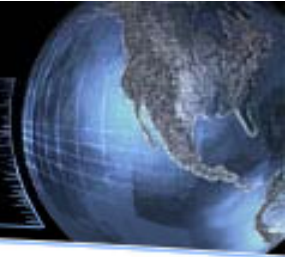
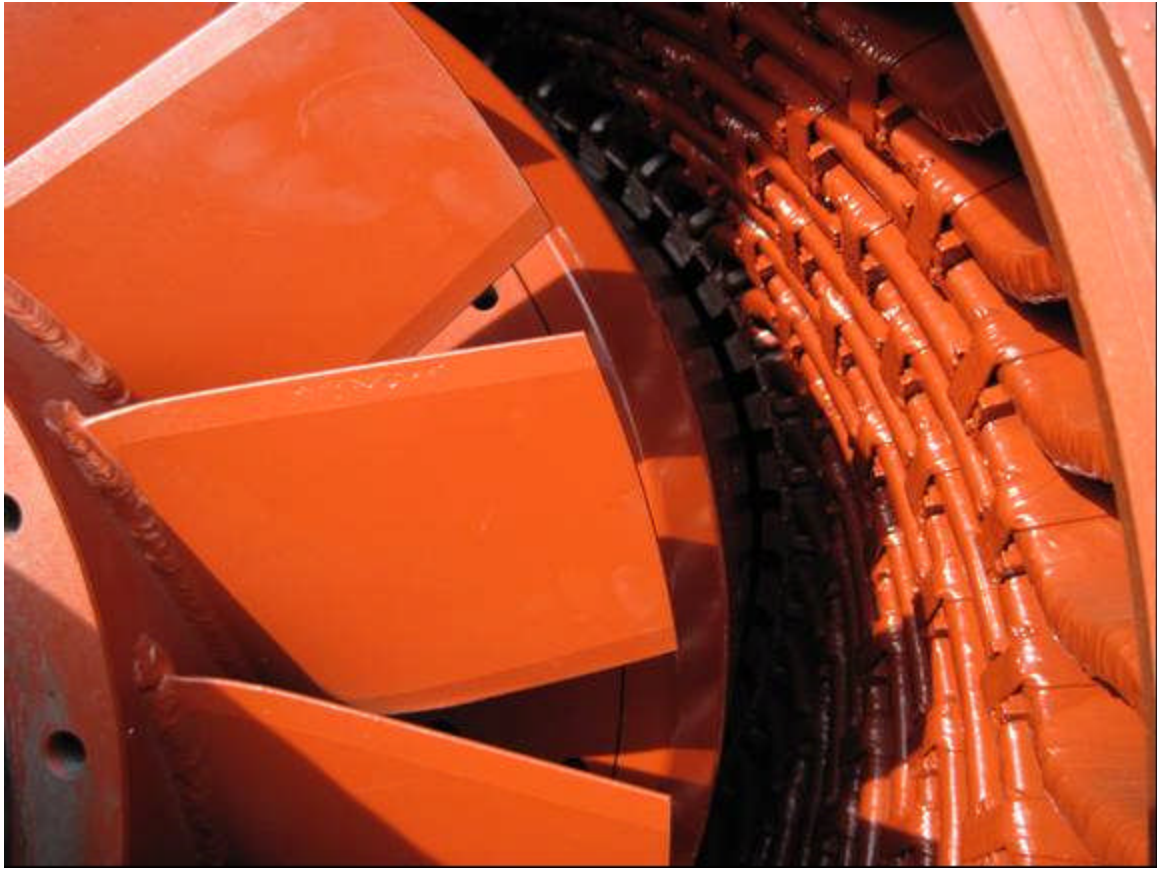


TP 2 - GENERATOR SPECIFICATION



- The electric generator was built in 1973 by Electric Machinery Company. The generator was complete rebuilt in 2009 by the Wood Group. Name plate data is as follows:

• Serial number	77-11957-01	• Volts	13,800
• Exciter SN	168-162591	• Amps	2640
• KVA	63,000	• Temp Rise-stator	85°C
• KW	56,700	• -rotor	110°C
• Power Factor	0.9	• Inlet air temp	59°F
• RPM/HZ	3600/60	• Altitude	0 ft
		• Phase sequence	1-2-3
		• Rotation	CW



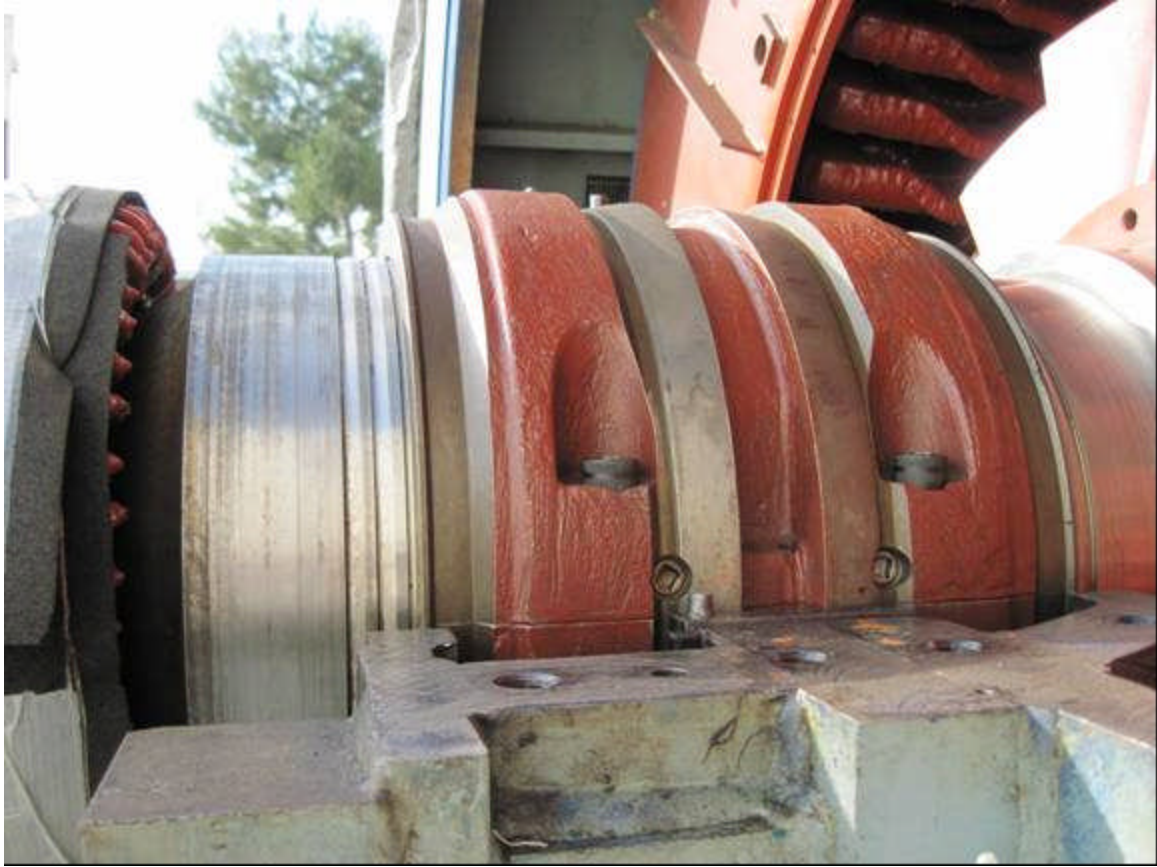


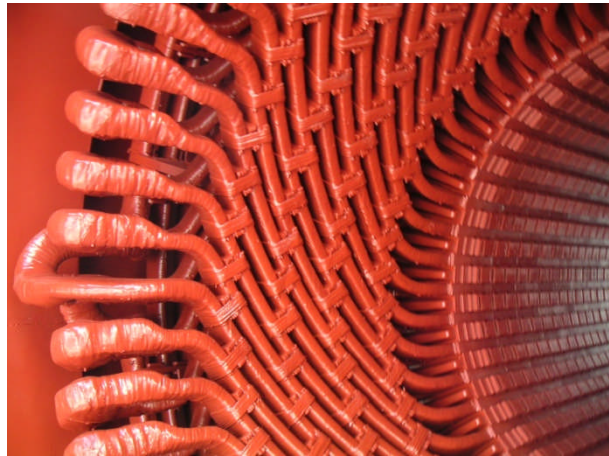
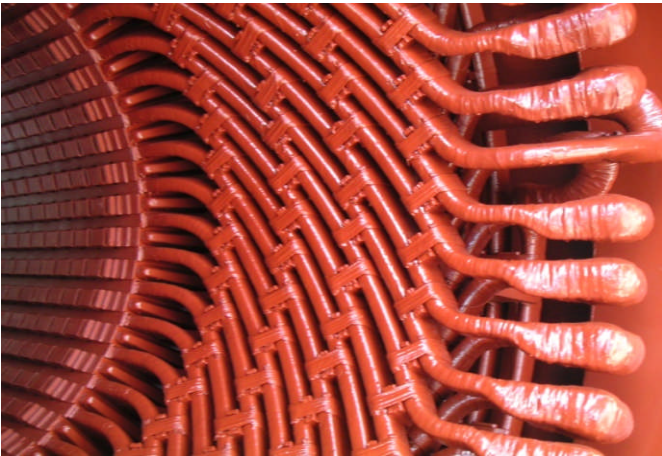
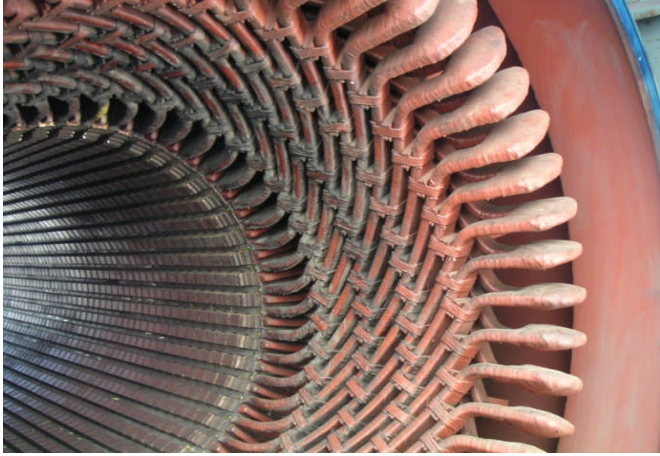


