Date of Test: 9-17-03

Reported By: D. Gesinski
Unit No: 1
Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	271 MW	17.3 MW	253.7 MW
2nd Hour	272 MW	17.6 MW	254.4 MW
3rd Hour	272 MW	17.9 MW	254.1 MW
4th Hour	271 MW	17.6 MW	253.4 MW
5th Hour	273 MW	17.6 MW	255.4 MW
6th Hour	272 MW	17.6 MW	254.4 MW
7th Hour	272 MW	17.3 MW	254.7 MW
8th Hour	273 MW	17.4 MW	255.6 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 254.5 MW
Prior Net Demonstrated Capability 255.0 MW
Throttle Pressure 2395 psia
Steam Temp. - Main 989 °F, 1st R.H. 1030 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 70 °F
Ambient Air Temperature 74 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
255	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

1-4 high pressure feedwater heater was Out Of Service.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: D. E. Karn
Date of Test: 6-12-03

Reported By: D. Gesinski
Unit No: 2
Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	282 MW	19.0 MW	263.0 MW
2nd Hour	282 MW	19.0 MW	263.0 MW
3rd Hour	282 MW	19.0 MW	263.0 MW
4th Hour	284 MW	19.1 MW	264.9 MW
5th Hour	284 MW	19.1 MW	264.9 MW
6th Hour	284 MW	19.1 MW	264.9 MW
7th Hour	283 MW	19.1 MW	263.9 MW
8th Hour	283 MW	19.1 MW	263.9 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 263.9 MW
Prior Net Demonstrated Capability 260.0 MW
Throttle Pressure 2395 psia
Steam Temp. - Main 1052 °F, 1st R.H. 1001 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 67 °F
Ambient Air Temperature 62 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
260	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations
2-2 high pressure feedwater heater was Out of Service

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company CONSUMERS ENERGY Reported By DWGESINSKI
Plant DE KARN 1+2 Unit No TWO
Date of Test 12 JUNE 2003 Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	282 MW	19 MW	263 MW
2nd Hour	282 MW	19 MW	263 MW
3rd Hour	282 MW	19 MW	263 MW
4th Hour	284 MW	19.1 MW	264.9 MW
5th Hour	284 MW	19.1 MW	264.9 MW
6th Hour	284 MW	19.1 MW	264.9 MW
7th Hour	283 MW	19.1 MW	263.9 MW
8th Hour	283 MW	19.1 MW	263.9 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 264.1 MW
Prior Net Demonstrated Capability 260 MW
Throttle Pressure 2395 psia
Steam Temp. - Main 1052 °F, 1st R.H. 1001 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 67 °F
Ambient Air Temperature 62 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Remarks: (including load limiting conditions and deviation from normal operations)

#2-2 HIGH PRESSURE FEEDWATER HEATER OUT OF SERVICE
70% WESTERN COAL

2008_00009285

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: D.E.Karn
Date of Test: 2-6-03

Reported By: G A Ross
Unit No: 3
Time of Test; Begin 1000, End 1400

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	660	MW	22	MW	638	MW
2nd Hour	660	MW	24	MW	636	MW
3rd Hour	660	MW	22	MW	638	MW
4th Hour	670	MW	22	MW	648	MW
5th Hour		MW		MW		MW
6th Hour		MW		MW		MW
7th Hour		MW		MW		MW
8th Hour		MW		MW		MW

Seven-Hour Summary

Net Generation - Average of Best Four Hours of Test 640.0 MW
Prior Net Demonstrated Capability 638.0 MW
Throttle Pressure 1816 psia
Steam Temp. - Main 948 °F, N R.H. 907 °F, S R.H. 899 °F
Circulating Water Inlet Temperature 83 °F
Ambient Air Temperature 25 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
638	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations

Supplemental ECAR Test Data

Plant:	Karn 3&4 Plant	Unit #	3	Date of Test: 2/6/2003
Time of Test:	Begin	1000		
	End	1400		

Average Test Capability (Uncorrected): 640.0

Ambient Conditions	Avg Winter	Avg Summer	Avg During Test
Air Temperature (°F)	26.5	85	25
Relative Humidity (%)			
Circ Water Inlet Temp (°F)	77	92	83

Steam Flow (lbs/hr) ***optional*** **:**

Corrections for Normalizing to Winter Capability (NDC)

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950	941	0.9
Throttle Pressure (psia)	1,800	1,816	0.0
Reheat Temperature (°F)	950	906	4.4
Back Pressure (in Hg)	3.0	2.9	-0.5
Reheat Spray (lb/hr)	10,000	10,000	0.0
Superheat Spray (lb/hr)	10,000	10,000	0.0
Combustion Air Heat (lb/hr)	360,000	229,000	-3.9
Plant Heating (lb/hr)	0	0	
Other	0	0	

Total Correction (MW)= 0.9

Normalized Winter Capability (MW)= 640.9
(Avg of Test + Corrections)

Corrections for Normalizing to Summer Capability

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950		
Throttle Pressure (psia)	1,800		
Reheat Temperature (°F)	950		
Back Pressure (in Hg)	5.0		
Reheat Spray (lb/hr)	10,000		
Superheat Spray (lb/hr)	10,000		
Combustion Air Heat (lb/hr)	245,000		
Plant Heating (lb/hr)	0		
Other	0		

Total Correction (MW)=

Normalized Summer Capability (MW)=
(Avg of Test + Corrections)

Net Demonstrated Capability Test

Company: Consumers Energy **Unit #** 3

Plant: Karn 3&4 **Time of Test** **Begin** 1000
End 1400

Date of Test: 2/6/2003

Time	Integrated Gross Generation	Integrated Aux Power	Net Generation
1100	660	22	638
1200	660	24	636
1300	660	22	638
1400	670	22	648

4 Hour Summary

Net Generation 4 Hour Average for Test (MW)=	640.0
Prior Demonstrated Capability (MW)=	638
Throttle Pressure (psia)=	1816
Steam Temperature (°F)	
Main Steam=	948
North Reheat Steam=	907
South Reheat Steam=	899
Back Pressure	
A Zone=	3.5
B Zone=	2.3
Circulating Water Inlet Temperature (°F)=	83
Ambient Air Temperature (°F)=	25

Seasonal Derating

Jan	Feb	Mar	Apr	May	Jun
0	0	0	0	0	5 ***

July	Aug	Sept	Oct	Nov	Dec
10 ***	10 ***	0	0	0	0

Remarks: (Include Load Limiting Conditions and Deviations from Normal Operation)
*** On hot (85+ F), humid days derates may occur due to high back pressure (cooling tower performance) during the heat of the day. Derate will only apply during hot humid hours, as needed.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: D.E.Karn
Date of Test: 5-1-03

Reported By: G A Ross
Unit No: 4
Time of Test; Begin 1800, End 2200

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	670	MW	23	MW	647	MW
2nd Hour	660	MW	23	MW	637	MW
3rd Hour	660	MW	22	MW	638	MW
4th Hour	660	MW	23	MW	637	MW
5th Hour		MW		MW		MW
6th Hour		MW		MW		MW
7th Hour		MW		MW		MW
8th Hour		MW		MW		MW

Seven-Hour Summary

Net Generation - Average of Best Four Hours of Test 639.8 MW
Prior Net Demonstrated Capability 638.0 MW
Throttle Pressure 1796 psia
Steam Temp. - Main 930 °F, N R.H. 927 °F, S R.H. 932 °F
Circulating Water Inlet Temperature 80 °F
Ambient Air Temperature 49 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
638	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations

Supplemental ECAR Test Data

Plant:	Karn 3&4 Plant	Unit #	4	Date of Test: 5/1/2003
Time of Test:	Begin	1800		
	End	2200		

Average Test Capability (Uncorrected): 639.8

Ambient Conditions	Avg Winter	Avg Summer	Avg During Test
Air Temperature (°F)	26.5	85	49
Relative Humidity (%)			
Circ Water Inlet Temp (°F)	77	92	80

Steam Flow (lbs/hr) *optional*:

Corrections for Normalizing to Winter Capability (NDC)

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950		
Throttle Pressure (psia)	1,800		
Reheat Temperature (°F)	950		
Back Pressure (in Hg)	3.0		
Reheat Spray (lb/hr)	10,000		
Superheat Spray (lb/hr)	10,000		
Combustion Air Heat (lb/hr)	360,000		
Plant Heating (lb/hr)	0		
Other	0		

Total Correction (MW)= 0.0

Normalized Winter Capability (MW)=
(Avg of Test + Corrections)

Corrections for Normalizing to Summer Capability

Parameter	Normal Value	Test Value	Correction (MW)
Throttle Temperature (°F)	950	937	1.3
Throttle Pressure (psia)	1,800	1796	0.0
Reheat Temperature (°F)	950	930	3.0
Back Pressure (in Hg)	5.0	3.5	-7.0
Reheat Spray (lb/hr)	10,000	15,000	0.5
Superheat Spray (lb/hr)	10,000	19,000	0.0
Combustion Air Heat (lb/hr)	245,000	262,000	0.5
Plant Heating (lb/hr)	0	0	
Other	0	0	

Total Correction (MW)= -1.7

Normalized Summer Capability (MW)= 638.1
(Avg of Test + Corrections)

Net Demonstrated Capability Test

Company: Consumers Energy **Unit #** 4

Plant: Karn 3&4 **Time of Test** **Begin** 1800
End 2200

Date of Test: 5/1/2003

Time	Integrated Gross Generation	Integrated Aux Power	Net Generation
1900	670	23	647
2000	660	23	637
2100	660	22	638
2200	660	23	637

4 Hour Summary

Net Generation 4 Hour Average for Test (MW)=	639.8
Prior Demonstrated Capability (MW)=	638
Throttle Pressure (psia)=	1796
Steam Temperature (°F)	
Main Steam=	930
North Reheat Steam=	927
South Reheat Steam=	932
Back Pressure	
A Zone=	4.1
B Zone=	2.8
Circulating Water Inlet Temperature (°F)=	80
Ambient Air Temperature (°F)=	49

Seasonal Derating

Jan	Feb	Mar	Apr	May	Jun
0	0	0	0	0	5 ***

July	Aug	Sept	Oct	Nov	Dec
10 ***	10 ***	0	0	0	0

Remarks: (Include Load Limiting Conditions and Deviations from Normal Operation)
*** On hot (85+ F), humid days derates may occur due to high back pressure (cooling tower performance) during the heat of the day. Derate will only apply during hot humid hours, as needed.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J C Weadock
Date of Test: 3-4-03

Reported By: KE Barber
Unit No: 7
Time of Test; Begin 1000, End 1700

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	163	MW	8.7	MW	154.3	MW
2nd Hour	163	MW	8.6	MW	154.4	MW
3rd Hour	164	MW	8.5	MW	155.5	MW
4th Hour	163	MW	8.4	MW	154 .6	MW
5th Hour	162	MW	9.0	MW	153	MW
6th Hour	165	MW	9.0	MW	156	MW
7th Hour	163	MW	8.0	MW	155	MW
8th Hour	165	MW	9.0	MW	156	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 154.7 MW
Prior Net Demonstrated Capability 155.0 MW
Throttle Pressure 2012 psia
Steam Temp. - Main 1042 °F, 1st R.H. 990 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 33 °F
Ambient Air Temperature 34 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
155	0	0	0	0	0	2	4	4	4	2	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

The first two hours of the test, the unit was limited due to fans. For the remainder of the test fan capacity was enough to attain full load.

