

Title: **Vibration Data Report  
Gas Compressor**

Client:

Site:

**Latest Compressor Vibration Data 3<sup>rd</sup> June 2013**

To:

Prepared By: **S. Walker**  
Reliability Maintenance Solutions Limited

Date: **2/4/13**

Reference: 051210-SW

## **GAS COMPRESSOR B RB211-24G MEASUREMENT POINTS**

### **GAS GENERATOR**

- C1 GG Inlet End Accel (GG 955169 )
- H1 GG Inlet End Hi Fq (GG 955169 )
- 1P GG Inlet End PkVue (GG 955169 )
- C2 GG Center Accel (GG 955168 )
- H2 GG Center Hi Fq (GG 955168 )
- 2P GG Center PkVue (GG 955168 )
- C3 GG Exhaust Accel (GG 955179 )
- H3 GG Exhaust Hi Fq (GG 955179 )
- 3P GG Exhaust PkVue (GG 955179 )

### **POWER TURBINE**

- C4 Power T DE X Axis (VT955407 )
- C5 Power T DE Y Axis (VT955408 )
- C6 Power T NDE X Axis (VT955411 )
- C7 Power T NDE Y Axis (VT955412 )
- C8 Power Turb Thrust (VT955403 )

### **GEARBOX**

- C9 Gbx LS DE X Axis (VT956210 )
- C10 Gbx LS DE Y Axis (VT956211 )
- C11 Gbx LS NDE X Axis (VT956215 )
- C12 Gbx LS NDE Y Axis (VT956216 )
- C13 Gbx LS Thrust (VT956208-1 )
- C14 Gbx HS DE X Axis (VT956202 )
- C15 Gbx HS DE Y Axis (VT956203 )
- C16 Gbx HS NDE X Axis (VT956206 )
- C17 Gbx HS NDE Y Axis (VT956207 )

### **COMPRESSOR**

- C20 Comp DE X Axis (VT955903 )
- C21 Comp DE Y Axis (VT955904 )
- C22 Comp NDE X Axis (VT955905 )
- C23 Comp NDE Y Axis (VT955906 )
- C24 Comp Thrust (VT955902 )

Abbreviated Last Measurement Summary

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- GAS COMPRESSOR B RB211-24G (03-Jun-13)

	OVERALL LEVEL	WAVEFORM P-P
C1 - GG Inlet End Accel (GG 955169 B)	10.03 mm/Sec	19.12 G-s
H1 - GG Inlet End Hi Fq (GG 955169 B)	4.639 G-s	
1P - GG Inlet End PkVue (GG 955169 B)	2.609 G-s	
C2 - GG Center Accel (GG 955168 B)	16.83 mm/Sec	55.31 G-s
H2 - GG Center Hi Fq (GG 955168 B)	13.10 G-s	
2P - GG Center PkVue (GG 955168 B)	4.384 G-s	
C3 - GG Exhaust Accel (GG 955179 B)	5.221 mm/Sec	51.15 G-s
H3 - GG Exhaust Hi Fq (GG 955179 B)	13.90 G-s	
3P - GG Exhaust PkVue (GG 955179 B)	6.259 G-s	