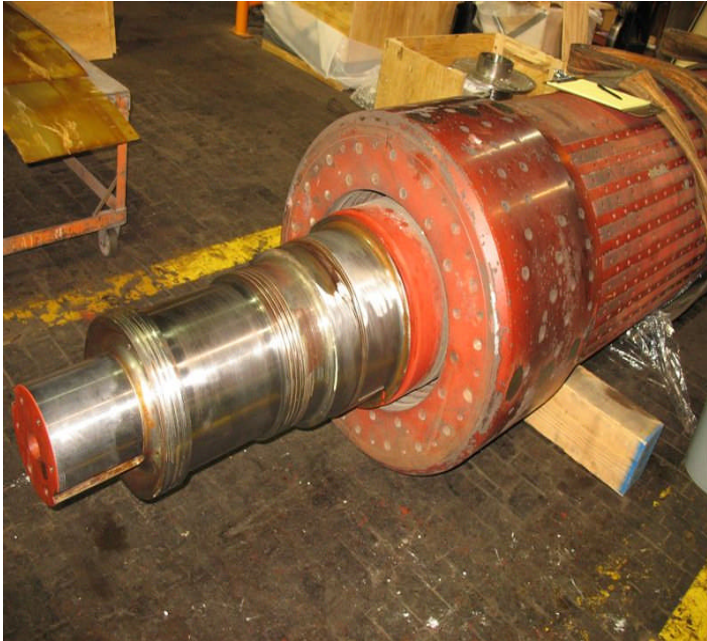
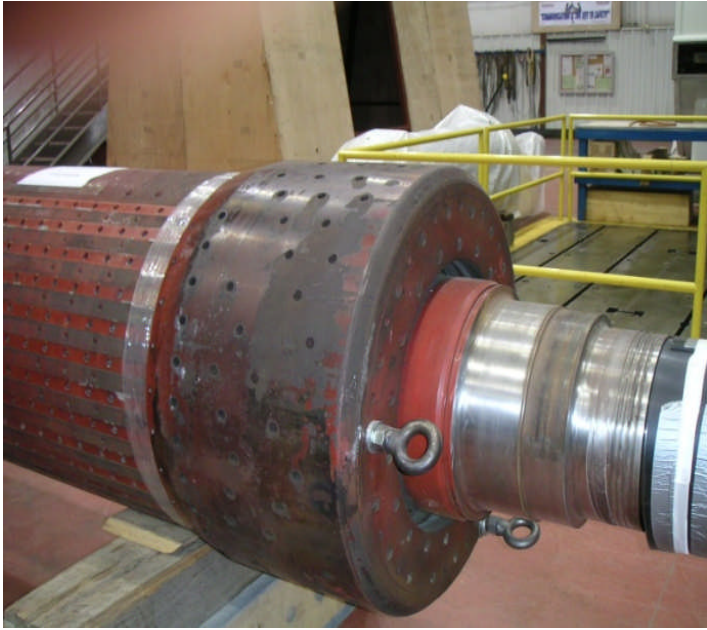


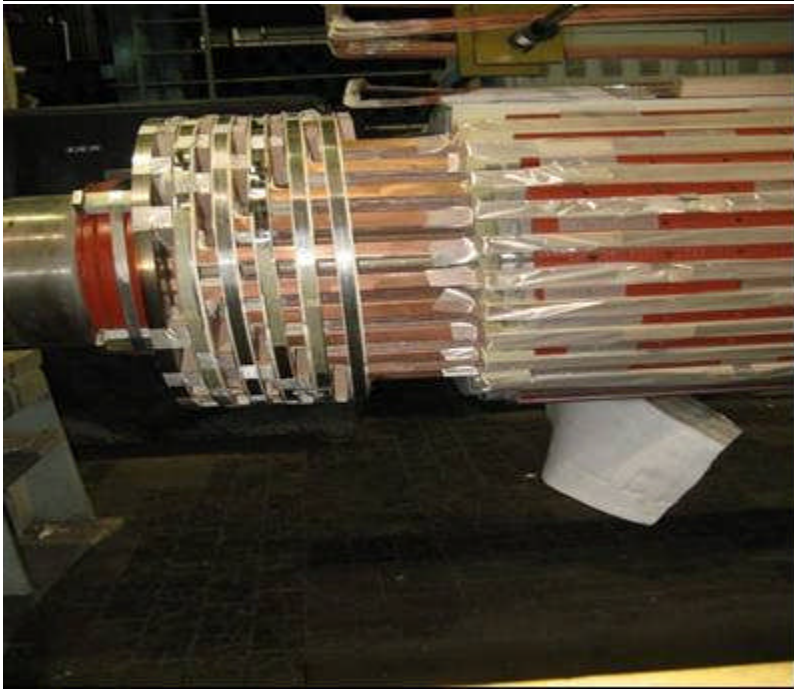


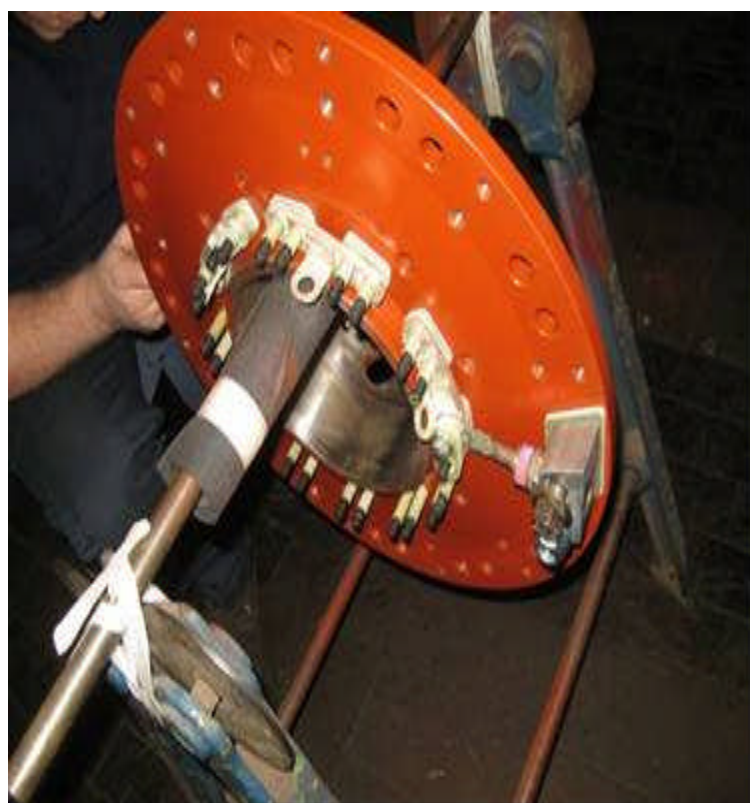


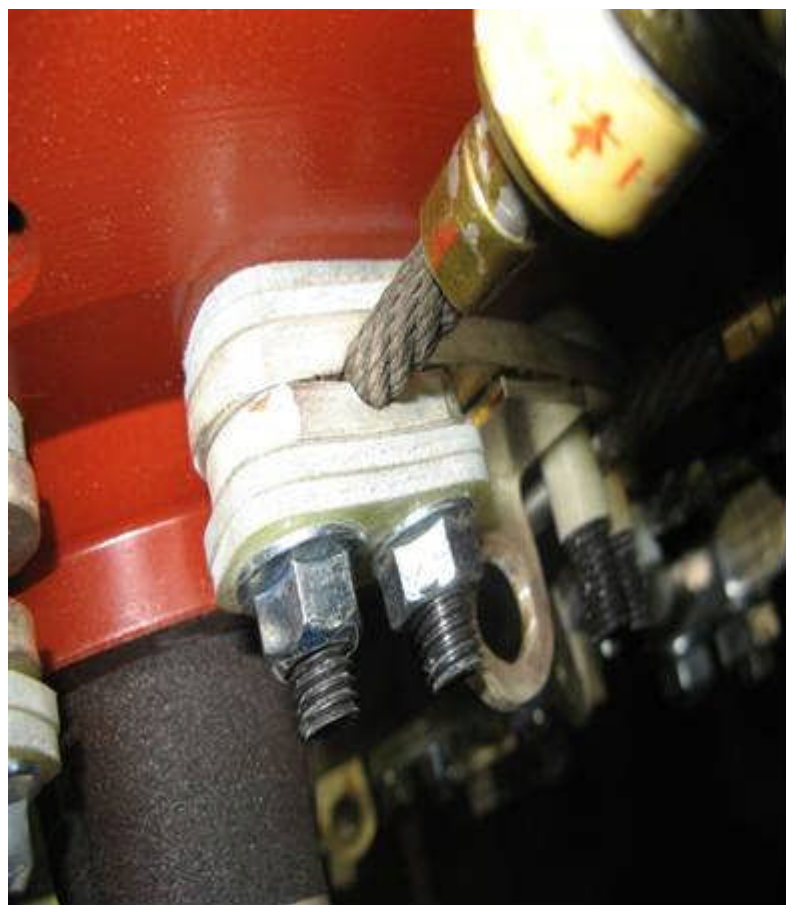














113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

INSPECTION DATA FOR 63 MW TWIN PAK GENERATOR

GENERATOR NAMEPLATE DATA

EM BRUSHLESS SYNCHRONOUS GENERATOR

SERIAL # 771195701 **KVA – 63,000** **VOLTAGE – 13,800**

AMPERAGE – 2,640 **FREQUENCY – 60Hz** **PHASE – 3**

Test	Test Equipment	Calibration
Megger	AMPROBE Megatest 1	26 August 2010
Polarization Index	AMPROBE Megatest 5000	26 August 2010
High Voltage	PHENIX 460-5 DC Dielectric Test Set	26 August 2010

Table 1: 63 MW Twin Pak Arrival Megger Readings

Leads	Phase	Megger	Ambient Temp	Ambient Humidity
T1 – T4	A	3945 Meg Ω	95.7° F	15%
T2 – T5	B	3111 Meg Ω	95.7° F	15%
T3 – T6	C	2452 Meg Ω	95.7° F	15%



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title DC Absorption & Current Leakage Test Data		Document	
Approval Mike Shaw	Revision Original	Date 11/13/2008	Page 1 of 1

63MW DC Absorption and Current Leakage Test(Arrival)