NET DEMOSTRATED CAPABILITY TEST

Company Consumers Energy

Plant J.C. Weadock **Unit No** Unit No. 7

Date of Test March 04, 2003 **Time of Test** **Begin** 10:00 **End** 17:00

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	163.00	8.70	153.00
2nd Hour	163.00	8.60	153.00
3rd Hour	164.00	8.50	155.00
4th Hour	163.00	8.40	155.00
5th Hour	162.00	9.00	153.00
6th Hour	165.00	9.00	156.00
7th Hour	163.00	8.00	155.00
8th Hour	165.00	9.00	156.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				154.7 MW
Prior Net Demonstrated Capability				155 MW
Throttle Pressure				2012 psia
Steam Temp	**Main**	1042 deg F	**1st RH**	990 deg F
Back Pressure				1.4 in Hg
Circulating Water Inlet Temperature				33 deg F
Ambient Air Temperature				34 deg F

Net Demo Cap	Seasonal Derating

Remarks: (including load limiting conditions and deviations from normalconditions)

During the first two hours of the test, the unit was limited due to fans. During rest of test capacity on the fans was enough to attain full load

The plant is requesting the NDC for the unit be assigned according to the following:

Jan - May: 155 Mw, June: 153 Mw, Jul - Sept: 151 Mw, Oct: 153 Mw, Nov - Dec: 155 Mw

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J C Weadock
Date of Test: 3-4-03

Reported By: KE Barber
Unit No: 8
Time of Test; Begin 1000, End 1700

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	162	MW	9	MW	153	MW
2nd Hour	163	MW	9	MW	154	MW
3rd Hour	162	MW	9	MW	153	MW
4th Hour	162	MW	9	MW	153	MW
5th Hour	161	MW	10	MW	151	MW
6th Hour	162	MW	9	MW	153	MW
7th Hour	161	MW	9	MW	152	MW
8th Hour	163	MW	9	MW	154	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 153.0 MW
Prior Net Demonstrated Capability 155.0 MW
Throttle Pressure 2046 psia
Steam Temp. - Main 1041 °F, 1st R.H. 991 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 34 °F
Ambient Air Temperature 35 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
155	0	0	0	0	0	2	4	4	4	2	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

ID fans at 100%. The #5 turbine valve is broken and will not allow #6 to open completely. The valve problem is costing unit 2 Mw's.

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	J.C. Weadock	**Unit No**	Unit No. 8				
Date of Test	March 04, 2003	**Time of Test**	**Begin**	10:00	**End**	17:00	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	162.00	9.00	152.00
2nd Hour	163.00	9.00	152.00
3rd Hour	162.00	9.00	153.00
4th Hour	162.00	9.00	153.00
5th Hour	161.00	10.00	151.00
6th Hour	162.00	9.00	153.00
7th Hour	161.00	9.00	152.00
8th Hour	163.00	9.00	154.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				152.7 Mw
Prior Net Demonstrated Capability				155 Mw
Throttle Pressure				2046 psia
Steam Temp	**Main**	1041 deg F	**1st RH**	991 deg F
Back Pressure				1.7 in Hg
Circulating Water Inlet Temperature				34 deg F
Ambient Air Temperature				35 deg F

Net Demo Cap	Seasonal Derating

Remarks: (including load limiting conditions and deviations from normalconditions)

Id fans were at 100%. If the backpressure was reduced from 1.7 to 1.3, an additional .4 mw coul be produced. Possible caus for increase is back pressure.
The #5 turbine valve is broken and will not allow #6 to open completely. This valve problem is costing the unit about 2 mw.
The plant is requesting the NDC for the unit be assigned according to the following:
Jan - May: 155 Mw, June: 153 Mw, Jul - Sept: 151 Mw, Oct: 153 Mw, Nov - Dec: 155 Mw

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J.R.Whiting
Date of Test: 7-9-03

Reported By: JA Reithel
Unit No: 1
Time of Test; Begin 0800, End 1700

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	106	MW	6	MW	100	MW
2nd Hour	106	MW	6	MW	100	MW
3rd Hour	108	MW	6	MW	102	MW
4th Hour	107	MW	6	MW	101	MW
5th Hour	109	MW	6	MW	103	MW
6th Hour	106	MW	6	MW	100	MW
7th Hour	106	MW	6	MW	100	MW
8th Hour	107	MW	6	MW	101	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 101 MW
Prior Net Demonstrated Capability 102 MW
Throttle Pressure 1450 psia
Steam Temp. - Main 1000 °F, 1st R.H. 1000 °F, 2nd R.H. °F
Circulating Water Inlet Temperature 77.7 °F
Ambient Air Temperature 72 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
102	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain rating at 102.

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 1
Time of Test: Begin – 1245 End – 1445
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	106 MW 45 MVAR	6.2 MW 3.8 MVAR	99.8 MW 41.2 MVAR	*99.6 MW *32.9 MVAR
2nd Hour	105 MW 49 MVAR	6.2 MW 3.8 MVAR	98.8 MW 45.2 MVAR	*98.6 MW *36.8 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test 43.2 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test 34.9 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1 145.0 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 145.4 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 145.7 KV	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:			
	Ph. 1 14.8 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 14.8 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 14.8KV	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 14.4 KV

GSU Nameplate Data: Tap Setting: 140 kV Impedance: 5 % Capability: 123.2 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|_|4|5| GSU High-Side |_|_|3|7|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Test was limited by maximum system voltage.

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 1
Time of Test: Begin – 1510 End – 1710
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	104 MW -20 MVAR	6.4 MW 4.44 MVAR	97.6 MW -24.44 MVAR	*97.4 MW *-32.4 MVAR
2nd Hour	106 MW -25 MVAR	6.2 MW 4.37 MVAR	99.8 MW -29.37 MVAR	*99.6 MW *-38.0 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test -26.9 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test -35.2 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1 144.4 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 144.7 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 145 KV	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:			
	Ph. 1 14.2 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 14.2 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 14.2 KV	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 15.5 KV

GSU Nameplate Data: Tap Setting: 140 kV Impedance: 5 % Capability: 123.2 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|-|2|9| GSU High-Side |_|-|3|8|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Test limited by minimum generator terminal voltage.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J.R.Whiting
Date of Test: 12-5-03

Reported By: JA Reithel
Unit No: 2
Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	104	MW	6	MW	98	MW
2nd Hour	108	MW	6	MW	102	MW
3rd Hour	108	MW	6	MW	102	MW
4th Hour	109	MW	6	MW	103	MW
5th Hour	107	MW	6	MW	101	MW
6th Hour	108	MW	6	MW	102	MW
7th Hour	108	MW	6	MW	102	MW
8th Hour	108	MW	6	MW	102	MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 102 MW
Prior Net Demonstrated Capability 102 MW
Throttle Pressure 1450 psia
Steam Temp. - Main 1000 °F, 1st R.H. 975 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 45.7 °F
Ambient Air Temperature 35 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
102	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain rating at 102.

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 2
Time of Test: Begin – 1550 End – 1850
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	102 MW -25 MVAR	6 MW 4.21 MVAR	96 MW -29.21 MVAR	*95.61 MW *-36.83 MVAR
2nd Hour	103 MW -25 MVAR	6 MW 4.21 MVAR	97 MW -29.21 MVAR	*96.60 MW *-36.98 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test -29.21 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test -36.91 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages:	Ph. 1 145.2 KV	Ph. 1 ___ V	Ph. 1 ___ V
(from multiple sources,	Ph. 2 145.56 KV	Ph. 2 ___ V	Ph. 2 ___ V
if available)	Ph. 3 145.68 KV	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:	Ph. 1 14.3 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 14.3 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 14.3 KV	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 15.5 KV

GSU Nameplate Data: Tap Setting: 140 kV Impedance: 8 % Capability: 110 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|_|2|9| GSU High-Side |_|_|3|7|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
1. Limited by Generator 15 psig Hydrogen MVA rating.
2. Test was conducted at 15 psi hydrogen instead of generator maximum rating of 30 psi because of operating efficiency and protective settings at the normal operating pressure of 15 psi

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 2
Time of Test: Begin – 1345 End – 1645
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	102 MW 50 MVAR	6 MW 4.21 MVAR	96 MW 45.8 MVAR	*95.62 MW *38.10 MVAR
2nd Hour	101 MW 52 MVAR	6 MW 4.12 MVAR	95 MW 47.9 MVAR	*94.61 MW *40.21 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test 46.85 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test 39.16 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1 145.20 KV	Ph. 1 ____ V	Ph. 1 ____ V
	Ph. 2 145.56 KV	Ph. 2 ____ V	Ph. 2 ____ V
	Ph. 3 145.68 KV	Ph. 3 ____ V	Ph. 3 ____ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:			
	Ph. 1 14.9 KV	Ph. 1 ____ V	Ph. 1 ____ V
	Ph. 2 14.9 KV	Ph. 2 ____ V	Ph. 2 ____ V
	Ph. 3 14.9KV	Ph. 3 ____ V	Ph. 3 ____ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 14.4 KV

GSU Nameplate Data:Tap Setting: 140 kV Impedance: 8 % Capability: 110 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|_|4|8| GSU High-Side |_|_|4|0|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
1. Exceeded 15 psig Hydrogen MVA rating.
2. Limited by system voltage.
3. Test was conducted at 15 psi hydrogen instead of generator maximum rating of 30 psi because of operating efficiency and protective settings at the normal operating pressure of 15 psi.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company: Consumers Energy
Plant: J.R.Whiting
Date of Test: 7-10-03

Reported By: JA Reithel
Unit No: 3
Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.		Integrated Aux. Power		Net Generation	
1st Hour	136	MW	8	MW	128	MW
2nd Hour	135	MW	8	MW	127	MW
3rd Hour	134	MW	8	MW	126	MW
4th Hour	133	MW	9	MW	124	MW
5th Hour	136	MW	8	MW	128	MW
6th Hour	135	MW	8	MW	127	MW
7th Hour	135	MW	8	MW	127	MW
8th Hour		MW		MW		MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 126.7 MW
Prior Net Demonstrated Capability 124.0 MW
Throttle Pressure 1450 psia
Steam Temp. - Main 1000 °F, 1st R.H. 1000 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 76 °F
Ambient Air Temperature 68 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
124	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain rating at 124.