	OVERALL LEVEL	DC GAP
C4 - Power T DE X Axis (VT955407 B)	20.53 Microns	-9.884 Volts
C5 - Power T DE Y Axis (VT955408 B)	18.71 Microns	-9.785 Volts
C6 - Power T NDE X Axis (VT955411 B)	20.02 Microns	-8.885 Volts
C7 - Power T NDE Y Axis (VT955412 B)	22.19 Microns	-7.305 Volts
C8 - Power Turb Thrust (VT955403 B)	129.7 Microns	-7.191 Volts
C9 - Gbx LS DE X Axis (VT956210 B)	10.84 Microns	-7.589 Volts
C10 - Gbx LS DE Y Axis (VT956211 B)	11.76 Microns	-9.210 Volts
C11 - Gbx LS NDE X Axis (VT956215 B)	7.212 Microns	-7.838 Volts
C12 - Gbx LS NDE Y Axis (VT956216 B)	8.818 Microns	-9.365 Volts
C13 - Gbx LS Thrust (VT956208-1 B)	29.82 Microns	-9.651 Volts
C14 - Gbx HS DE X Axis (VT956202 B)	12.85 Microns	-6.275 Volts
C15 - Gbx HS DE Y Axis (VT956203 B)	14.32 Microns	-9.102 Volts
C16 - Gbx HS NDE X Axis (VT956206 B)	10.83 Microns	-5.985 Volts
C17 - Gbx HS NDE Y Axis (VT956207 B)	9.810 Microns	-9.137 Volts

	OVERALL LEVEL	DC GAP
C20 - Comp DE X Axis (VT955903 B)	16.00 Microns	-7.784 Volts
C21 - Comp DE Y Axis (VT955904 B)	14.90 Microns	-8.285 Volts
C22 - Comp NDE X Axis (VT955905 B)	52.46 Microns	-8.930 Volts
C23 - Comp NDE Y Axis (VT955906 B)	63.24 Microns	-8.175 Volts
C24 - Comp Thrust (VT955902-1 B)	19.76 Microns	-8.451 Volts
PT1 - Power Turb Counter Brg Temp (417)	56.00 C	
PT2 - Power Turbine DE Brg Temp (405)	71.00 C	
PT3 - Power Turbine NDE Brg Temp (409)	68.00 C	
PT4 - Power Turb Thrust Brg Temp (415)	71.00 C	
GT1 - Gearbox LS DE Brg Temp (209)	76.00 C	
GT2 - Gearbox LS NDE Brg Temp (214)	77.00 C	
GT3 - Gbx LS Out Thrust Brg Temp (217)	59.00 C	
GT4 - Gbx LS Inb Thrust Brg Temp (212)	58.00 C	
GT5 - Gearbox HS DE Brg Temp (201)	86.00 C	
GT6 - Gearbox HS NDE Brg Temp (205)	81.00 C	
GT7 - Compressor DE Brg Temp (907)	84.00 C	
GT8 - Compressor NDE Brg Temp (909)	74.00 C	
GT9 - Compressor Thrust Brg Temp (908)	60.00 C	

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Clarification Of Vibration Units:

Acc --> G-s PK  
Vel --> mm/Sec RMS  
Dsp --> Microns P-P

### Compressor DE Bearing (9587 RPM)

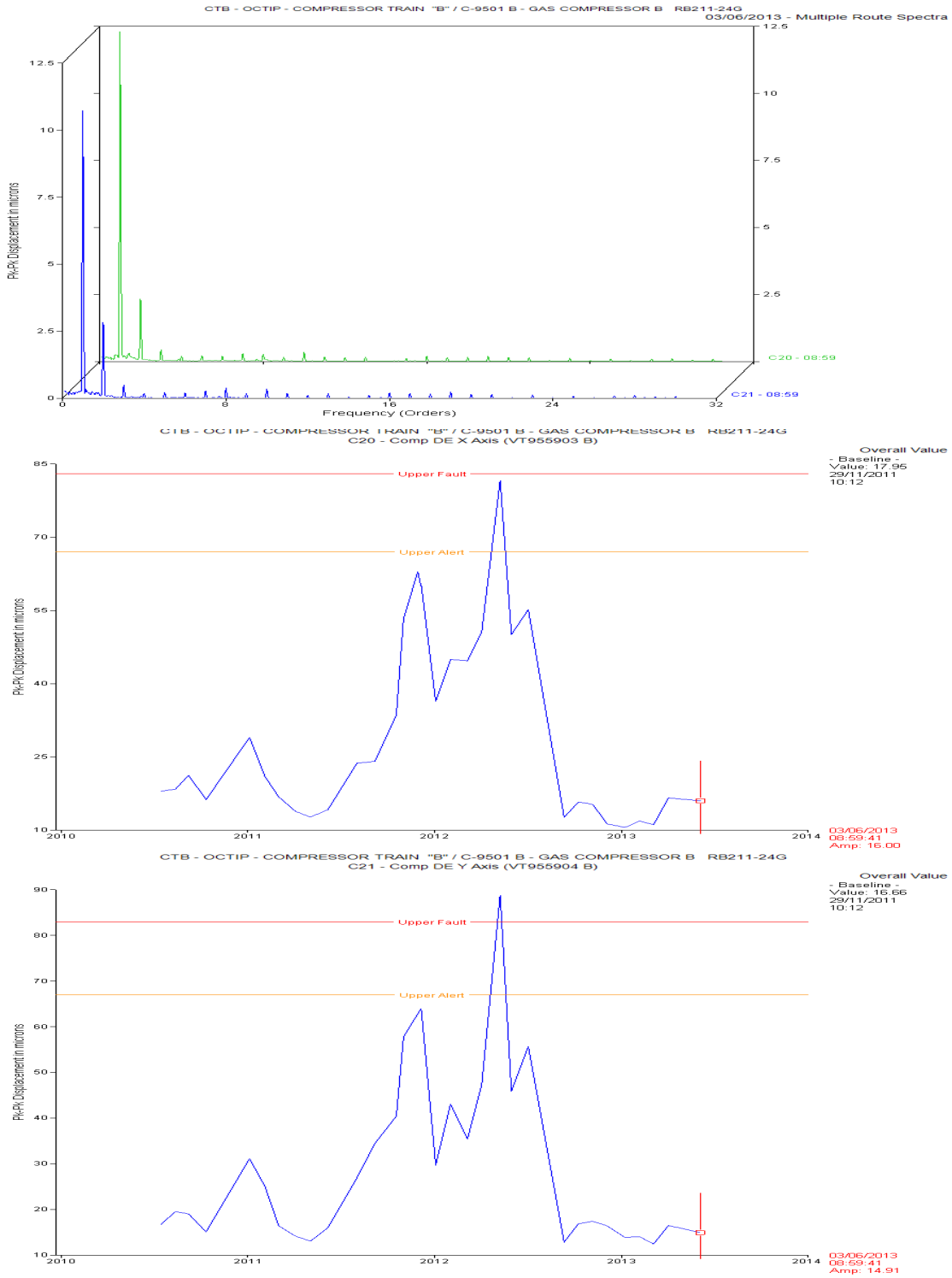


Fig 1 Overall levels at the Compressor DE bearing X & Y Frequency is 1XRPM of the compressor shaft. (DR Alarms applied to trends, Alarm & trip)

DTB COMP COMPRESSOR TRM1 B110202 B GAS COMPRESSOR B R0211240  
(020 Comp DE X/Acc (V7925203 B) 021 Comp DE Y/Acc (V7925204 B))

03/06/2015 08:50:41  
...nb=1.000  
...f=1.000  
...d=1.000  
V.D.C. = 1.000  
V.A. = 1.000  
V.S.L. = 1.000

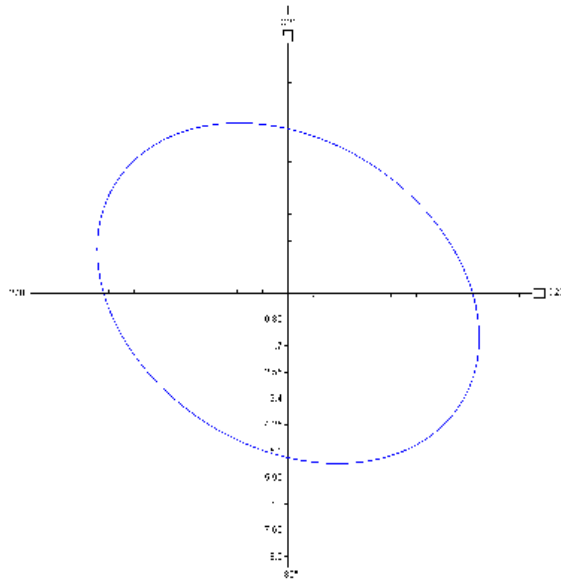


Fig 2 Shaft Orbit Compressor DE

Compressor NDE Bearing (9586 RPM)