Customer Name: Wood Group

Job Number: 50807

Unit Voltage Rating: 13,800

Humidity: 15%

Leads/Phase Tested: T1 – T4/Phase A

Temperature: 96.7/95.4°F

DC Absorption Test		Current Leak Test	
Time	μamps	Voltage	μamps
15 seconds	7		
30 seconds	5	10 Kv (1 Min)	4.2
45 seconds	4	10 Kv (2 Min)	2.9
1 minute	3.7	12 Kv	2.6
2 minute	2.7	14 Kv	3.2
3 minute	2.2	16 Kv	3.3
4 minute	1.9	18 Kv	3.5
5 minute	1.7	20 Kv	4.5
6 minute	1.5	22 Kv	5.5
7 minute	1.4	24 Kv	6.0
8 minute	1.3	26 Kv	6.5
9 minute	1.3	28 Kv	8.5
10 minute	1.2	30 Kv	8.5

P.I. Ratio: (1 minute) 3.7 ÷ (10 minute) 1.2 = 3.08

P.I. Ratio: (10 minute) 8.5 ÷ (1 minute) 4.2 = 2.02

Test Performed by: Kevin Lazzari Date: 10/12/09



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title DC Absorption & Current Leakage Test Data		Document	
Approval Mike Shaw	Revision Original	Date 11/13/2008	Page 1 of 1

63MW DC Absorption and Current Leakage Test(Arrival)

Customer Name: Wood Group

Job Number: 50807

Unit Voltage Rating: 13,800

Humidity: 15%/13%

Leads/Phase Tested: T2 – T5/Phase B

Temperature: 95.2/98.3°F

DC Absorption Test		Current Leak Test	
Time	μamps	Voltage	μamps
15 seconds	7.5		
30 seconds	5.5	10 Kv (1 min)	3.1
45 seconds	4.9	10 Kv (2 min)	2.4
1 minute	3.8	12 Kv	2.5
2 minute	2.8	14 Kv	2.8
3 minute	2.0	16 Kv	2.5
4 minute	1.9	18 Kv	3.5
5 minute	1.6	20 Kv	3.7
6 minute	1.4	22 Kv	3.6
7 minute	1.3	24 Kv	4
8 minute	1.2	26 Kv	4.3
9 minute	1.2	28 Kv	4
10 minute	1.2	30 Kv	5

P.I. Ratio: (1 minute) 3.80 ÷ (10 minute) 1.2 = 3.16

P.I. Ratio: (10 minute) 5.0 ÷ (1 minute) 3.1 = 1.61

Test Performed by: Kevin Lazzari Date: 10/12/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title DC Absorption & Current Leakage Test Data		Document	
Approval Mike Shaw	Revision Original	Date 11/13/2008	Page 1 of 1

63 MW DC Absorption and Current Leakage Test(Arrival)

Customer Name: Wood Group

Job Number: 50807

Unit Voltage Rating: 13,800

Humidity: 15%/12%

Leads/Phase Tested: T3 – T6/Phase C

Temperature: 95.9°F/101.0°F

DC Absorption Test		Current Leak Test	
Time	μamps	Voltage	μamps
15 seconds	7.0		
30 seconds	5.9	10 Kv (1 min)	4.5
45 seconds	4.5	10 Kv (2 min)	3.1
1 minute	3.9	12 Kv	3.8
2 minute	2.8	14 Kv	4.3
3 minute	2.3	16 Kv	5
4 minute	2.1	18 Kv	7
5 minute	1.9	20 Kv	9
6 minute	1.8	22 Kv	11
7 minute	1.6	24 Kv	13
8 minute	1.5	26 Kv	15.5
9 minute	1.5	28 Kv	17
10 minute	1.5	30 Kv	22

P.I. Ratio: (1 minute) 3.90 ÷ (10 minute) 1.5 = 2.60

P.I. Ratio: (10 minute) 22 ÷ (1 minute) 4.5 = 4.88

Test Performed by: Kevin Lazzari Date: 10/21/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title Polarization Index Test Data		Document QA10020102	
Approval Mike Shaw	Revision Original	Date 9/10/2001	Page 1 of 1

63MW Polarization Index (T1 – T4/Phase A) Arrival

Customer Name Wood Group

Job Number 50807

Megger Test @ 1000 Volts

Megohms: 1,235 MΩ

P&I Test @ 5000 Volts

P&I= 6.79

30 Seconds: 568 MΩ

1 Minute: 1.24 GΩ

2 Minutes: 2.14 GΩ

3 Minutes: 3.31 GΩ

4 Minutes: 4.60 GΩ

5 Minutes: 5.49 GΩ

6 Minutes: 6.98 GΩ

7 Minutes: 7.34 GΩ

8 Minutes: 7.83 GΩ

9 Minutes: 12.4 GΩ

10 Minutes: 8.42 GΩ

HI POT Test @ N/A Volts

Surge Test @ N/A Volts

Phase Comparison N/A

1 Minute: N/A

2 Minutes: N/A

3 Minutes: N/A

4 Minutes: N/A

5 Minutes: N/A

Surge Test Printed: NO

Test Performed by: Kevin Lazzari

Date: 10/12/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title Polarization Index Test Data		Document QA10020102	
Approval Mike Shaw	Revision Original	Date 9/10/2001	Page 1 of 1

63MW Polarization Index (T2 – T5/Phase B) Arrival

Customer Name Wood Group

Job Number 50807

Megger Test @ 1000 Volts

Megohms: 1,312 MΩ

P&I Test @ 5000 Volts

P&I= 6.54

30 Seconds: 717 MΩ

1 Minute: 1.31 GΩ

2 Minutes: 2.74 GΩ

3 Minutes: 3.53 GΩ

4 Minutes: 4.65 GΩ

5 Minutes: 5.29 GΩ

6 Minutes: 6.28 GΩ

7 Minutes: 7.12 GΩ

8 Minutes: 8.79 GΩ

9 Minutes: 11.43 GΩ

10 Minutes: 8.57 GΩ

HI POT Test @ N/A Volts

Surge Test @ N/A Volts

Phase Comparison N/A

1 Minute: N/A

2 Minutes: N/A

3 Minutes: N/A

4 Minutes: N/A

5 Minutes: N/A

Surge Test Printed: NO

Test Performed by: Kevin Lazzari

Date: 10/12/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title Polarization Index Test Data		Document QA10020102	
Approval Mike Shaw	Revision Original	Date 9/10/2001	Page 1 of 1

63MW Polarization Index (T3 – T6/Phase C) Arrival

Customer Name Wood Group

Job Number 50807

Megger Test @ 1000 Volts

Megohms: 1,043 MΩ

P&I Test @ 5000 Volts

P&I= 5.125

30 Seconds: 678 MΩ

1 Minute: 1.51 GΩ

2 Minutes: 2.34 GΩ

3 Minutes: 3.67 GΩ

4 Minutes: 4.11 GΩ

5 Minutes: 4.98 GΩ

6 Minutes: 5.76 GΩ

7 Minutes: 6.83 GΩ

8 Minutes: 7.54 GΩ

9 Minutes: 9.08 GΩ

10 Minutes: 7.74 GΩ

HI POT Test @ N/A Volts

Surge Test @ N/A Volts

Phase Comparison N/A

1 Minute: N/A

2 Minutes: N/A

3 Minutes: N/A

4 Minutes: N/A

5 Minutes: N/A

Surge Test Printed: NO

Test Performed by: Kevin Lazzari

Date: 10/12/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title DC Absorption & Current Leakage Test Data		Document	
Approval Mike Shaw	Revision Original	Date 11/13/2008	Page 1 of 1

63MW DC Absorption and Current Leakage Test (Final)

Customer Name: Wood Group

Job Number: 50807

Unit Voltage Rating: 13,800

Humidity: 15%

Leads/Phase Tested: T1 – T4/Phase A

Temperature: 96.7/95.4°F

DC Absorption Test		Current Leak Test	
Time	μamps	Voltage	μamps
15 seconds	8		
30 seconds	6	10 Kv (1 Min)	4.5
45 seconds	5	10 Kv (2 Min)	3.2
1 minute	4.6	12 Kv	2.8
2 minute	3.8	14 Kv	3.4
3 minute	3.4	16 Kv	3.5
4 minute	2.7	18 Kv	4.2
5 minute	2.3	20 Kv	4.8
6 minute	2.1	22 Kv	5.6
7 minute	1.9	24 Kv	6.5
8 minute	1.7	26 Kv	7.2
9 minute	1.7	28 Kv	9.5
10 minute	1.5	30 Kv	9.7

P.I. Ratio: (1 minute) 3.7 ÷ (10 minute) 1.2 = 3.06

P.I. Ratio: (10 minute) 9.7 ÷ (1 minute) 4.5 = 2.15

Test Performed by: Kevin Lazzari Date: 10/21/09



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title DC Absorption & Current Leakage Test Data		Document	
Approval Mike Shaw	Revision Original	Date 11/13/2008	Page 1 of 1

63MW DC Absorption and Current Leakage Test (Final)

Customer Name: Wood Group

Job Number: 50807

Unit Voltage Rating: 13,800

Humidity: 15%/13%

Leads/Phase Tested: T2 – T5/Phase B

Temperature: 95.2/98.3°F

DC Absorption Test		Current Leak Test	
Time	μamps	Voltage	μamps
15 seconds	8.4		
30 seconds	6.5	10 Kv (1 min)	3.4
45 seconds	5.8	10 Kv (2 min)	3.2
1 minute	4.7	12 Kv	2.9
2 minute	3.8	14 Kv	3.5
3 minute	2.9	16 Kv	3.9
4 minute	2.5	18 Kv	4.3
5 minute	2.1	20 Kv	4.8
6 minute	1.8	22 Kv	5.4
7 minute	1.7	24 Kv	5.9
8 minute	1.6	26 Kv	6.6
9 minute	1.4	28 Kv	7.9
10 minute	1.4	30 Kv	8.3

P.I. Ratio: (1 minute) 4.70 ÷ (10 minute) 1.4 = 3.35

P.I. Ratio: (10 minute) 8.3 ÷ (1 minute) 3.4 = 2.44

Test Performed by: Kevin Lazzari Date: 10/21/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title DC Absorption & Current Leakage Test Data		Document	
Approval Mike Shaw	Revision Original	Date 11/13/2008	Page 1 of 1

63MW DC Absorption and Current Leakage Test (Final)