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 3
Time of Test: Begin – 1350 End – 1650
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	127 MW -37 MVAR	7.7 MW 5.34 MVAR	119.3 MW -42.34 MVAR	*118.8 MW *-52.4 MVAR
2nd Hour	126 MW -35 MVAR	7.7 MW 5.34 MVAR	118.3 MW -40.34 MVAR	*117.8 MW *-50.1 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated from low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test -41.34 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test -51.25 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1 142.7 KV	Ph. 1 ____ V	Ph. 1 ____ V
	Ph. 2 143.4 KV	Ph. 2 ____ V	Ph. 2 ____ V
	Ph. 3 143.8 KV	Ph. 3 ____ V	Ph. 3 ____ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 142 KV

Gen. Bus Voltages:			
	Ph. 1 15.2 KV	Ph. 1 ____ V	Ph. 1 ____ V
	Ph. 2 15.2 KV	Ph. 2 ____ V	Ph. 2 ____ V
	Ph. 3 15.2 KV	Ph. 3 ____ V	Ph. 3 ____ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 15.5 KV

GSU Nameplate Data: Tap Setting: 140 kV Impedance: 8.32 % Capability: 140 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|-|4|2| GSU High-Side |_|-|5|2|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
1. Exceeded Stator Amps for 15 psig Hydrogen.
2. Test was Limited by minimum system voltage of 142 KV.
3. Test was conducted at 15 psi hydrogen instead of generator maximum rating of 30 psi because of operating efficiency and protective settings at the normal operating pressure of 15 psi

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 3
Time of Test: Begin – 1120 End – 1320
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	126 MW 60 MVAR	7.7 MW 6.12 MVAR	118.3 MW 53.88 MVAR	*117.8 MW *44.5 MVAR
2nd Hour	126 MW 60 MVAR	7.7 MW 5.87 MVAR	118.3 MW 54.13 MVAR	*117.8 MW *44.7 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test 54 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test 44.6 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1 145.8 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 146 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 146.3 KV	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:			
	Ph. 1 16.2 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 16.2 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 16.2 KV	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 15.5 KV

GSU Nameplate Data: Tap Setting: 140 kV Impedance: 8.32 % Capability: 140 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|_|5|4| GSU High-Side |_|_|4|5|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
1. Exceeded Stator Amps for 15 psig Hydrogen.
2. Test was limited by maximum system voltage.
3. Test was conducted at 15 psi hydrogen instead of generator maximum rating of 30 psi because of operating efficiency and protective settings at the normal operating pressure of 15 psi

NET DEMONSTRATED CAPABILITY TEST

Company Consumers Energy Plant J H Campbell Unit No. 1

Date of Test 1-16-02 Time of Test Begin 0700 End 1500

	Integrated Gross Gen (MW)	Integrated Aux Power (MW)	Net Generation (MW)
1st Hour	272.3	13.8	258.5
2nd Hour	271.9	13.9	258.0
3rd Hour	272.1	13.8	258.3
4th Hour	273.1	13.7	259.4
5th Hour	272.1	13.7	258.4
6th Hour	272.8	13.8	259.0
7th Hour	272.3	13.9	258.4
8th Hour	271.7	13.8	257.9

Seven Hour Summary

Net Generation Seven Hour Average for Test 258.6 MWN

Prior Net Demonstrated Capability 260.0 MWN

Throttle Pressure 2400 + 15 = 2415 PSIA

Steam Temp. - Main 1051 °F, 1st R.H. 990 °F, 2nd R.H. _____ °F

Back Pressure 0.977 in Hg.

Circulating Water Inlet Temperature 43 °F

Ambient Air Temperature 33 °F

Net Demo Cap	SEASONAL DERATING											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
260	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (Including load limiting conditions and deviations from normal operation)

1A GMW Meter	133.9	133.6	134.0	134.3	133.7	134.0	133.8	133.4
1B GMW Meter	138.4	138.3	138.1	138.8	138.4	138.8	138.5	138.3
1B Bank	4.78	4.83	4.75	4.78	4.80	4.80	4.79	4.78
#7 Bank/10 x .4	0.21	0.24	0.26	0.16	0.16	0.24	0.35	0.33
#1 DWD	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Tie Air	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
WWP	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
#1 Bank	7.18	7.19	7.18	7.19	7.18	7.19	7.15	7.09
GROSS	272.3	271.9	272.1	273.1	272.1	272.8	272.3	271.7
AUX	13.8	13.9	13.8	13.7	13.7	13.8	13.9	13.8
NET GEN	258.5	258.0	258.3	259.4	258.4	259.0	258.4	257.9

SUPPLEMENTAL ECAR TEST DATA
(See Reverse Side For Instructions)

Plant: J H Campbell Unit No: 1
Date of Test: 1-16-02 Time of Test: Begin 0700 End 1500

Average Test Capability (Uncorrected): 258.6 NOX 0.19

[illegible]	[illegible]	[illegible]	[illegible]
Air Temp °F	20	70	33
Relative Humidity %	-	-	-
Circ Water Inlet Temp °F	45	65	43

STEAM FLOW: _____ lbs/Hr (Optional) Barometric 29.46

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Throttle Temperature	1050	oF	1051	oF	0	MW
Throttle Pressure	2415	psia	2415	psia	0	MW
Reheat Temperature	1000	oF	990	oF	+1.4	MW
Back Pressure	1.0	in Hg	0.98	in Hg	0	MW
Reheat Spray	0	Klb/hr	8.1	Klb/hr	-1.0	MW
Superheat Spray	0	Klb/hr	36.4	Klb/hr	-0.7	MW
Combustion Air Heat	0	oF	0	oF	0	MW
Plant Heating	8	Klb/hr	3.6	Klb/hr	0	MW
Total Correction					-0.3	MW

Normalized Winter Capability = 258.3 net MW (Avg for test + corrections)

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY (NDC):

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Throttle Temperature		oF		oF		MW
Throttle Pressure		psia		psia		MW
Reheat Temperature		oF		oF		MW
Back Pressure		in Hg		in Hg		MW
Reheat Spray		Klb/hr		Klb/hr		MW
Superheat Spray		Klb/hr		Klb/hr		MW
Cold End Temperature		oF		oF		MW
Plant Heating		Klb/hr		Klb/hr		MW
Outdoor Air Temperature		oF		oF		MW
Total Correction						MW

Normalized Summer Capability = _____ net MW (Avg for test + corrections)

2008_00009306

SUPPLEMENTAL ECAR TEST DATA
(See Reverse Side For Instructions)

Plant: J H Campbell Unit No: 2
Date of Test: 2-27-02 Time of Test: Begin 0800 End 1600

Average Test Capability (Uncorrected): 351.1

AMBIENT CONDITIONS	Avg Winter	Avg Summer	Avg Other
Air Temp °F	20	65	30
Circ Water Inlet Temp °F	45	65	36

STEAM FLOW: 2,566,377 lbs/Hr (Optional)

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value		Test Value		Correction	
Throttle Temperature	1000	oF	974	oF	+4.4	MW
Throttle Pressure	3515	psia	3515	psia	0	MW
Reheat Temperature	1000	oF	979	oF	+3.9	MW
Back Pressure	1.1	in Hg	1.04	in Hg	0	MW
Reheat Spray	60	Klb/hr	60.3	Klb/hr	0	MW
Superheat Spray	0	Klb/hr	0	Klb/hr	0	MW
Cold End Temperature	170	oF	177	oF	+1.4	MW
Plant Heating	0	Klb/hr	0	Klb/hr	0	MW
Outdoor Air Temperature	20	oF	30	oF	-0.5	MW
Total Correction					+8.2	MW

Normalized Winter Capability = 359.3 net MW (Avg for test + corrections)

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY (NDC):

Parameter	Normal Value		Test Value		Correction	
Throttle Temperature		oF		oF		MW
Throttle Pressure		psia		psia		MW
Reheat Temperature		oF		oF		MW
Back Pressure		in Hg		in Hg		MW
Reheat Spray		Klb/hr		Klb/hr		MW
Superheat Spray		Klb/hr		Klb/hr		MW
Cold End Temperature		oF		oF		MW
Plant Heating		Klb/hr		Klb/hr		MW
Outdoor Air Temperature		oF		oF		MW
Total Correction						MW

Normalized Summer Capability = _____ net MW (Avg for test + corrections)

2008_00009307

NET DEMONSTRATED CAPABILITY TEST

Company Consumers Energy Plant J H Campbell Unit No. 2

Date of Test 2-27-02 Time of Test Begin 0800 End 1600

	Integrated Gross Gen (MW)	Integrated Aux Power (MW)	Net Generation (MW)
1st Hour	369	18.8	350.2
2nd Hour	369	18.7	350.3
3rd Hour	371	18.4	352.6
4th Hour	371	18.5	352.5
5th Hour	369	18.5	350.5
~~6th Hour~~	~~368~~	~~18.8~~	~~349.2~~
7th Hour	369	18.8	350.2
8th Hour	370	18.6	351.4

Seven Hour Summary

Net Generation Seven Hour Average for Test 351.1 MWN

Prior Net Demonstrated Capability 360.0 MWN

Throttle Pressure 3500 + 15 = 3515 PSIA

Steam Temp. - Main 974 °F, 1st R.H. 979 °F, 2nd R.H. - °F

Back Pressure 1.04 in Hg.