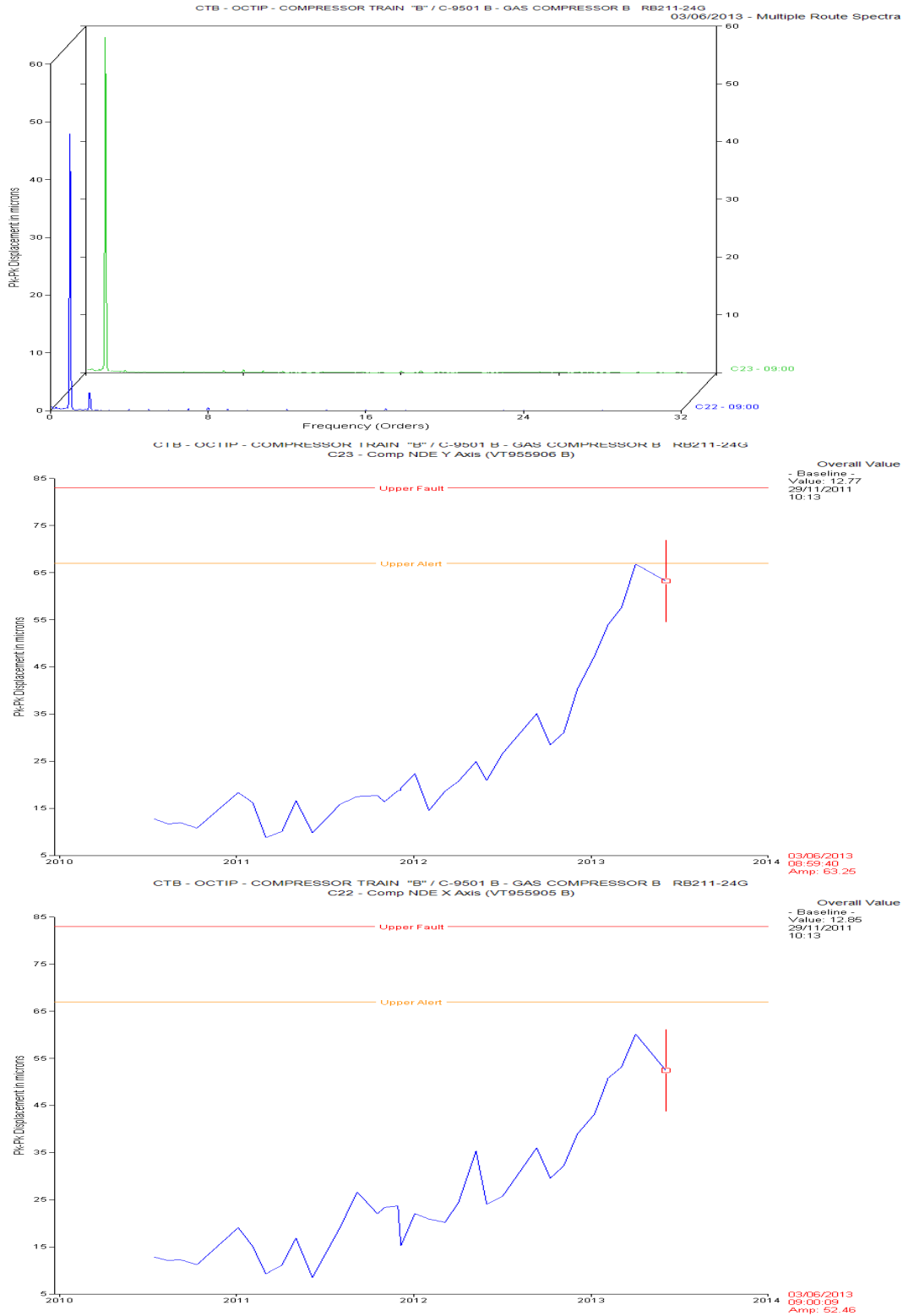


Fig 4 Overall levels at the Compressor NDE bearing. Frequency is 1XRPM of the compressor shaft. (DR Alarms applied to trends, Alarm & trip) **Note increasing trend of 1XRPM levels X Y on the NDE bearing, suspected salt build up on rotor.**

CTB - OCTIP - COMPRESSOR TRAIN 'B' / C-9501 B - GAS COMPRESSOR B RB211-24G  
(C22 - Comp NDE X Axis (VT955905 B), C23 - Comp NDE Y Axis (VT955906 B))

03/06/2013 09:00:09  
Units=microns  
Filter=1xBP  
X Diff = 49.69  
Y Diff = 59.89  
LOAD = 59621  
9581.6 Rpm