Customer Name: Wood Group

Job Number: 50807

Unit Voltage Rating: 13,800

Humidity: 15%/12%

Leads/Phase Tested: T3 – T6/Phase C

Temperature: 95.9°F/101.0°F

DC Absorption Test		Current Leak Test	
Time	μamps	Voltage	μamps
15 seconds	9.0		
30 seconds	7.5	10 Kv (1 min)	5.3
45 seconds	6.9	10 Kv (2 min)	3.4
1 minute	6.1	12 Kv	3.7
2 minute	5.7	14 Kv	4.2
3 minute	4.9	16 Kv	4.9
4 minute	4.1	18 Kv	5.8
5 minute	3.6	20 Kv	6.8
6 minute	3.1	22 Kv	8.1
7 minute	2.6	24 Kv	9.3
8 minute	2.1	26 Kv	10.5
9 minute	1.8	28 Kv	11
10 minute	1.8	30 Kv	12.4

P.I. Ratio: (1 minute) 6.10 ÷ (10 minute) 1.8 = 3.38

P.I. Ratio: (10 minute) 12.4 ÷ (1 minute) 5.3 = 2.34

Test Performed by: Kevin Lazzari Date: 10/21/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title Polarization Index Test Data		Document QA10020102	
Approval Mike Shaw	Revision Original	Date 9/10/2001	Page 1 of 1

63 MW Polarization Index (T1 – T4/Phase A) Final

Customer Name Wood Group

Job Number 50807

Megger Test @ 1000 Volts

Megohms: 1,815 MΩ

P&I Test @ 5000 Volts

P&I= 5.20

30 Seconds: 768 MΩ
1 Minute: 1.83 GΩ
2 Minutes: 3.28 GΩ
3 Minutes: 4.39 GΩ
4 Minutes: 5.61 GΩ
5 Minutes: 6.40 GΩ

6 Minutes: 7.01 GΩ
7 Minutes: 7.78 GΩ
8 Minutes: 8.41 GΩ
9 Minutes: 15.4 GΩ
10 Minutes: 9.51 GΩ

HI POT Test @ N/A Volts

Surge Test @ N/A Volts
Phase Comparison N/A

1 Minute: N/A
2 Minutes: N/A
3 Minutes: N/A
4 Minutes: N/A
5 Minutes: N/A

Surge Test Printed: NO

Test Performed by: Kevin Lazzari

Date: 10/20/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title Polarization Index Test Data		Document QA10020102	
Approval Mike Shaw	Revision Original	Date 9/10/2001	Page 1 of 1

63 MW Polarization Index (T2 – T5/Phase B) Final

Customer Name Wood Group

Job Number 50807

Megger Test @ 1000 Volts

Megohms: 1,642 MΩ

P&I Test @ 5000 Volts

P&I= 5.225

30 Seconds: 948 MΩ
1 Minute: 1.91 GΩ
2 Minutes: 4.37 GΩ
3 Minutes: 4.54 GΩ
4 Minutes: 5.55 GΩ
5 Minutes: 6.41 GΩ

6 Minutes: 7.28 GΩ
7 Minutes: 8.02 GΩ
8 Minutes: 8.69 GΩ
9 Minutes: 9.31 GΩ
10 Minutes: 9.98 GΩ

HI POT Test @ N/A Volts

Surge Test @ N/A Volts
Phase Comparison N/A

1 Minute: N/A
2 Minutes: N/A
3 Minutes: N/A
4 Minutes: N/A
5 Minutes: N/A

Surge Test Printed: NO

Test Performed by: Kevin Lazzari

Date: 10/20/2009



113 West Dudley Town Rd. Bloomfield, CT 06002 860-243-1737 Fax 860-242-8283

Title Polarization Index Test Data		Document QA10020102	
Approval Mike Shaw	Revision Original	Date 9/10/2001	Page 1 of 1

63MW Polarization Index (T3 – T6/Phase C) Final

Customer Name Wood Group

Job Number 50807

Megger Test @ 1000 Volts

Megohms: 1,643 MΩ

P&I Test @ 5000 Volts

P&I= 3.010

30 Seconds: 981 MΩ

1 Minute: 2.01 GΩ

2 Minutes: 3.22 GΩ

3 Minutes: 4.36 GΩ

4 Minutes: 5.22 GΩ

5 Minutes: 5.93 GΩ

6 Minutes: 6.55 GΩ

7 Minutes: 7.16 GΩ

8 Minutes: 7.76 GΩ

9 Minutes: 8.20 GΩ

10 Minutes: 8.97 GΩ

HI POT Test @ N/A Volts

Surge Test @ N/A Volts

Phase Comparison N/A

1 Minute: N/A

2 Minutes: N/A

3 Minutes: N/A

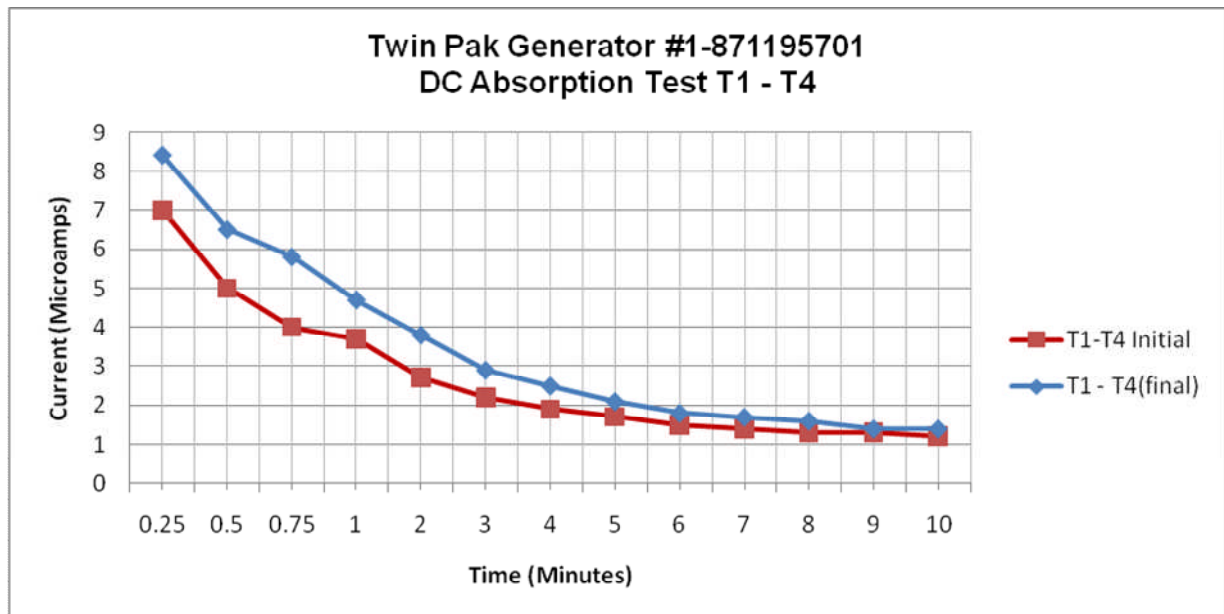
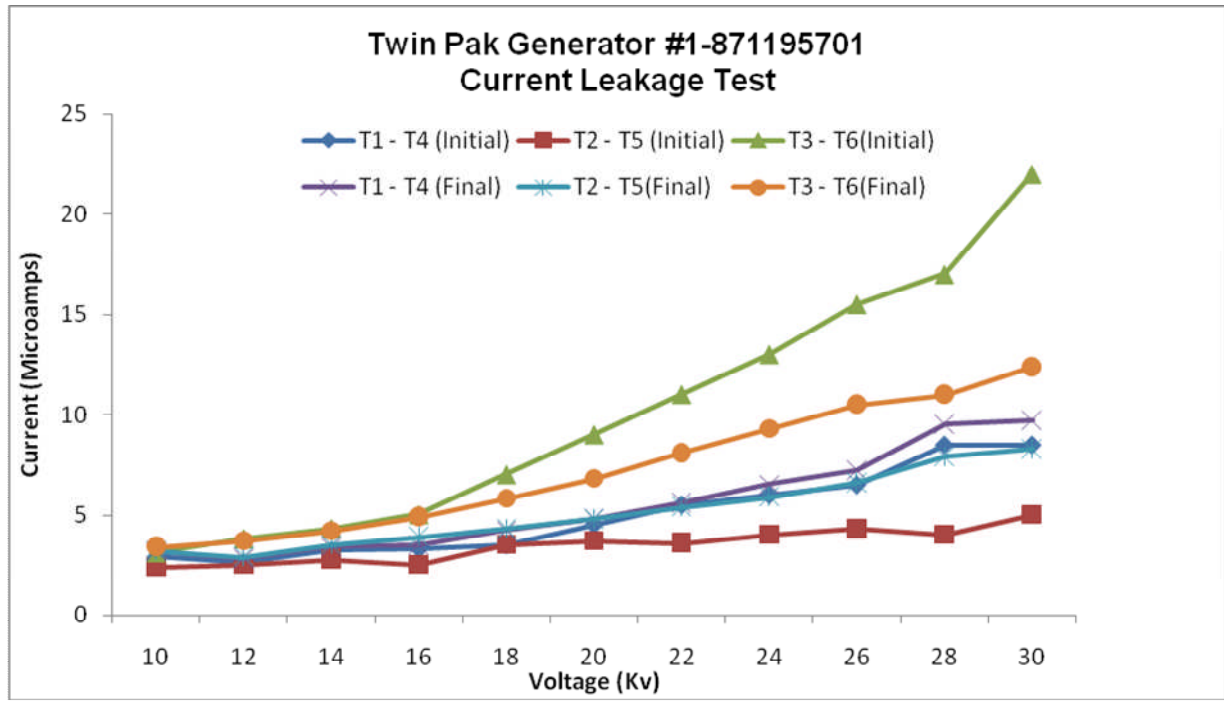
4 Minutes: N/A