Circulating Water Inlet Temperature 36 °F

Ambient Air Temperature 30 °F

Net Demo Cap	SEASONAL DERATING											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
360	0	0	0	0	0	0	5	5	5	0	0	0

Remarks: (Including load limiting conditions and deviations from normal operation)
SH and RH temps at 975ºF

#2 Gen Meter								
2A Aux								
2B Aux								
#7 Bank								
#2 DWD								
Tie Air								
WWP								
TIE STM								
GROSS								
AUX								
NET GEN								

SUPPLEMENTAL ECAR TEST DATA

PLANT: **J H CAMPBELL**		UNIT NO: **3**	
DATE OF TEST: **2/14/02**	TIME OF TEST: BEGIN: **0800** END: **1600**		
AVERAGE TEST CAPABILITY (UNCORRECTED): **819.8**			
AMBIENT CONDITIONS:			
	AVG WINTER	**AVG SUMMER**	**AVG DURING TEST**
AIR TEMP °F	20	70	**41**
RELATIVE HUMIDITY%			
CIRC WATER INLET TEMP°F	45	65	**50.4**
STEAM FLOW: **5,780,000**	lbs/Hr (Optional)		

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

PARAMETER	NORMAL VALUE		TEST VALUE		CORRECTION	
Throttle Temperature	1000	°F	998.8	°F	-0.4	MW
Throttle Pressure	2415	psia	2397.8	psia	0	MW
Reheat Temperature	1000	°F	1001.4	°F	+0.4	MW
Back Pressure	1.5	in Hg	1.65	in Hg	+0.8	MW
Reheat Spray	0	lb/Hr	53,200	lb/Hr	-5.3	MW
Superheat Spray	0	lb/Hr	106,800	lb/Hr	-0.6	MW
Cold End Temperature	155	°F	170.8	°F	0	MW
Plant Heating	30000	lb/Hr	36,400	lb/Hr	+0.6	MW
IE		ON				MW
TOTAL CORRECTION					-4.5	MW

Normalized Winter Capability - **815.3** (Avg for test + corrections)

CORRECTIONS FOR NORMALIZING SUMMER CAPABILITY:

PARAMETER	NORMAL VALUE	TEST VALUE	CORRECTION
Throttle Temperature	°F	°F	MW
Throttle Pressure	psia	psia	MW
Reheat Temperature	°F	°F	MW
Back Pressure	in Hg	in Hg	MW
Reheat Spray	lb/Hr	lb/Hr	MW
Superheat Spray	lb/Hr	lb/Hr	MW
Plant Heating	lb/Hr	lb/Hr (SO3 System)	MW
*Combustion Air Heating	Glycol		MW
TOTAL CORRECTION			MW

Normalized Summer Capability = (Avg for test and corrections)

* Summer ambient air temp is not a penalty unless glycol usage is required.

NET DEMONSTRATED CAPABILITY TEST

COMPANY: Consumers Energy		
PLANT: JHCampbell	UNIT NO. 3	DATE OF TEST: February 14, 2002
TIME OF TEST:	BEGIN: 0800	END: 1600

	Integrated Gross Gen MW	Integrated Aux Power MW	Net Generation on MW
1st HOUR	855	36.3	818.7
2nd HOUR	854	34.6	819.4
3rd HOUR	850	34.3	815.7 λ
4TH HOUR	855	34.0	821.0
5th HOUR	857	33.8	823.2
6th HOUR	858	35.0	823.0
7th HOUR	853	37.0	816.0
8th HOUR	853	35.9	817.1

SEVEN HOUR SUMMARY

Net Generation Seven Hour Average for Test: 819.8 MWN

Prior Net Demonstrated Capability : 820.0 MWN

Throttle Pressure: 2397.8 + 14.7 = 2412.5 psia

Steam Temp. – Main: 998.8 °F | 1st R.H. 1001.4 °F | 2nd R.H. -------

Back Pressure: 1.65" in Hg

Circulating Water Inlet Temperature: 41 °F

Ambient Air Temperature: 50.4 °F

NET
DEMO CAP SEASONAL DERATING

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

REMARKS: (Including load limiting conditions and deviations from normal operation)

Feedwater flow = 5,454,000 lbs/HR
Limiting factor for the test was PA Fans and Precip Inlet Pressure

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 1				
Date of Test	August 15, 2002	**Time of Test**	**Begin**	1000	**End**	1400	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	57.40	3.30	54.10
2nd Hour	57.70	3.40	54.30
3rd Hour	57.60	3.20	54.40
4th Hour	57.50	3.40	54.10
5th Hour			
6th Hour			
7th Hour			
8th Hour			

Seven Hour Summary

Net Generation Four Hour Average for Test				54.2 MW
Prior Net Demonstrated Capability				61 MW
Throttle Pressure				772 psia
Steam Temp	**Main**	888 deg F	**1st RH**	
Back Pressure				2.2 in Hg
Circulating Water Inlet Temperature				77 deg F
Ambient Air Temperature				78 deg F

Net Demo Cap	Seasonal Derating
54	

Remarks: (Including load limiting conditions and deviations from normal operation)

#1 bearing high temperature.

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	**Unit No**	Cobb 1	August 15, 2002

Average Test Capability (Uncorrected): 54.2 MW

Ambient Conditions:	**Avg Winter**	**Avg Summer**	**Avg During Test**
Air Temp deg F	26.3	68.3	78.0
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	58.0
Steam Flow:	-	-	-

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	875 deg F	888 deg F	-
Throttle Pressure	800.0 psia	772.0 psia	-
Reheat Temperature	-	-	-
Back Pressure	2.50 in Hg	2.20 in Hg	-
Reheat Spray	-	-	-
Superheat Spray	-	-	-
Combustion Air Heat	-	-	-
Plant Heating	-	-	-
Other	-	-	-
Total Correction			0.0 MW

Normalized Winter Capability = 54.2 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	875 deg F	888 deg F	-
Throttle Pressure	800.0 psia	772.0 psia	-
Reheat Temperature	-	-	-
Back Pressure	2.50 in Hg	2.20 in Hg	-
Reheat Spray	-	-	-
Superheat Spray	-	-	-
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			0.0

Normalized Summer Capability = 54.2

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 2				
Date of Test	August 15, 2002	**Time of Test**	**Begin**	1000	**End**	1400	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	67.00	2.80	64.20
2nd Hour	68.00	2.80	65.20
3rd Hour	67.00	1.80	65.20
4th Hour	67.00	3.60	63.40
5th Hour			
6th Hour			
7th Hour			
8th Hour			

Seven Hour Summary

Net Generation Four Hour Average for Test				64.5 MW
Prior Net Demonstrated Capability				61 MW
Throttle Pressure				766 psia
Steam Temp	**Main**	881 deg F	**1st RH**	
Back Pressure				3.7 in Hg
Circulating Water Inlet Temperature				77 deg F
Ambient Air Temperature				78 deg F

Net Demo Cap	Seasonal Derating
64	

Remarks: (Including load limiting conditions and deviations from normal operation)

#1 bearing high temperature.

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	**Unit No**	Cobb 2	August 15, 2002

Average Test Capability (Uncorrected): 64.5 MW

Ambient Conditions:	**Avg Winter**	**Avg Summer**	**Avg During Test**
Air Temp deg F	26.3	68.3	78.0
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	77.0
Steam Flow:	-	-	-

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	875 deg F	881 deg F	-
Throttle Pressure	800.0 psia	766.0 psia	-
Reheat Temperature	-	-	-
Back Pressure	4.00 in Hg	3.64 in Hg	-
Reheat Spray	-	-	-
Superheat Spray	-	-	-
Combustion Air Heat	-	-	-
Plant Heating	-	-	-
Other	-	-	-
Total Correction			0.0 MW

Normalized Winter Capability = 64.5 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	875 deg F	881 deg F	-
Throttle Pressure	800.0 psia	766.0 psia	-
Reheat Temperature	-	-	-
Back Pressure	4.00 in Hg	3.64 in Hg	-
Reheat Spray	-	-	-
Superheat Spray	-	-	-
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			0.0

Normalized Summer Capability = 64.5

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 3				
Date of Test	August 15, 2002	**Time of Test**	**Begin**	1000	**End**	1400	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	67.30	2.90	64.40
2nd Hour	67.60	2.80	64.80
3rd Hour	67.60	2.90	64.70
4th Hour	67.50	2.80	64.70
5th Hour			
6th Hour			
7th Hour			
8th Hour			

Seven Hour Summary

Net Generation Four Hour Average for Test				64.7 MW
Prior Net Demonstrated Capability				61 MW
Throttle Pressure				769 psia
Steam Temp	**Main**	903 deg F	**1st RH**	
Back Pressure				3.6 in Hg
Circulating Water Inlet Temperature				76 deg F
Ambient Air Temperature				78 deg F

Net Demo Cap	Seasonal Derating
65	

Remarks: (Including load limiting conditions and deviations from normal operation)

Back Pressure

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	Unit No	Cobb 3	August 15, 2002

Average Test Capability (Uncorrected): 64.7 MW

Ambient Conditions:	Avg Winter	Avg Summer	Avg During Test
Air Temp deg F	26.3	68.3	78.0
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	76.0
Steam Flow:	-	-	-

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	875 deg F	903 deg F	-
Throttle Pressure	800.0 psia	769.0 psia	-
Reheat Temperature	-	-	-
Back Pressure	4.00 in Hg	3.60 in Hg	-
Reheat Spray	-	-	-
Superheat Spray	-	-	-
Combustion Air Heat	-	-	-
Plant Heating	-	-	-
Other	-	-	-
Total Correction			0.0 MW

Normalized Winter Capability = 64.7 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	875 deg F	903 deg F	-
Throttle Pressure	800.0 psia	769.0 psia	-
Reheat Temperature	-	-	-
Back Pressure	4.00 in Hg	3.60 in Hg	-
Reheat Spray	-	-	-
Superheat Spray	-	-	-
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			0.0

Normalized Summer Capability = 64.7

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 4				
Date of Test	May 17, 2002	**Time of Test**	**Begin**	835	**End**	1635	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	171.00	9.55	161.45
2nd Hour	170.00	9.65	160.35
3rd Hour	171.00	9.40	161.60
4th Hour	171.00	9.45	161.55
5th Hour	171.00	9.30	161.70
6th Hour	171.00	10.30	160.70
7th Hour	171.00	8.30	162.70
8th Hour	172.00	9.20	162.80

Seven Hour Summary

Net Generation Seven Hour Average for Test				161.7 MW
Prior Net Demonstrated Capability				160 MW
Throttle Pressure				1996 psia
Steam Temp	**Main**	1038 deg F	**1st RH**	991 deg F
Back Pressure				1.6 in Hg
Circulating Water Inlet Temperature				58 deg F
Ambient Air Temperature				49 deg F

Net Demo Cap	Seasonal Derating
160	2 MW for June, 4MW July, August and September; 2MW FOR OCTOBER

Remarks: (Including load limiting conditions and deviations from normal operation)

Turbine limited. Governor valves wide open.