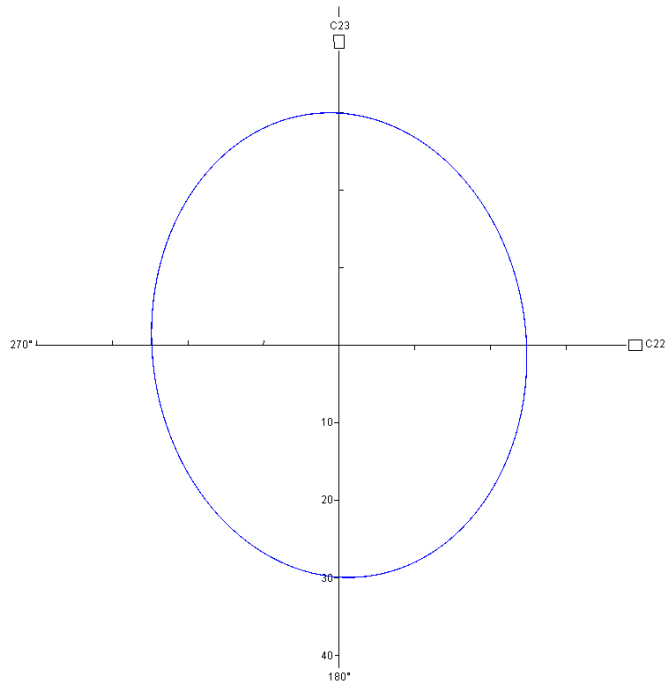


Fig 5 Shaft Orbit Compressor NDE

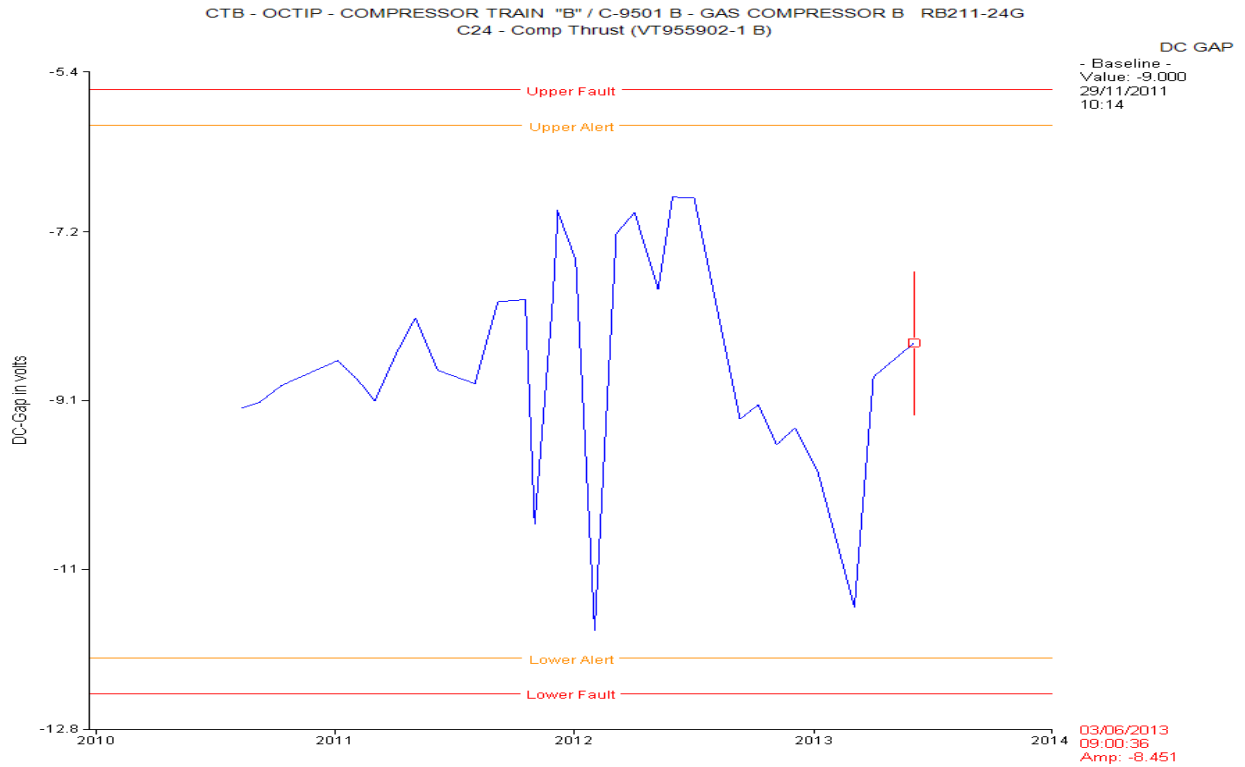


Fig 7 Trend of DC gap reading on thrust probe indicating shaft position.

### Peak & Phase Angle Data

C9501 B Compressor Peak & Phase Data @ 1xRPM		10th Sept 2012	9th Oct 2012	6th Nov 2012	3rd Dec 2012	7th Jan 2013	4th Feb 2013	4th Mar 2013	3rd April 2013	3rd June 2013
Compressor DE X Axis	Peak Microns	9	11.5	11.8	7.1	6.5	7.2	6.39	12.65	<b>12.83</b>
	Phase Angle Deg	317	188	185	182	137	129	126	114	<b>120</b>
Compressor DE Y Axis	Peak Microns	8.1	12.93	14.1	12.54	11	9.9	8.8	11.62	<b>11.07</b>
	Phase Angle Deg	48	280	270	267	251	254	249	225	<b>131</b>
Compressor NDE X Axis	Peak Microns	33	27.25	29.94	36.3	39.64	47.95	49.71	57.35	<b>49.75</b>
	Phase Angle Deg	244	238	235	245	248	252	255	257	<b>255</b>
Compressor NDE Y Axis	Peak Microns	31	24.6	27.59	37	43.55	50.46	53.13	62.73	<b>59.14</b>
	Phase Angle Deg	144	137	129	127	137	145	148	157	<b>162</b>

Fig 8 Phase data from X Y probes & 1XRPM Peak Vib, note increasing 1XRPM on NDE bearing, suspect salt build up on rotor.



CTB - OCTIP - COMPRESSOR TRAIN "B" / C-9501 B - GAS COMPRESSOR B RB211-24G  
C23 - Comp NDE Y Axis (VT955906 B)