5 Minutes: N/A

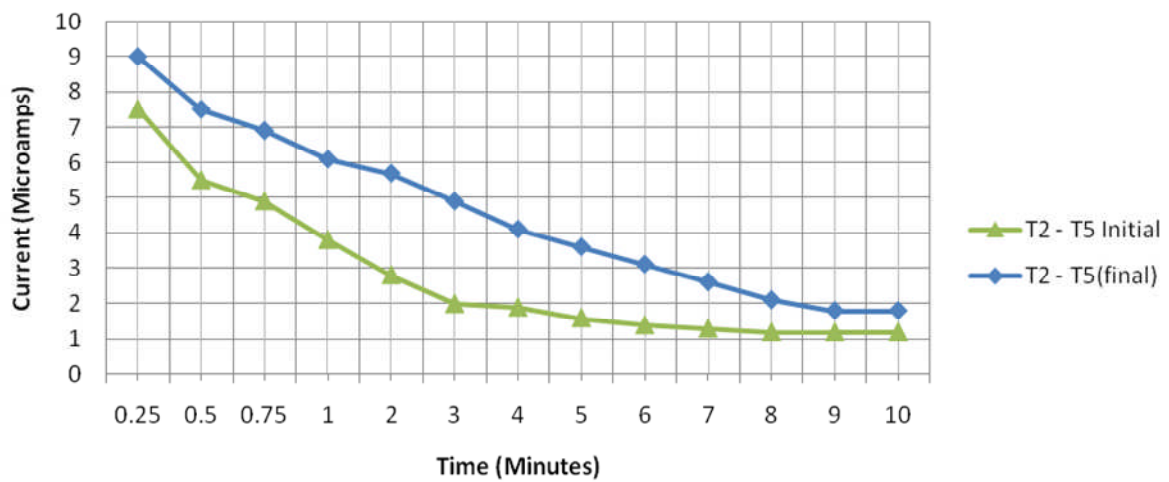
Surge Test Printed: NO

Test Performed by: Kevin Lazzari

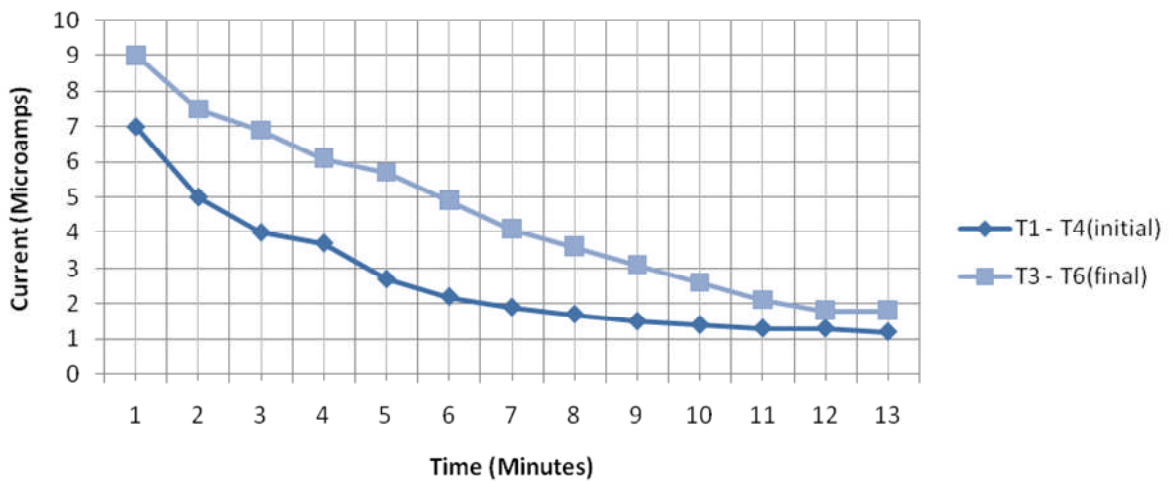
Date: 10/20/2009



**Twin Pak Generator #1871195701
DC Absorption Test T2 - T5**



**Twin Pak Generator #1-871195701
DC Absorption Test T3 - T6**





COLUMBUS, OH • BROWNSVILLE, TX

800 KING AVENUE (43212)
P.O. BOX 370 • COLUMBUS, OHIO 43216
PHONE: (614) 488-1151
FAX: (614) 488-8892 • (614) 488-2063

CUSTOMER: WOOD GROUP – PRATT & WHITNEY

NEC JOB #: 79977-2181

FINAL INSPECTION RESULTS

Date Unit Shipped:

Background Data

Ambient Temperature: 75°F

Iron Temperature: 96°F

Electrical Tests

Winding Resistance: **0.412** Ohms

Insulation Resistance Test with **1000** Volt Megger

One Minute Reading: **3360** MegOhms

Ten Minute Reading: **4520** MegOhms

Polarization Index: **1.35**

Field Winding Impedance: **4.79** Amps @ **115** VAC

Pole No. 1 (IB Collector Ring) **57.6** VAC

Pole No. 2 (OB Collector Ring) **57.7** VAC

High Potential Test:

☒ VDC **3500** for **1** minutes **.06** microamps, Result: ☒ OK

☐ Failed

☐ VAC for minutes milliamps, Result:

☐ OK

☐ Failed

Final Balance Results

Dynamic Balance @ 3600 RPM:

Coupling End Vibration Levels:

Horizontal: **.134** mils **NA** degrees (phase angle)

Vertical: **.226** mils **270** degrees (phase angle)

Axial: **0** mils **NA** degrees (phase angle)

Opposite Coupling End:

Horizontal: **.134** mils **NA** degrees (phase angle)

Vertical: **.144** mils **NA** degrees (phase angle)

Axial: **.041** mils **NA** degrees (phase angle)

Final Inspection of Retaining Rings after Overspeed

Retaining Rings:

Coupling End:

NDE Results:

☒ OK

☐ Rejected

Opposite Coupling End:

NDE Results:

☒ OK

☐ Rejected

CUSTOMER: WOOD GROUP – PRATT & WHITNEY

NEC JOB #: 79977-2181

FINAL INSPECTION RESULTS

Final Rotating Insulation Resistance Test

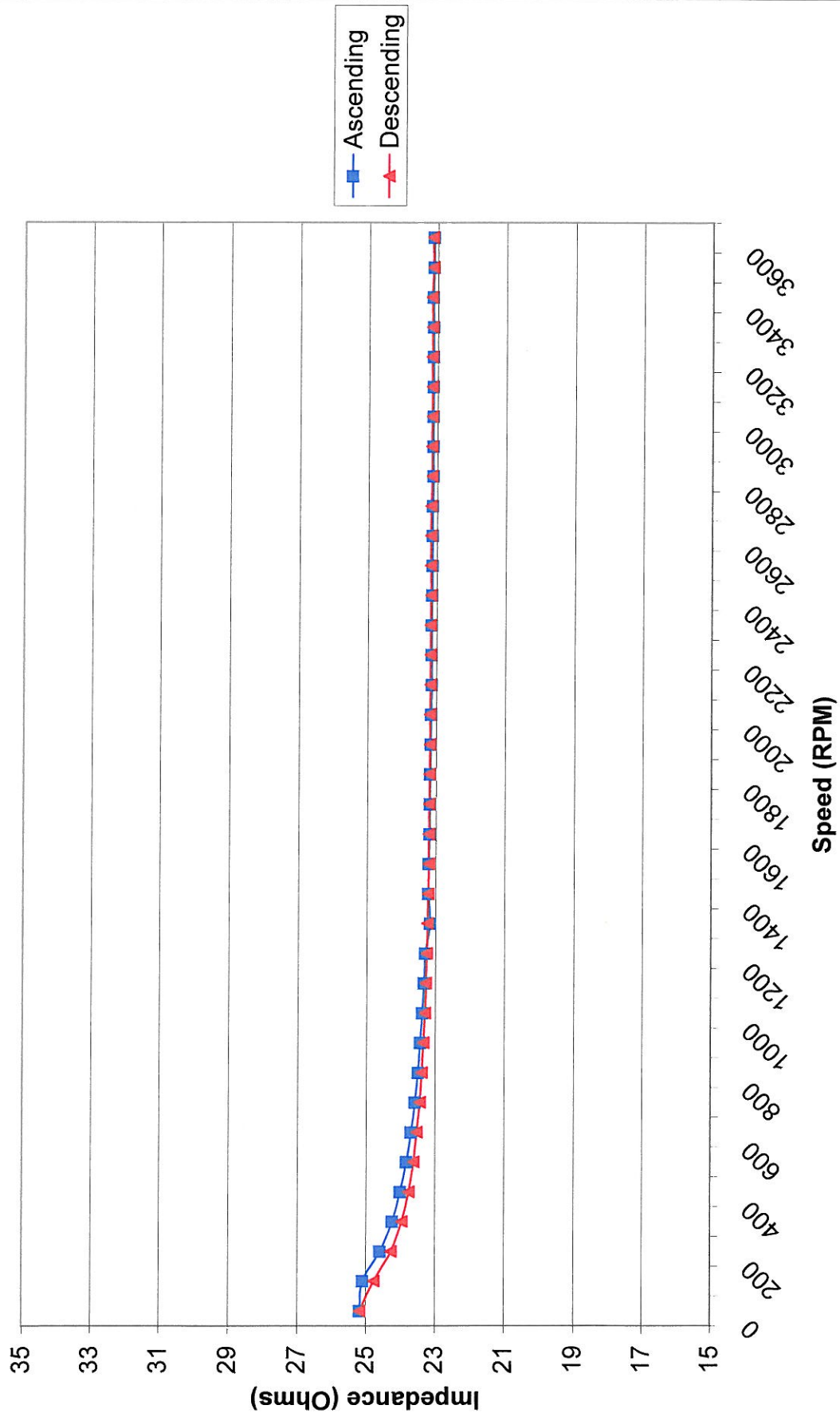
RPM	MegOhms	RPM	MegOhms
0	3800/ 3500	2100	2380/ 1830
300	3180/ 2920	2400	2320/ 1760
600	2800/ 2560	2700	2220/ 1680
900	2640/ 2400	3000	2020/ 1640
1200	2540/ 2240	3300	1910/ 1650
1500	2540/ 2100	3600	1750/ 1700
1800	2480/ 1950	(Ascending/Descending)	