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	Unit No	Cobb 4	May 17, 2002

Average Test Capability (Uncorrected): 161.8 MW

Ambient Conditions:	Avg Winter	Avg Summer	Avg During Test
Air Temp deg F	26.3	68.3	49.0
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	58.0
Steam Flow:	-	-	-

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040 deg F	1038 deg F	0.11
Throttle Pressure	2000.0 psia	1996.0 psia	-
Reheat Temperature	990 deg F	991 deg F	-0.08
Back Pressure	1.20 in Hg	1.60 in Hg	1.94
Reheat Spray	5000	16728	-0.95
Superheat Spray	5000	-	0.08
Combustion Air Heat	-	-	-
Plant Heating	-	-	-
Other	-	-	-
Total Correction			1.1 MW

Normalized Winter Capability = 162.8 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040 deg F	1038 deg F	0.11
Throttle Pressure	2000.0 psia	1996.0 psia	-
Reheat Temperature	990 deg F	991 deg F	-0.08
Back Pressure	2.20 in Hg	1.60 in Hg	-2.9
Reheat Spray	5000	16728	-0.95
Superheat Spray	5000	-	0.08
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			-3.7

Normalized Summer Capability = 158.0

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	Cobb	**Unit No**	Cobb 5				
Date of Test	May 17, 2002	**Time of Test**	**Begin**	835	**End**	1635	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	173.00	11.75	161.25
2nd Hour	173.00	11.65	161.35
3rd Hour	172.00	11.70	160.30
4th Hour	173.00	11.65	161.35
5th Hour	173.00	11.50	161.50
6th Hour	172.00	11.60	160.40
7th Hour	173.00	11.40	161.60
8th Hour	173.00	11.60	161.40

Seven Hour Summary

Net Generation Seven Hour Average for Test				161.300 MW
Prior Net Demonstrated Capability				160.000 MW
Throttle Pressure				2037 psia
Steam Temp	**Main**	1053 deg F	**1st RH**	992 deg F
Back Pressure				1.6 in Hg
Circulating Water Inlet Temperature				56 deg F
Ambient Air Temperature				49 deg F

Net Demo Cap	Seasonal Derating
160	2 MW for June, 4MW July, August and September. 2MW OCTOBER

Remarks: (Including load limiting conditions and deviations from normal operation)
Steam Flow Limited.

SUPPLEMENTAL ECAR TEST DATA

Company	Consumers Energy			
Plant	Cobb	Unit No	Cobb 5	May 17, 2002

Average Test Capability (Uncorrected): 161.300 MW

Ambient Conditions:	Avg Winter	Avg Summer	Avg During Test
Air Temp deg F	26.3	68.3	49
Relative Hunidity %	-	-	-
Circ Water Inlet Temp deg F	32.3	73.3	56
Steam Flow:	-	-	-

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040 deg F	1053 deg F	-0.61
Throttle Pressure	2000 psia	2037 psia	-
Reheat Temperature	990 deg F	992 deg F	-0.17
Back Pressure	1.2 in Hg	1.6 in Hg	1.45
Reheat Spray	5000	-	0.53
Superheat Spray	5000	12397	-0.15
Combustion Air Heat	-	-	-
Plant Heating	-	-	-
Other	-	-	-
Total Correction			1.1 MW

Normalized Winter Capability = 162.4 MW

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	1040	1053	-0.61
Throttle Pressure	2000	2037	-
Reheat Temperature	990	992	-0.17
Back Pressure	2.2	1.6	-2.17
Reheat Spray	5000	-	0.53
Superheat Spray	5000	12397	-0.15
Combustion Air Heat	-	-	
Plant Heating	-	-	
Other	-	-	
Total Correction			-2.6

Normalized Summer Capability = 158.7

-

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company CONSUMERS ENERGY Reported By D. GESINSKI
Plant DAN E KARN Unit No 1
Date of Test 03-27-2002 Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	269 MW	16.0 MW	253.0 MW
2nd Hour	269 MW	16.3 MW	252.7 MW
3rd Hour	268 MW	16.2 MW	251.8 MW
4th Hour	269 MW	16.1 MW	252.9 MW
5th Hour	270 MW	16.1 MW	253.9 MW
6th Hour	270 MW	16.0 MW	254.0 MW
7th Hour	269 MW	16.0 MW	253.0 MW
8th Hour	269 MW	15.9 MW	253.1 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 253.2 MW
Prior Net Demonstrated Capability 255 MW
Throttle Pressure 2395 psia
Steam Temp. - Main 1009 °F, 1st R.H. 1052 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 36 °F
Ambient Air Temperature 40 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
255	10	10	10	10	10	10	10	10	10	10	10	0

Remarks: (including load limiting conditions and deviation from normal operations)

1-3 HIGH PRESSURE FEEDWATER HEATER OUT OF SERVICE

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: D. E. Karn
Date of Test: 12/17/2002
Hydrogen Pressure: 45

Reported By: Abbas Shabani
Unit No. # 1
Time of Test: Begin, End 900 to 1300
PSIG (if applicable): 1A, 44.6-45.7 7 & 1B, 46.3

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	265.00 MW 111.00 MVAr	16.10 MW 11.60 MVAr	248.90 MW 99.40 MVAr	248.2* MW 75.2* MVAr
2nd Hour	268.00 MW 104.00 MVAr	16.00 MW 11.40 MVAr	252.00 MW 92.60 MVAr	251.2* MW 68.1* MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

* Calculated from the Low-Side reading and the known Transformer Impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **96 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **71.7 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1, *144840 V	Ph. 1, 146000 V	Ph. 1, 146000 V
	Ph. 2, *142200 V	Ph. 2, 146000 V	Ph. 2, 146000 V
	Ph. 3, *142560 V	Ph. 3, 146000 V	Ph. 3, 146000 V

* buses unbalance voltage

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages 1A & B:			
	Ph. 1, 16100/16000 V	Ph. 1, 16000/15900 V	Ph. 1 Voltage Regulator 16400 V
	Ph. 2, 16200/16000 V	Ph. 2, 16200/16000 V	Ph. 2, _____V
	Ph. 3, 16100/16000 V	Ph. 3, 16100/16000 V	Ph. 3, _____V

Generator Voltage PT Ratio: 16000/120
Generator Voltage Rating: 16000 V

GSU Nameplate Data: Tap Setting: No tap, ratio 15.5/145 kV Impedance: 10.80 % Voltage 145000 GR. Y. - 15500 Volt (X WDG.) - 15500 Volt (Y WDG) @ 290000 KVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |__|_9_|_6_| GSU High-Side |__|_7_|_2_|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Limited by Generator Terminal Voltage on 1A and Stator Amps on 1B

1. Inconsistency between the metering and voltage regulator PT'S.
2. Inconsistency between the switchboard amp meters (reading the rated amperes) and voltage regulators.
3. Inconsistency between the unit net out-put calculated values and SCADA.
4. Gross generator MW at average 266.5 or 4.5 less then reported capability.
5. Voltage regulators generator protection set points were the limiting parameter.
6. Test was not conducted at max H_2 pressure because of operating efficiency and protective set points at normal operating pressure of 45psi.

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy Co.
Plant: D. E. Karn
Date of Test: 12/17/2002
Hydrogen Pressure: 45

Reported By: Abbas Shabani
Unit No. # 1
Time of Test: Begin, End 1430 to 1900
PSIG (if applicable): 1A, 46.3 & 1B, 46.1

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU High-Side
1st Hour	268.00 MW -35.00 MVAr	16.00 MW 11.00 MVAr	252.00 MW -46.00 MVAr	251.7* MW -70.5* MVAr
2nd Hour	269.00 MW -33.00 MVAr	16.00 MW 11.00 MVAr	253.00 MW -44.00 MVAr	252.7* MW -68.6* MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

* Calculated from the Low-Side reading and the known Transformer Impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **–45.00 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **–69.6 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1, *145080V	Ph. 1, 146000 V	Ph. 1, 145000 V
(from multiple sources,	Ph. 2, *142680 V	Ph. 2, 146000 V	Ph. 2, 145000 V
if available)	Ph. 3, *142080 V	Ph. 3, 146000 V	Ph. 3, 145000 V

* Bus unbalance voltage.

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V
Gen. Bus Voltages 1A & 1B:

Ph. 1, 15200/15000 V	Ph. 1, 15200/15100 V	Ph. 1 Voltage Regulator 15600/15500 V
Ph. 2, 15200/15100 V	Ph. 2, 15200/15100 V	Ph. 2, _____V
Ph. 3, 15200/15100 V	Ph. 3, 15200/15100 V	Ph. 3, _____V

Generator Voltage PT Ratio: 16000/120
Generator Voltage Rating: 16000 V

GSU Nameplate Data: Tap Setting: No tap, Ratio 15.5/145 Kv,
Impedance: 10.80 % Voltage 145000 GR. Y. - 15500 Volt (X WDG.) - 15500 Volt (Y WDG) @ 290000 KVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_-_|_4_|_5_| GSU High-Side |_-_|_7_|_0_|

Remarks: (including reactive output limiting conditions and deviations from normal operation)

1. Inconsistency between the metering and voltage regulator PT'S.
2. Voltage regulator generator protection correct set point (MEL) was the limiting parameter. Reached the lower limit of generator terminal voltage.
3. Inconsistency between the unit net out-put calculated values and SCADA.
4. Test was not conducted at max H_2 pressure because of operating efficiency and protective set points at normal operating pressure of 45psi.

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company CONSUMERS ENERGY Reported By D. GESINSKI
Plant DAN E KARN Unit No 2
Date of Test 03-29-02 Time of Test; Begin 0800, End 1600

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	276 MW	17.0 MW	259.0 MW
2nd Hour	276 MW	17.2 MW	258.8 MW
3rd Hour	277 MW	17.2 MW	259.8 MW
4th Hour	277 MW	17.1 MW	259.9 MW
5th Hour	277 MW	17.0 MW	260.0 MW
6th Hour	278 MW	17.1 MW	260.9 MW
7th Hour	277 MW	17.0 MW	260.0 MW
8th Hour	277 MW	17.1 MW	259.9 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 259.9 MW
Prior Net Demonstrated Capability 260 MW
Throttle Pressure 2415 psia
Steam Temp. - Main 1054 °F, 1st R.H. 999 °F, 2nd R.H. ____ °F
Circulating Water Inlet Temperature 38 °F
Ambient Air Temperature 47 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
260	10	10	10	14	14	14	14	14	14	10	10	0

Remarks: (including load limiting conditions and deviation from normal operations)

2-2 HIGH PRESSURE FEEDWATER HEATER OUT OF SERVICE
4MW DERATE DUE TO SCR OPERATION IN OZONE SEASON.

2008_00009324

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: D. E. Karn
Date of Test: 12/20/2002
Hydrogen Pressure: 45

Reported By: Abbas Shabani
Unit No. # 2
Time of Test: Begin, End 1100 to 1530
PSIG (if applicable): 2A, 45. & 2B, 45

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	*272.80 MW	17.20 MW	255.60 MW	**254.8 MW
	*134.30 MVAr	12.30 MVAr	122.00 MVAr	**92.7 MVAr
2nd Hour	*273.40 MW	17.20 MW	256.20 MW	**255.5 MW
	*132.00 MVAr	12.40 MVAr	119.60 MVAr	**90.3 MVAr
3rd Hour	____MW	_____MW	_____MW	_____MW
(if req'd)	____MVAr	_____MVAr	_____MVAr	_____MVAr
4th Hour	____MW	_____MW	_____MW	_____MW
(if req'd)	____MVAr	_____MVAr	_____MVAr	_____MVAr

*Used Voltage Regulator Metering
**Calculated from the Low-Side reading and the known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **120.8 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **91.5 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1, 144840 V	Ph. 1, 145000 V	Ph. 1, 145000 V
(from multiple sources,	Ph. 2, 144360 V	Ph. 2, 145000 V	Ph. 2, 145000 V
if available)	Ph. 3, 144480 V	Ph. 3, 145000 V	Ph. 3, 145000 V

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages 1A & B:	Ph. 1, 16000 V	Ph. 1, 16213/16153 V	Ph. 1 Voltage Regulator 16200/16400 V
	Ph. 2, 16000 V	Ph. 2, 16233/16173 V	Ph. 2, _____V
	Ph. 3, 16000 V	Ph. 3, 16173/16153 V	Ph. 3, _____V

Generator Voltage PT Ratio: 16000/120
Generator Voltage Rating: 16000 V

GSU Nameplate Data: Tap Setting: No tap changer, ratio 15.5/145 kV Impedance: 11.5 % 290 MVA @ Voltage 145000 TO 15500 V (X1, X2, X3) and 15500 V(X'1, X'2, X'3) In Parallel.
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_1_|_2_|_2_| GSU High-Side |__|_9_|_2_|
Remarks: (including reactive output limiting conditions and deviations from normal operation)

1. The GSU high-side transducer out of calibration.
2. Turbine limits MW load.
3. Test was not conducted at max H_2 pressure because of operating efficiency and protective set points at normal operating pressure of 45psi.

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: D. E. Karn
Date of Test: 12/20/2002
Hydrogen Pressure: 45

Reported By: Abbas Shabani
Unit No. # 2
Time of Test: Begin, End 1630 to 1900
PSIG (if applicable): 2A, 45. & 2B, 45

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	275.00 MW –30.00 MVAr	17.10 MW 11.50 MVAr	257.90 MW –41.50 MVAr	*257.1 MW *–69.8 MVAr
2nd Hour	276.00 MW –20.00 MVAr	17.10 MW 11.50 MVAr	258.90 MW –31.50 MVAr	*258.2 MW *–59.5 MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

*Calculated from the low-side reading and the known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test – **36.50 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test – **64.7 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1, 144960 V	Ph. 1, 145000 V	Ph. 1, 144000 V
(from multiple sources,	Ph. 2, 144600 V	Ph. 2, 145000 V	Ph. 2, 144000 V
if available)	Ph. 3, 144720 V	Ph. 3, 145000 V	Ph. 3, 144000 V

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages 1A & B:	Ph. 1, 15200 V	Ph. 1, 15343/15343 V	Ph. 1, 15290/15290 V
	Ph. 2, 15200 V	Ph. 2, 15369/15369 V	Ph. 2, 15330/15316 V
	Ph. 3, 15200 V	Ph. 3, 15316/15303 V	Ph. 3, 15303/15276 V

Generator Voltage PT Ratio: 16000/120
Generator Voltage Rating: 16000 V

GSU Nameplate Data: Tap Setting: No tap changer, ratio 15.5/145 kV Impedance: 11.5 % 290 MVA @ Voltage 145000 TO 15500 V (X1, X2, X3) and 15500 V (X'1, X'2, X'3) In Parallel.

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_–_|_4_|_4_| GSU High-Side |_–_|_6_|_5_|
Remarks: (including reactive output limiting conditions and deviations from normal operation)
Limited by generator terminal voltage

1. Restrictions from system control; unit could operate within the reactive capability and voltage regulators set points.
2. The GSU high-side transducer out of calibration.
3. Test was not conducted at max H_2 pressure because of operating efficiency and protective set points at normal operating pressure of 45psi.

* Calculated megawatts value

APPENDIX B

Net Demonstrated Reactive Capability Test Data

Company Consumers Energy Reported By Jim LaLonde
Plant Karn 3&4 Unit No. Karn 3
Date of Test 10/2/2002 Time of Test: Begin 13:15, End 15:15
Hydrogen Pressure 59 PSIG (if applicable)

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	660 MW 420 MVAr	26 MW MVAr	MW MVAr	MW MVAr
2nd Hour	660 MW 420 MVAr	26 MW MVAr	MW MVAr	MW MVAr
3rd Hour (if req'd)	MW MVAr	MW MVAr	MW MVAr	MW MVAr
4th Hour (if req'd)	MW MVAr	MW MVAr	MW MVAr	MW MVAr

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test 333 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph.1 361 kV	Ph.1 V	Ph.1 V
	Ph.2 V	Ph.2 V	Ph.2 V
	Ph.3 V	Ph.3 V	Ph.3 V

System Voltage PT Ratio
System Voltage Schedule 361

Gen. Bus Voltages			
	Ph.1 26.8 V	Ph.1 V	Ph.1 V
	Ph.2 26.7 V	Ph.2 V	Ph.2 V
	Ph.3 26.6 V	Ph.3 V	Ph.3 V

Generator Voltage PT Ratio 26000/120
Generator Voltage Rating 24,000

GSU Nameplate Data: Tap Setting: 345 kV Impedance: 9.9 % Capability: 800 MVA

Net Demonstrated Reactive Capability (MVAr) GSU Low-Side |_|_|_| GSU High-Side |_|_|_|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Volts per Hertz Alarm
High Stator Winding Temperature 80°C

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APPENDIX B

Net Demonstrated Reactive Capability Test Data

Company Consumers Energy Reported By Jim LaLonde
Plant Karn 3 & 4 Unit No. Karn 4
Date of Test 10/2/2002 Time of Test: Begin 16:02, End 18:02
Hydrogen Pressure 73 PSIG (if applicable)

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	575 MW 410 MVAr	22 MW ___ MVAr	___ MW ___ MVAr	___ MW ___ MVAr
2nd Hour	575 MW 410 MVAr	22 MW ___ MVAr	___ MW ___ MVAr	___ MW ___ MVAr
3rd Hour (if req'd)	___ MW ___ MVAr	___ MW ___ MVAr	___ MW ___ MVAr	___ MW ___ MVAr
4th Hour (if req'd)	___ MW ___ MVAr	___ MW ___ MVAr	___ MW ___ MVAr	___ MW ___ MVAr

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test ___ MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) ___ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test 313 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) ___ MVAr

System Bus Voltages: (from multiple sources, if available)

	Ph.1 361 kV	Ph.1 ___ V	Ph.1 ___ V
	Ph.2 ___ V	Ph.2 ___ V	Ph.2 ___ V
	Ph.3 ___ V	Ph.3 ___ V	Ph.3 ___ V

System Voltage PT Ratio ___
System Voltage Schedule 361 kV

Gen. Bus Voltages

	Ph.1 26.8 V	Ph.1 ___ V	Ph.1 ___ V
	Ph.2 27.0 V	Ph.2 ___ V	Ph.2 ___ V
	Ph.3 26.9 V	Ph.3 ___ V	Ph.3 ___ V

Generator Voltage PT Ratio 26000/120
Generator Voltage Rating 26000

GSU Nameplate Data: Tap Setting: 345 kV Impedance: 9.0 % Capability: 715 MVA

Net Demonstrated Reactive Capability (MVAr) GSU Low-Side |_|_|_| GSU High-Side |_|_|_|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Alarm: Overexcitation Limiter @ 420 MVAr
Limit System load - Karn 4 expensive - Run test at 575 MW vs high limit of 660 MW.

2008_00009328

SUPPLEMENTAL ECAR TEST DATA
(See Reverse Side For Instructions)

Plant: KARN 3+4 PLANT Unit No: 4

Date of Test: 11/6/02 Time of Test: Begin 1100 End 1500

Average Test Capability (Uncorrected): 638.5

AMBIENT CONDITIONS:	Avg Winter	Avg Summer	Avg During Test
Air Temp °F	26.5		40
Relative Humidity %	—	—	—
Circ Water Inlet Temp °F	77.5		77

STEAM FLOW: _____ lbs/Hr (Optional)

CORRECTIONS FOR NORMALIZING TO WINTER CAPABILITY (NDC):

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	950 °F	933 °F	2.0 MW
Throttle Pressure	1800 psia	1804 psia	— MW
Reheat Temperature	950 °F	947 °F	.5 MW
Back Pressure	3.0 in Hg	3.37 in Hg	1.0 MW
Reheat Spray	10000 lb/hr	10,660 lb/hr	— MW
Superheat Spray	10000 lb/hr	10,000 lb/hr	— MW
Combustion Air Heat	360000 lb/hr	279,380 lb/hr	-2.0 MW
Plant Heating	0 lb/hr	0 lb/hr	— MW
Other	0	0	MW
Total Correction			+1.5 MW

Normalized Winter Capability = 640 (Avg for test + corrections)

CORRECTIONS FOR NORMALIZING TO SUMMER CAPABILITY:

Parameter	Normal Value	Test Value	Correction
Throttle Temperature	950 °F	°F	MW
Throttle Pressure	1800 psia	psia	MW
Reheat Temperature	950 °F	°F	MW
Back Pressure	5.0 in Hg	in Hg	MW
Reheat Spray	10000 lb/hr	lb/hr	MW
Superheat Spray	10000 lb/hr	lb/hr	MW
Combustion Air Heat	245000 lb/hr	lb/hr	MW
Plant Heating	0 lb/hr	lb/hr	MW
Other	0		MW
Total Correction			MW

Normalized Summer Capability = _____ (Avg for test + corrections)

NET DEMONSTRATED CAPABILITY TEST

Company Consumers

Plant KARN 3+4 PLANT Unit No. 4

Date of Test 11/6/02 Time of Test Begin 1100 End 1500

				Integrated Gross Gen.	Integrated Aux. Power		Net Generation
1100	1st Hour	91842	–	MW	MW		MW
1200	2nd Hour	91908	log 655	660	24	log 631	636
1300	3rd Hour	91974	666	660	24	642	636
1400	4th Hour	92041	667	670	24	642.5	646
1500	5th Hour	92107	667	660	24	643	636
	6th Hour						
	7th Hour						
	8th Hour						

Seven Hour Summary

Net Generation ~~Seven Hour~~ 4 hour Average for test 638.5 MW

? Prior Net Demonstrated Capability 638 MW

Throttle Pressure 1804 psia

Steam Temp. - Main 933 °F, NORTH 1st R.H. 947 °F, SOUTH 2nd R.H. 948 °F

Back Pressure A ZONE 4.07 B ZONE 2.67 in/Hg.