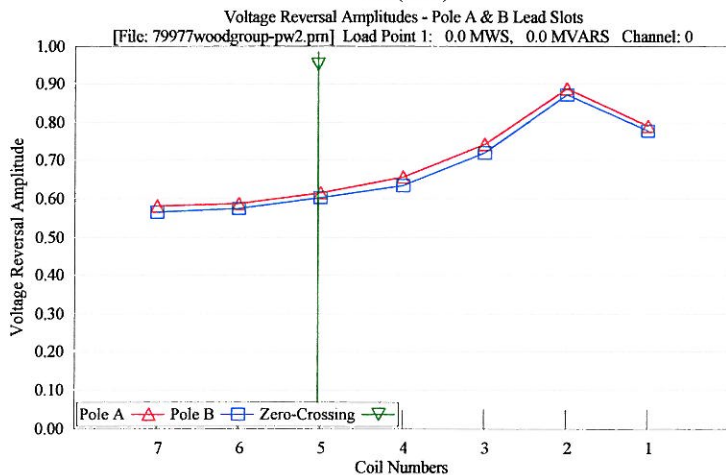
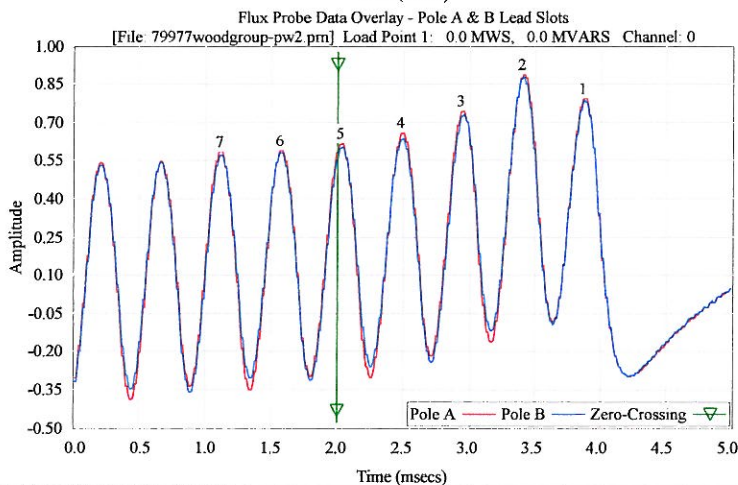
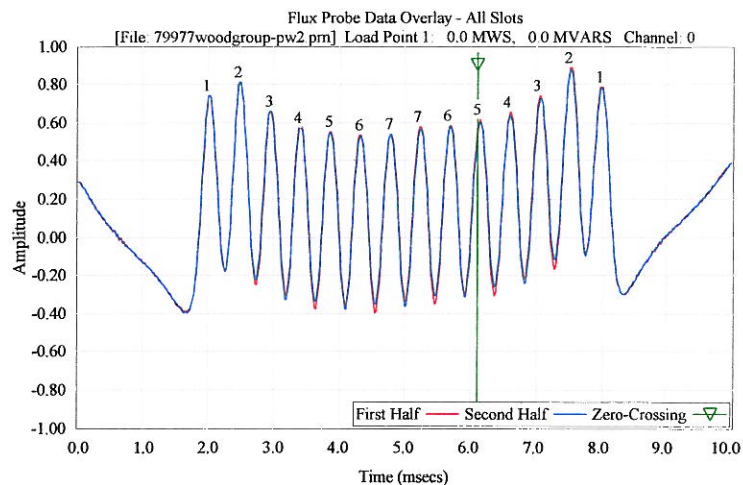
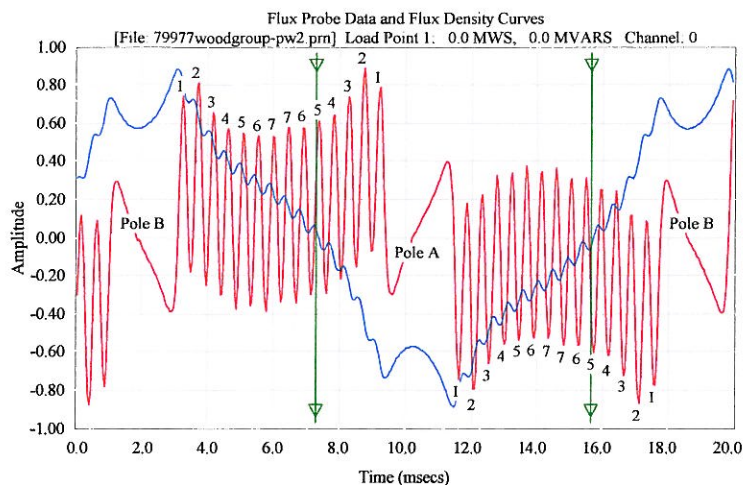
Final Running Impedance Rest

RPM	Impedance (Ohms)	RPM	Impedance (Ohms)	RPM	Impedance (Ohms)
0	25.177	1300	23.158	2600	23.126
100	25.087	1400	23.211	2700	23.125
200	24.585	1500	23.203	2800	23.111
300	24.230	1600	23.182	2900	23.119
400	24.003	1700	23.175	3000	23.119
500	23.823	1800	23.169	3100	23.117
600	23.688	1900	23.154	3200	23.117
700	23.577	2000	23.151	3300	23.123
800	23.493	2100	23.136	3400	23.134
900	23.428	2200	23.139	3500	23.112
1000	23.375	2300	23.139	3600	23.115
1100	23.324	2400	23.132		
1200	23.288	2500	23.128		

Running Impedance

Wood Group 79977-
2181 12/23/09





Generatortech Shorted-Turn Data Table

File: 79977woodgroup-pw2.prm Date: December 23, 2009 5:40:11 pm

Path: C:\Documents and Settings\Balance\My Documents\79977woodgroup-pw2.prm

Company: Wood Group-2 Station: 79977

Comments:

Number of poles= 2 Coils/pole= 7 Max Load MWS= 0.0

Turns/Coil: 1=17, 2=22, 3=22, 4=22, 5=22, 6=22, 7=22,

Load Point= 1 MWS= 0.0 MVARs= 0.0 Field Amps= 0.0 Field Volts= 0.0

Flux Density Zero-Crossing= 5.0, Filter=none, Rotor RPM=3600.0 Peak Height=Modified

Coil	Pole A Peak Size	Pole B Peak Size	Ratio of Sizes A/B	Ratio of Sizes B/A	Pole A Shorted Turn Indication	Pole B Shorted Turn Indication
1	0.799	0.788	1.013	0.987	---	---
2	0.899	0.885	1.016	0.984	---	---
3	0.750	0.729	1.029	0.972	---	---
4	0.665	0.643	1.034	0.967	---	---
5	0.622	0.609	1.022	0.979	---	---
6	0.594	0.582	1.020	0.980	---	---
7	0.588	0.573	1.026	0.975	---	---

Generatortech, Inc. Shorted-Turn Detection System

Analysis System V3.1

Copyright 2002, Generatortech, Inc. All rights reserved

Generatortech, Inc.

31 Sutherland Drive

Scotia, NY 12302

518-399-4646 (voice & fax)

Email: support@generatortech.com

Web Page: www.generatortech.com

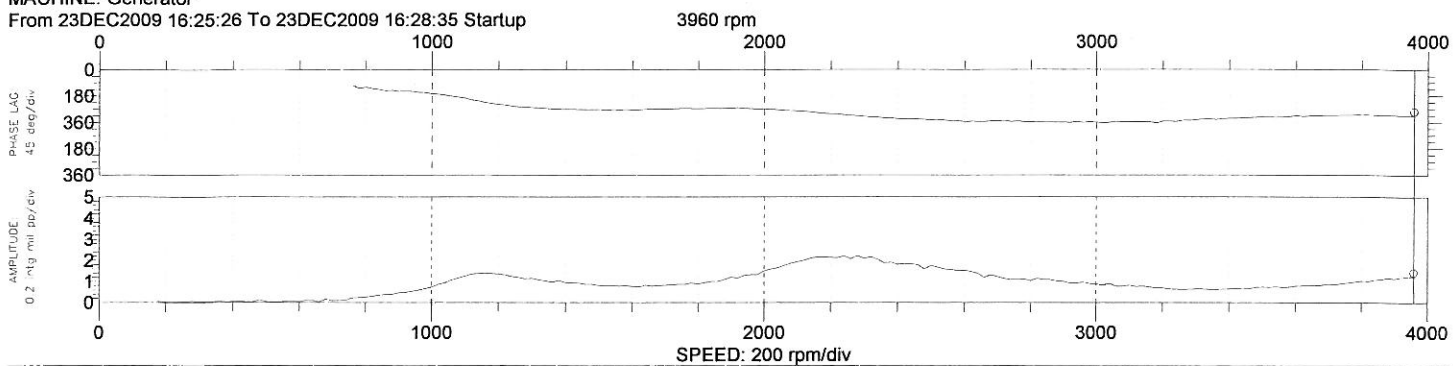
Modified Peak Calculations

BODE PLOT
COMPANY: Wood Group Station
MACHINE TRAIN: TURBO ROTOR

PLOT NO. _____
PLANT: N.E.C.
JOB REFERENCE: 79977-2181

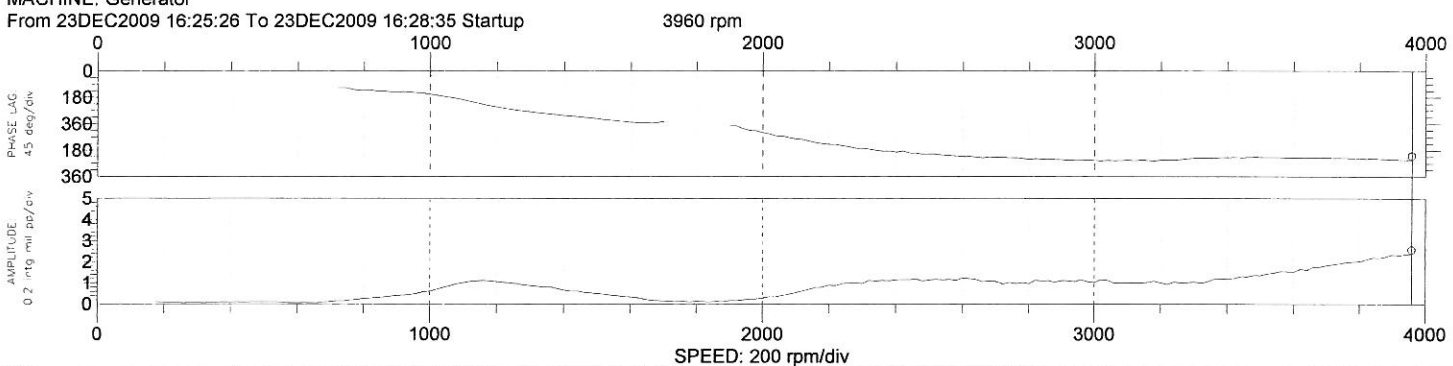
POINT: Near Horizontal $\angle 90^\circ$ Right 1X UNCOMP 1.23/316°
MACHINE: Generator

From 23DEC2009 16:25:26 To 23DEC2009 16:28:35 Startup



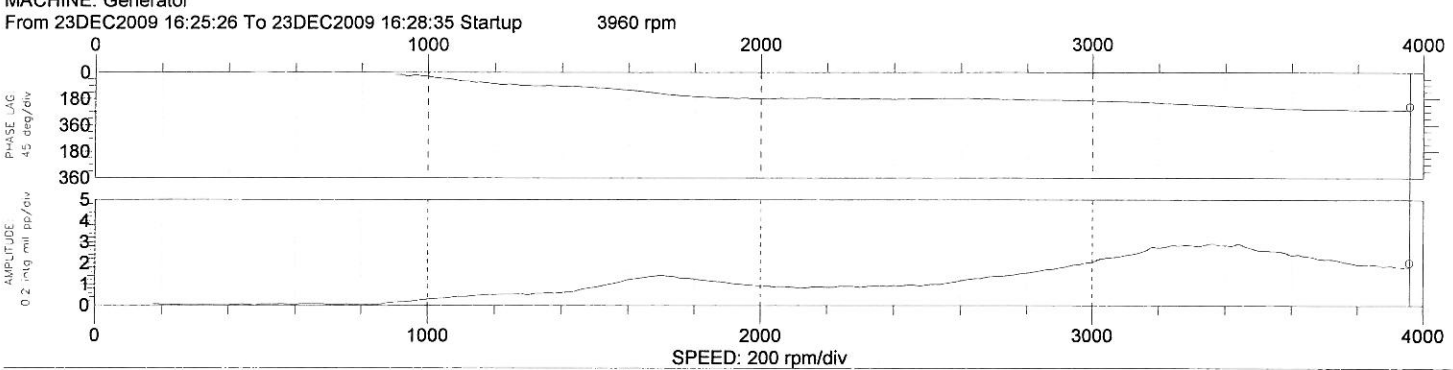
POINT: Far Horizontal $\angle 90^\circ$ Right 1X UNCOMP 2.38/245°
MACHINE: Generator

From 23DEC2009 16:25:26 To 23DEC2009 16:28:35 Startup



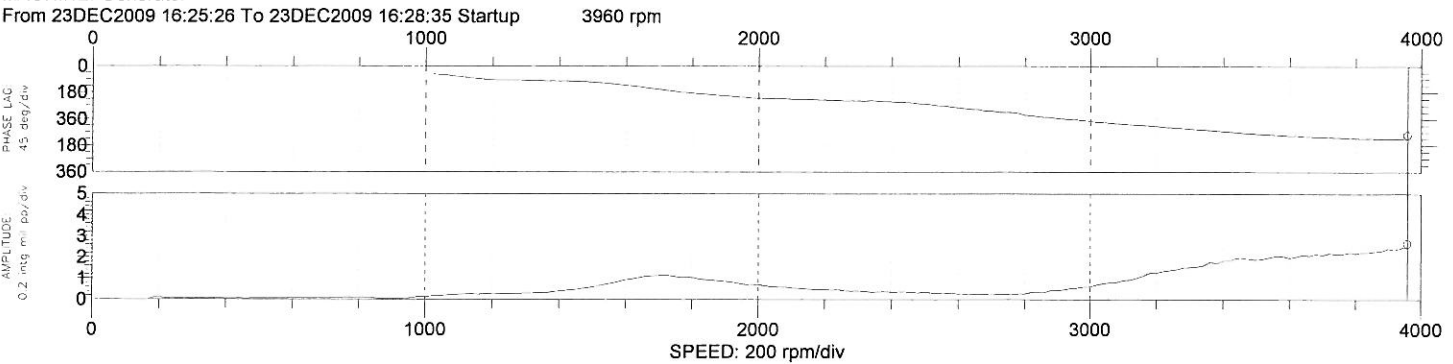
POINT: Near Vertical $\angle 0^\circ$ 1X UNCOMP 1.82/260°
MACHINE: Generator

From 23DEC2009 16:25:26 To 23DEC2009 16:28:35 Startup



POINT: Far Vertical $\angle 0^\circ$ 1X UNCOMP 2.46/137°
MACHINE: Generator

From 23DEC2009 16:25:26 To 23DEC2009 16:28:35 Startup



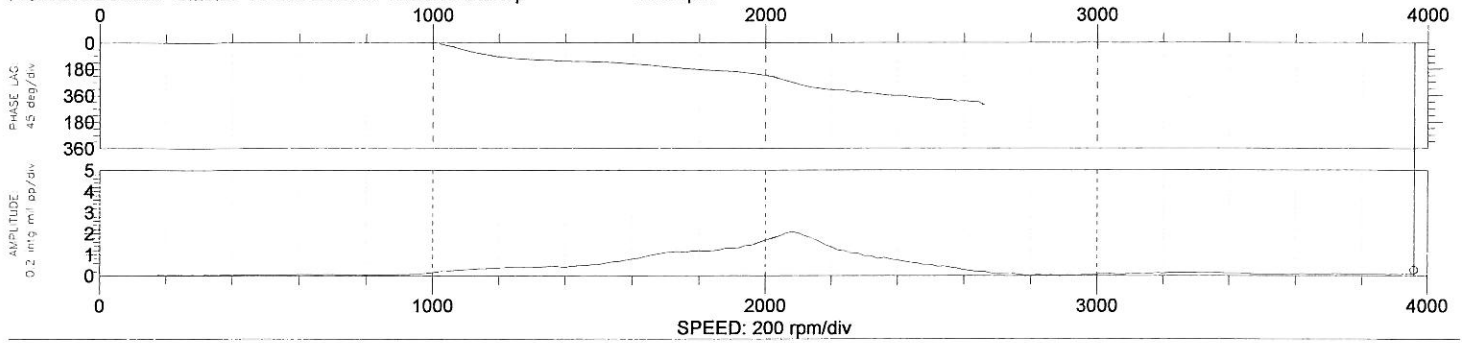
COMMENTS

10% Over Speed. Held For 1 Minute.

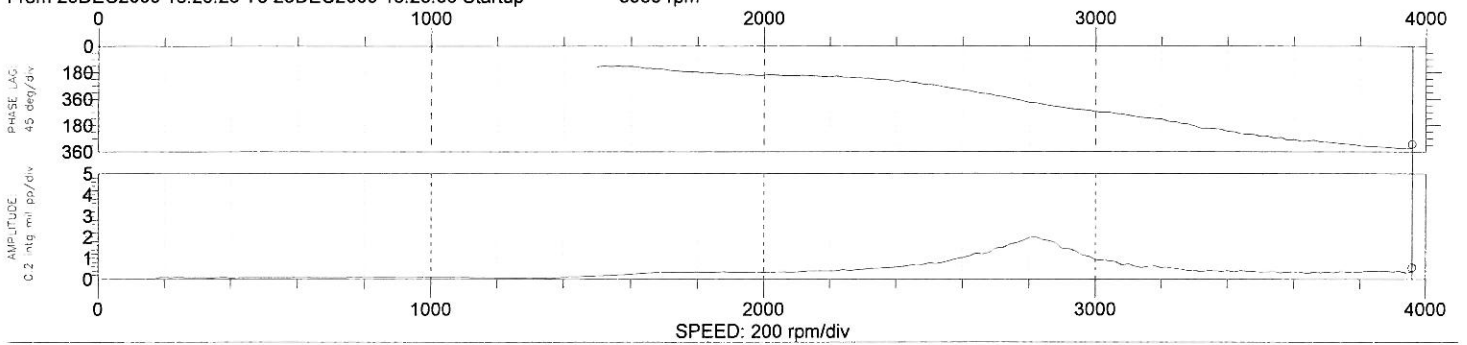
BODE PLOT
COMPANY: Wood Group Station
MACHINE TRAIN: TURBO ROTOR

PLOT NO. _____
PLANT: N.E.C.
JOB REFERENCE: 79977-2181

POINT: Near Axial $\angle 90^\circ$ Right 1X UNCOMP 0.093 $\angle NA^\circ$
MACHINE: Generator
From 23DEC2009 16:25:26 To 23DEC2009 16:28:35 Startup 3960 rpm



POINT: Far Axial $\angle 90^\circ$ Right 1X UNCOMP 0.360 $\angle 336^\circ$
MACHINE: Generator
From 23DEC2009 16:25:26 To 23DEC2009 16:28:35 Startup 3960 rpm



COMMENTS

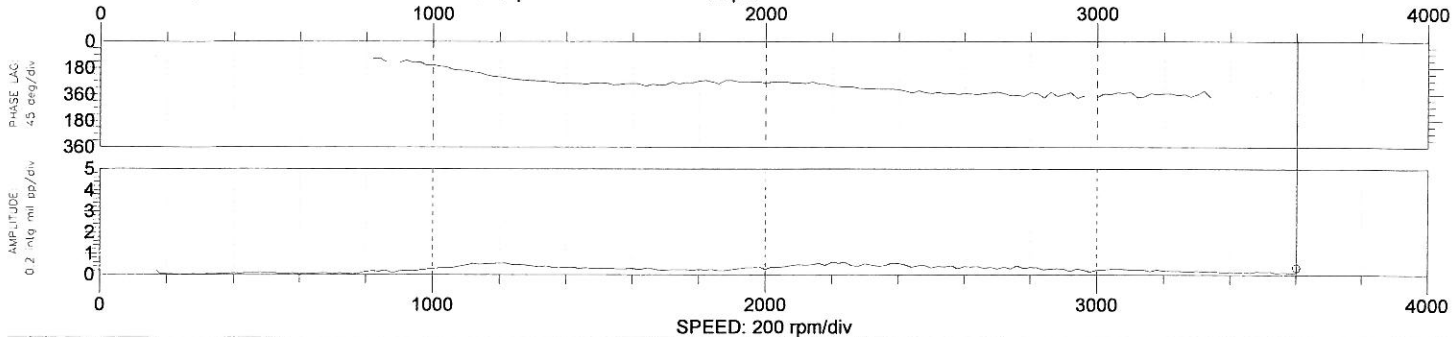
10% Over Speed. Held For 1 Minute.