Circulating Water Inlet Temperature 77 °F

Ambient Air Temperature 40 °F

Net Demo Cap	Seasonal Derating											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
638	0	0	0	0	0	0	0	0	0	0	0	0

Remarks: (including load limiting conditions and deviations from normal operation)

2008_00009330

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy — Reported By: Jim Lalonde
Plant: DEKarn 3&4 — Unit No.: 4
Date of Test: 10/2/2002 — Time of Test: Begin – 1700 hrs End – 1800 hrs
Hydrogen Pressure: 72.5 — PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	575.6 MW 396.2 MVAR	22.1 MW 16.6* MVAR	553.3* MW 377* MVAR	552.3*MW 330.2* MVAR
2nd Hour	576.2 MW 395.5 MVAR	19.4 MW 14.5*MVAR	556.7* MW 379* MVAR	555.6* MW 331.7* MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

* = Values not measured but estimated and / or calculated.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test 378 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test 331 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages: (from multiple sources, if available)			
	Ph. 1 ___ KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 ___ V	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 ___ V	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio _____
System Voltage Schedule 360 KV

Gen. Bus Voltages:			
	Ph. 1 26,346 V	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 26,593 V	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 26,185 V	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 26,000 / 120
Generator Voltage Rating 26,000

GSU Nameplate Data:Tap Setting: 345 kV Impedance: 9.0 % Capability: 715 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side | | 3 | 7 | 8 | GSU High-Side | | 3 | 3 | 1 |

Remarks: (including reactive output limiting conditions and deviations from normal operation)
* = Values not measured but estimated and or calculated.
Bumped into over-excitation limiter alarm at 420 MVAR

NET DEMOSTRATED CAPABILITY TEST

Company	Consumers Energy						
Plant	J.C. Weadock	**Unit No**	Unit No. 7				
Test Date	March 14, 2002	**Time of Test**	**Begin**	8:00	**End**	17:00	

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	164.00	10.00	154.00
2nd Hour	165.00	11.00	155.00
3rd Hour	165.00	10.00	155.00
4th Hour	164.00	10.00	154.00
5th Hour	165.00	11.00	154.00
6th Hour	165.00	10.00	155.00
7th Hour	164.00	10.00	154.00
8th Hour	166.00	11.00	154.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				154.4 MW
Prior Net Demonstrated Capability				155 MW
Throttle Pressure				1997 psia
Steam Temp	**Main**	1039 deg F	**1st RH**	967 deg F
Back Pressure				1.3 in Hg
Circulating Water Inlet Temperature				39 deg F
Ambient Air Temperature				39 deg F

Net Demo Cap	Seasonal Derating
155	0

Remarks: (including load limiting conditions and deviations from normalconditions)

The plant is requesting that the NDC for the unit remain at 155 Mws.

Remarks: (including load limiting conditions and deviations from normal operation)
2-2 LP fw htr and 2-2 HP fw htr OOS

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: J. C. Weadock
Date of Test: 12/19/2002
Hydrogen Pressure: 30

Reported By: Abbas Shabani
Unit No. # 7
Time of Test: Begin, End 1020 - 1230
PSIG (if applicable): 30

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	163.40 MW 90.00 MVAr	8.50 MW 7.01 MVAr	154.90 MW 83.00 MVAr	*154.3 MW *69.1 MVAr
2nd Hour	159.60 MW 93.00 MVAr	8.50 MW 7.01 MVAr	151.10 MW 86.00 MVAr	*150.5 MW *72.5 MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

*Calculated using low side readings and known transformer impedance

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **84.50 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **70.80 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1, V	Ph. 1, 145656 V	Ph. 1, 146.028 V
(from multiple sources,	Ph. 2, 144720 V	Ph. 2, 146412 V	Ph. 2, 146700 V
if available)	Ph. 3, V	Ph. 3, 144540 V	Ph. 3, 144540 V

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages:	Ph. 1, 18105 V	Ph. 1, 17600 V	Ph. 1, 18075 V	voltage regulator PT'S 18200.00 V
	Ph. 2, 18105 V	Ph. 2, 18100 V	Ph. 2, 18090 V	
	Ph. 3, 18105 V	Ph. 3, 17800 V	Ph. 3, 18090 V	

Generator Voltage PT Ratio: 18000/120
Generator Voltage Rating: 18000 V

GSU Nameplate Data: Tap Setting: No tap changer, ratio 17.5/145 kV Impedance: Impedance: 8.25 % Voltage 145000 GR. Y 17500 Voltage @ 170,000 KVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |__|_8_|_5_| GSU High-Side |__|_7_|_1_|
Remarks: (including reactive output limiting conditions and deviations from normal operation)

1. The generator switchboard stator ammeters are scaled incorrectly. Meters maximum at 6000 and 6479 is generator capability. Test was limited to 6000 amps.
2. Reached GSU Transformer Hot Spot Temperature Limit of 85° C.
3. Inconsistency between the metering and voltage regulator PT'S, as well as switchboard ammeters and voltage regulator readings. Also, the voltage regulator MXL set point was near operating parameters.
4. Inconsistency between calculated net values and SCADA.

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: J. C. Weadock
Date of Test: 12/19/2002
Hydrogen Pressure: 30

Reported By: Abbas Shabani
Unit No. # 7
Time of Test: Begin, End 1020 - 1230
PSIG (if applicable): 30

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	164.40 MW -31.70 MVAr	8.45 MW -7.23 MVAr	155.95 MW -38.93 MVAr	*155.41 MW *-51.94 MVAr
2nd Hour	165.40 MW -32.10 MVAr	8.50 MW -7.01 MVAr	156.95 MW -39.11 MVAr	*156.35 MW *-52.29 MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

*Calculated using low side readings and the known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **– 39.00 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **– 52.12 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1, V	Ph. 1, 145730 V	Ph. 1, V
(from multiple sources,	Ph. 2, 144650 V	Ph. 2, 146440 V	Ph. 2, V
if available)	Ph. 3, V	Ph. 3, 144530 V	Ph. 3, V

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages:	Ph. 1, 17235 V	Ph. 1, 17600 V	Ph. 1, 17220 VR PT/16860 M PT V
	Ph. 2, 17205 V	Ph. 2, 18100 V	Ph. 2, 17220 VR PT/17190 M PT V
	Ph. 3, 17205 V	Ph. 3, 17800 V	Ph. 3, 17190 VR PT/16890 M PT V

Generator Voltage PT Ratio: 18000/120
Generator Voltage Rating: 18000 V

GSU Nameplate Data: Tap Setting: No tap changer, ratio 17.5/145 kV Impedance: Impedance: 8.25 % Voltage 145000 GR. Y 17500 Voltage @ 170,000 KVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_-_|_3_|_9_| GSU High-Side |_-_|_5_|_2_|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Limited by generator terminal voltage.

1. Inconsistency between the metering and voltage regulator PT'S, as well as switchboard ammeters, varmeters, and wattmeter and voltage regulator read-out. In addition, the voltage regulator MEL set point was near operating parameters.
2. Test limited by generator terminal voltage.

NET DEMOSTRATED CAPABILITY TEST

Company Consumers Energy

Plant J.C. Weadock **Unit No** Unit No. 8

Date of Test March 14, 2002 **Time of Test** **Begin** 8:00 **End** 17:00

	Integrated Gross Gen	Integrated Aux Power	Net Generation
1st Hour	164.00	9.00	155.00
2nd Hour	165.00	9.00	156.00
3rd Hour	165.00	9.00	156.00
4th Hour	164.00	8.00	156.00
5th Hour	165.00	9.00	155.00
6th Hour	165.00	9.00	156.00
7th Hour	166.00	8.00	158.00
8th Hour	164.00	9.00	155.00

Seven Hour Summary

Net Generation Seven Hour Average for Test				156.0 MW
Prior Net Demonstrated Capability				155 MW
Throttle Pressure				2023 psia
Steam Temp	**Main**	1041 deg F	**1st RH**	991 deg F
Back Pressure				1.1 in Hg
Circulating Water Inlet Temperature				39 deg F
Ambient Air Temperature				39 deg F

Net Demo Cap	Seasonal Derating
155	0

Remarks: (including load limiting conditions and deviations from normalconditions)

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: J. C. Weadock
Date of Test: 12/19/2002
Hydrogen Pressure: 30

Reported By: Abbas Shabani
Unit No. # 8
Time of Test: Begin, End 1310 - 1530
PSIG (if applicable): 30

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	*166.20 MW *77.40 MVAr	8.85 MW 6.87 MVAr	157.35 MW 70.53 MVAr	**156.77 MW **56.97 MVAr
2nd Hour	*166.80 MW *71.00 MVAr	8.85 MW 6.87 MVAr	157.95 MW 64.13 MVAr	**157.37 MW **50.80 MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

*Used Voltage Regulator Meters
**Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **67.33 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **53.89 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1,	V	Ph. 1, 145656 V	Ph. 1, 146.028 V
(from multiple sources,	Ph. 2,	144720 V	Ph. 2, 146412 V	Ph. 2, 146700 V
if available)	Ph. 3,	V	Ph. 3, 144540 V	Ph. 3, 144540 V

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages 1A & B:	Ph. 1, 18105 V	Ph. 1, 17600 V	Ph. 1, 18075 V
	Ph. 2, 18105 V	Ph. 2, 18100 V	Ph. 2, 18090 V
	Ph. 3, 18105 V	Ph. 3, 17800 V	Ph. 3, 18090 V

Generator Voltage PT Ratio: 18000/120
Generator Voltage Rating: 18000 V

GSU Nameplate Data: Tap Setting: No tap changer, ratio 17.5/145 kV Impedance: 8.30 % Voltage 145000 GR. Y 17500 Voltage @ 170,000 KVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |__|_7_|_0_| GSU High-Side |__|_5_|_7_|
Remarks: (including reactive output limiting conditions and deviations from normal operation)
1. Inconsistency between the metering and voltage regulator PT'S, as well as switchboard ammeters and voltage regulator readings.
2. Inconsistency between calculated net values and SCADA.

APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers ENERGY Co.
Plant: J. C. Weadock
Date of Test: 12/19/2002
Hydrogen Pressure: 30

Reported By: Abbas Shabani
Unit No. #8
Time of Test: Begin, End 1310 - 1523
PSIG (if applicable): 30.50

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	**162.24 MW ** -32.00 MVAr	9.07 MW -5.88 MVAr	153.17 MW -37.88 MVAr	*152.63 MW * -50.48 MVAr
2nd Hour	**161.55 MW ** -32.00 MVAr	9.04 MW -5.82 MVAr	152.51 MW -37.82 MVAr	*151.97 MW *-50.31 MVAr
3rd Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr
4th Hour (if req'd)	____MW ____MVAr	_____MW _____MVAr	_____MW _____MVAr	_____MW _____MVAr

**Used Switchboard meter values.
*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test **– 37.85 MVAr**
Prior Net Demonstrated Reactive Capability (GSU Low-Side) ____ MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test **–50.40 MVAr**
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____MVAr

System Bus Voltages:	Ph. 1,	V	Ph. 1, 145730 V	Ph. 1, V
(from multiple sources,	Ph. 2,	144650 V	Ph. 2, 146440 V	Ph. 2, V
if available)	Ph. 3,	V	Ph. 3, 144530 V	Ph. 3, V

System Voltage PT Ratio: 1200
System Voltage Schedule: 145000 V

Gen. Bus Voltages:	Ph. 1, 17044 V	Ph. 1, 17058 V	Ph. 1, 17235 VR PT/17370 M PT V
	Ph. 2, 17080 V	Ph. 2, 17117 V	Ph. 2, 17235 VR PT/17385 M PT V
	Ph. 3, 17088 V	Ph. 3, 17109 V	Ph. 3, 17220 VR PT/17370 M PT V

Generator Voltage.PT Ratio: 18000/120
Generator Voltage Rating: 18000 V

GSU Nameplate Data: Tap Setting: No tap changer, ratio 17.5/145 kV Impedance: 8.30 % Voltage 145000 GR. Y 17500 Voltage @ 170,000 KVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_-_|_3_|_8_| GSU High-Side |_-_|_5_|_0_|
Remarks: (including reactive output limiting conditions and deviations from normal operation)

1. Inconsistency between the metering and voltage regulator PT'S, as well as switchboard ammeters, varmeters, and wattmeter and voltage regulator read-out. In addition, the voltage regulator MEL set point was near operating parameters.
2. Test limited by generator terminal voltage.

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 1
Time of Test: Begin – 1245 End – 1445
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	106 MW 45 MVAR	6.2 MW 3.8 MVAR	99.8 MW 41.2 MVAR	*99.6 MW *32.9 MVAR
2nd Hour	105 MW 49 MVAR	6.2 MW 3.8 MVAR	98.8 MW 45.2 MVAR	*98.6 MW *36.8 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test 43.2 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test 34.9 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages:	Ph. 1 145.0 KV	Ph. 1 ___ V	Ph. 1 ___ V
(from multiple sources,	Ph. 2 145.4 KV	Ph. 2 ___ V	Ph. 2 ___ V
if available)	Ph. 3 145.7 KV	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:	Ph. 1 14.8 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 14.8 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 14.8KV	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 14.4 KV

GSU Nameplate Data: Tap Setting: 140 kV Impedance: 5 % Capability: 123.2 MVA

Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|_|4|5| GSU High-Side |_|_|3|7|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Test was limited by maximum system voltage.
Test was conducted at 15 psi hydrogen instead of generator maximum rating of 30 psi because of operating efficiency and protective settings at the normal operating pressure of 15 psi

ECAR DOCUMENT 4 APPENDIX B
Net Demonstrated Reactive Capability Test Data

Company: Consumers Energy
Plant: JRWhiting
Date of Test: 3/18/03
Hydrogen Pressure: 15

Reported By: Abbas Shabani
Unit No.: 1
Time of Test: Begin – 1510 End – 1710
PSIG (if applicable) _____

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen. @ GSU Low-Side	Net Gen. @ GSU Hi-Side
1st Hour	104 MW -20 MVAR	6.4 MW 4.44 MVAR	97.6 MW -24.44 MVAR	*97.4 MW *-32.4 MVAR
2nd Hour	106 MW -25 MVAR	6.2 MW 4.37 MVAR	99.8 MW -29.37 MVAR	*99.6 MW *-38.0 MVAR
3rd Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR
4th Hour (if req'd)	MW MVAR	MW MVAR	MW MVAR	MW MVAR

*Calculated using low side readings and known transformer impedance.

Test Summary

Net Reactive Generation (GSU Low-Side) – Average of whole test -26.9 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) _____ MVAr

Net Reactive Generation (GSU High-Side) – Average of whole test -35.2 MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) _____ MVAr

System Bus Voltages:	Ph. 1 144.4 KV	Ph. 1 ___ V	Ph. 1 ___ V
(from multiple sources,	Ph. 2 144.7 KV	Ph. 2 ___ V	Ph. 2 ___ V
if available)	Ph. 3 145 KV	Ph. 3 ___ V	Ph. 3 ___ V

System Voltage PT Ratio 138KV / 115 V
System Voltage Schedule 145 KV

Gen. Bus Voltages:	Ph. 1 14.2 KV	Ph. 1 ___ V	Ph. 1 ___ V
	Ph. 2 14.2 KV	Ph. 2 ___ V	Ph. 2 ___ V
	Ph. 3 14.2 KV	Ph. 3 ___ V	Ph. 3 ___ V

Generator Voltage PT Ratio 14.4 KV / 120 V
Generator Voltage Rating 15.5 KV

GSU Nameplate Data:Tap Setting: 140 kV Impedance: 5 % Capability: 123.2 MVA
Net Demonstrated
Reactive Capability (MVAr) GSU Low-Side |_|-|_2|9| GSU High-Side |_|-|_3|8|

Remarks: (including reactive output limiting conditions and deviations from normal operation)
Test limited by minimum generator terminal voltage.
Test was conducted at 15 psi hydrogen instead of generator maximum rating of 30 psi because of operating efficiency and protective settings at the normal operating pressure of 15 psi

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company CONSUMERS ENERGY Reported By Henry Hinojosa
Plant J R Whiting Unit No 2
Date of Test 12/12/02 Time of Test; Begin 0700, End 1400

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	109 MW	5 MW	104 MW
2nd Hour	107 MW	6 MW	101 MW
3rd Hour	106 MW	6 MW	100 MW
4th Hour	108 MW	6 MW	102 MW
5th Hour	109 MW	6 MW	103 MW
6th Hour	106 MW	6 MW	100 MW
7th Hour	106 MW	6 MW	100 MW
8th Hour	106 MW	6 MW	100 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 101.4 MW
Prior Net Demonstrated Capability 102 MW
Throttle Pressure 1450 psia
Steam Temp. - Main 1000 °F, 1st R.H. 1000 °F, 2nd R.H. ~~~~ °F
Circulating Water Inlet Temperature 41 °F
Ambient Air Temperature 37 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
102	10	10	10	10	10	10	10	10	10	10	10	0

Remarks: (including load limiting conditions and deviation from normal operations)

Maintain 102

2008_00009340

APPENDIX B

Net Demonstrated Reactive Capability Test Data

Company CONSUMERS ENERGY Reported By D. ARMSTRONG
Plant J.R. WHITING Unit No. 2
Date of Test 5/15/02 Time of Test: Begin 0900, End 1100
Hydrogen Pressure 30 PSIG (if applicable)

	Instantaneous Gross Gen.	Instantaneous Aux. Power	Net Gen.@ GSU Low-Side	Net Gen.@ GSU Hi-Side
1st Hour	106 MW 46+ MVAr	6 MW — MVAr	~~95~~ 100 MW 46+ MVAr	MW MVAr
2nd Hour	108 MW 43+ MVAr	7 MW — MVAr	101 MW 43+ MVAr	MW MVAr
3rd Hour (if req'd)	MW MVAr	MW MVAr	MW MVAr	MW MVAr
4th Hour (if req'd)	MW MVAr	MW MVAr	MW MVAr	MW MVAr

Test Summary

Net Reactive Generation (GSU Low-Side) - Average of whole test 45 MVAr
Prior Net Demonstrated Reactive Capability (GSU Low-Side) 39 MVAr

Net Reactive Generation (GSU High-Side) - Average of whole test N/A MVAr
Prior Net Demonstrated Reactive Capability (GSU High-Side) N/A MVAr

System Bus Voltages: (from multiple sources, if available)	W	B		
	Ph.1 146.1 V	Ph.1 145.4 V	Ph.1 V	0900
	Ph.2 146.5 V	Ph.2 146.9 V	Ph.2 V	1000
	Ph.3 V	Ph.3 V	Ph.3 V	

System Voltage PT Ratio N/A
System Voltage Schedule 145KV

Gen. Bus Voltages			
0900	Ph.1 14.9 V	Ph.1 V	Ph.1 V
1000	Ph.2 14.9 V	Ph.2 V	Ph.2 V
	Ph.3 V	Ph.3 V	Ph.3 V

Generator Voltage PT Ratio
Generator Voltage Rating

GSU Nameplate Data: Tap Setting: 14.4 kV Impedance: — % Capability: — MVA

Net Demonstrated Reactive Capability (MVAr) GSU Low-Side | 45 | GSU High-Side | | |

AA-B Remarks: (including reactive output limiting conditions and deviations from normal operation)
Backup volts/hertz limiter stops unit automatic at this load.
Same load since installed in 1997.
Incomplete test. Need to run other units unloaded so volts/hertz limiter doesn't restrict unit from going to full reactive capability.
Dennis Armstrong said they wouldn't use the reactive test until the fall following the peak load season.

5/29/02

2008-00009341

APPENDIX A

Gross And Net Demonstrated Capability Test Data

Company CONSUMERS ENERGY Reported By D. ARMSTRONG
Plant J.R. WHITING Unit No 3
Date of Test 10/10/02 Time of Test; Begin 0900, End 1700

	Integrated Gross Gen.	Integrated Aux. Power	Net Generation
1st Hour	133 MW	7 MW	126 MW
2nd Hour	136 MW	8 MW	128 MW
3rd Hour	136 MW	8 MW	128 MW
4th Hour	135 MW	7 MW	128 MW
5th Hour	137 MW	8 MW	129 MW
6th Hour	134 MW	8 MW	126 MW
7th Hour	135 MW	7 MW	128 MW
8th Hour	133 MW	8 MW	125 MW

Seven-Hour Summary

Net Generation - Average of Best Seven Hours of Test 127.5 MW
Prior Net Demonstrated Capability 124 MW
Throttle Pressure 1451 psia
Steam Temp. - Main 988 °F, 1st R.H. 996 °F, 2nd R.H. 996 °F
Circulating Water Inlet Temperature 61 °F
Ambient Air Temperature 60-70 °F

Seasonal Derating (MW)

Net Demo Cap (MW)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
124 ~~127~~	0	0	0	2	2	2	3	3	3	0	0	1-101

Remarks: (including load limiting conditions and deviation from normal operations)

60% Western Coal & 40% Midwestern Coal will maintain at this time 124 Net