BODE PLOT
COMPANY: Wood Group Station
MACHINE TRAIN: TURBO ROTOR

PLOT NO. _____
PLANT: N.E.C.
JOB REFERENCE: 79977-2181

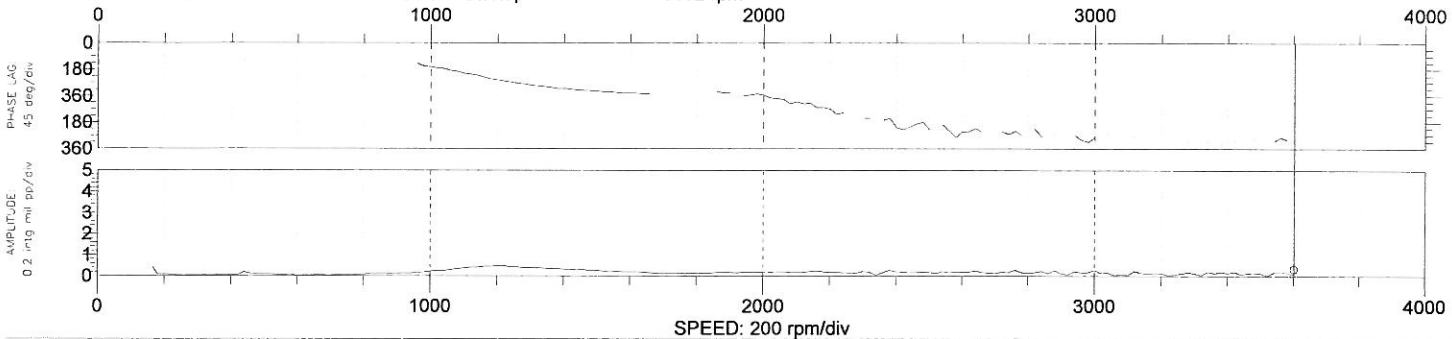
POINT: Near Horizontal $\angle 90^\circ$ Right 1X UNCOMP 0.134/NA $^\circ$
MACHINE: Generator

From 27DEC2009 17:23:53 To 27DEC2009 17:25:46 Startup



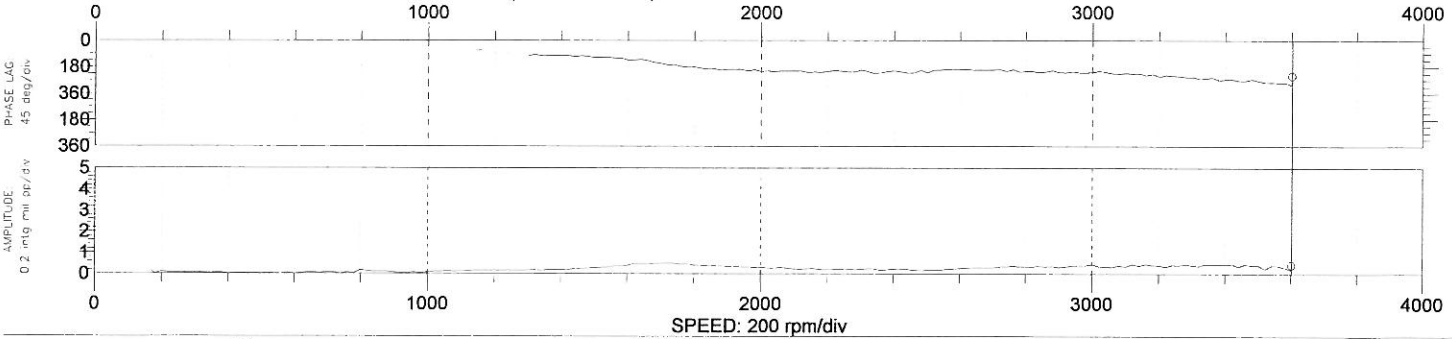
POINT: Far Horizontal $\angle 90^\circ$ Right 1X UNCOMP 0.134/NA $^\circ$
MACHINE: Generator

From 27DEC2009 17:23:53 To 27DEC2009 17:25:46 Startup



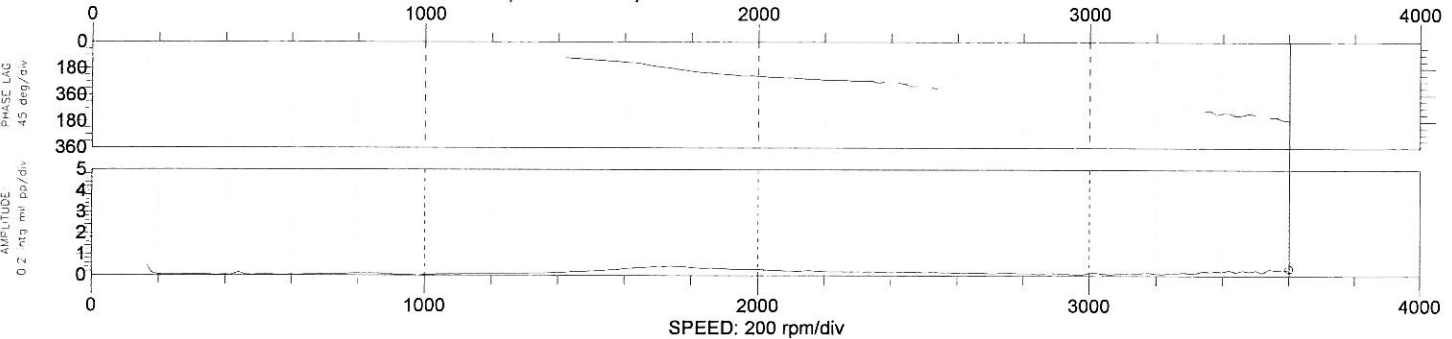
POINT: Near Vertical $\angle 0^\circ$ 1X UNCOMP 0.226/270 $^\circ$
MACHINE: Generator

From 27DEC2009 17:23:53 To 27DEC2009 17:25:46 Startup



POINT: Far Vertical $\angle 0^\circ$ 1X UNCOMP 0.144/NA $^\circ$
MACHINE: Generator

From 27DEC2009 17:23:53 To 27DEC2009 17:25:46 Startup



COMMENTS

Repeat Final Balance With Exciter/Diode Wheel Assembly.

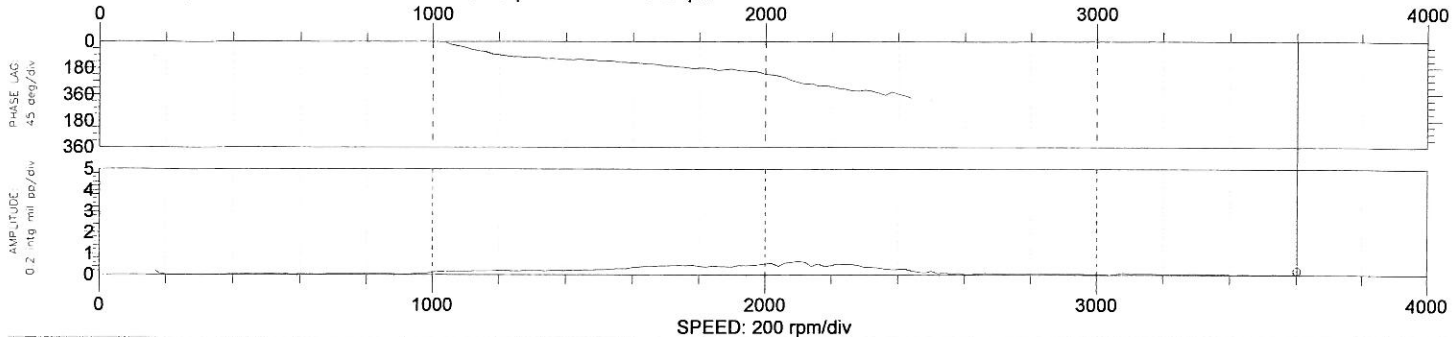
BODE PLOT
COMPANY: Wood Group Station
MACHINE TRAIN: TURBO ROTOR

PLOT NO. _____
PLANT: N.E.C.
JOB REFERENCE: 79977-2181

POINT: Near Axial $\angle 90^\circ$ Right 1X UNCOMP
MACHINE: Generator
From 27DEC2009 17:23:53 To 27DEC2009 17:25:46 Startup

0/NA⁰

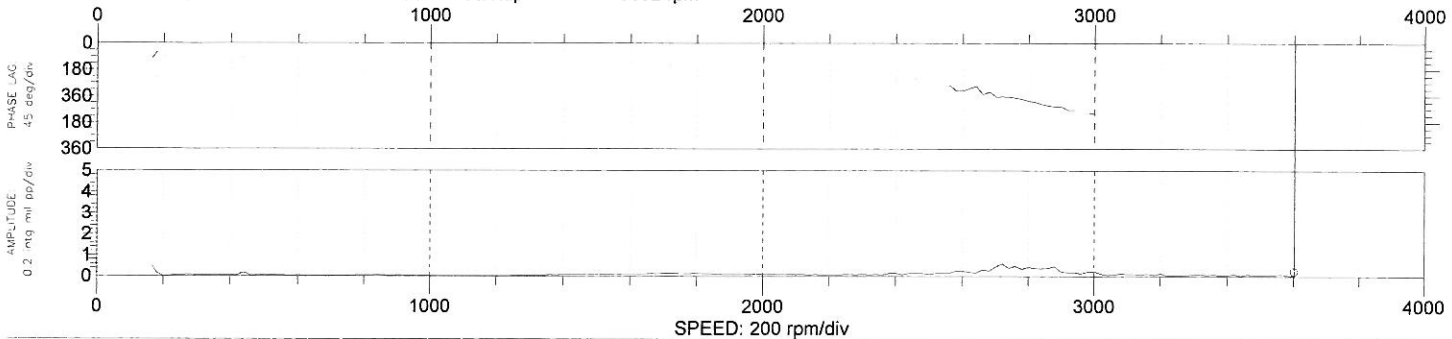
3602 rpm



POINT: Far Axial $\angle 90^\circ$ Right 1X UNCOMP
MACHINE: Generator
From 27DEC2009 17:23:53 To 27DEC2009 17:25:46 Startup

0.041/NA⁰

3602 rpm



COMMENTS

Repeat Final Balance With Exciter/Diode Wheel Assembly.