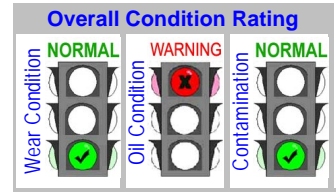


C U S T O M E R  
Code : **16009**  
Name : **ABC Company Limited**  
Address : Plant : Eastern Industrial Estate  
No 10 Soi G2, Pakomsongkrawhrat Rd.  
Huaypong, Muang, Rayong 21150  
Site :  
Location : Mid Inter Tank  
Test code : 814

E Q U I P M E N T  
Unit ID : **11 21 28MAB10HA005 INTER TANK MID**  
Unit Type : Engine Turbine Steam  
Unit Make : ALSTOM  
Unit Model : GT8C  
Oil type / Viscosity : CALTEX REGAL EP 46  
Oil System Capacity :



**Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)**

FTIR scan AND Ruler (Voltammetry) shows phenolic-type anti-oxidant additive to be depleted.  
Recommend close monitoring of this unit.

AS / Andy Sitton

			Current Sample			Previous Sample			Baseline and Alarm Limit											
Condition History			Wear	Oil	Cont.	Wear	Oil	Cont.	Wear	Oil	Cont.	Alarm Limit								
			N	W	N	N	W	N	N	W	▲	B A S E L I N E	Alarm Limit Matrix -Set Name (Equipment type / oil type)							
													Engine Turbine Steam Alstom Regal EP46 (Glow SPP1)							
Lab ID	Test Method	Result																		
Bottle ID			144574			142563			140132											
Date Sampled			919281			919258			917473											
Oil Hours (Kms)			20-Sep-10			24-Aug-10			20-Jul-10											
Unit Hours (Kms)			59393			58959			57879											
Oil Added (Liters)			96462			96028			94948											
Filters Hours (Kms)																				
Wear Condition			RDE fine		RFS coarse		RDE fine		RFS coarse		RDE fine		RFS coarse							
Wear Element	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	Reference Oil	U-Caution	U-Warning	U-Caution	U-Warning					
Iron	D-6595	PPM	0.0	0.0	0.0	0.5	0.0	1.8	0	>2	>5	>3	>5							
Chromium	D-6595	PPM	0.0	0.0	0.0	0.5	0.1	0.0	0	>1	>2	>1	>2							
Lead	D-6595	PPM	0.0	0.4	0.0	1.0	0.0	2.0	0	>1	>2	>5	>9							
Copper	D-6595	PPM	0.0	0.0	0.1	0.1	0.0	0.1	0	>1	>2	>1	>2							
Tin	D-6595	PPM	0.8	0.6	0.2	1.1	0.5	1.3	0	>2	>4	>3	>5							
Aluminum	D-6595	PPM	0.1	0.4	0.0	0.6	0.2	0.9	0	>1	>2	>2	>4							
Nickel	D-6595	PPM	0.0	0.0	0.0	0.6	0.0	0.0	0	>1	>2	>1	>2							
Silver	D-6595	PPM	0.4	0.0	0.3	0.0	0.0	0.0	0											
Molybdenum	D-6595	PPM	0.0	0.0	0.0	0.6	0.0	0.0	0											
Titanium	D-6595	PPM	0.0	0.0	0.0	0.0	0.0	0.0	0											
Oil Condition			RDE fine		RFS coarse		RDE fine		RFS coarse											
Viscosity @ 40°C	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RO	U-Caution	U-Warning	U-Caution	U-Warning							
45.6	D-445	cSt	45.6		45.7		46.0		45.2	<40.7	<42.9	>47.5	>49.7							
Viscosity @ 100°C	D-445	cSt																		
Oxidation	FTIR	Abs	11.1		11.0		11.1		8.0		>12	>16								
Nitration	FTIR	Abs	9.2		9.2		9.2		7.1		>10.7	>14.2								
TAN	D-974	mg KOH/g	0.10		0.11		0.12		0.12		>0.22	>0.32								
TBN	D-4739	mg KOH/g																		
Contamination			RDE fine		RFS coarse		RDE fine		RFS coarse											
Water	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RO	U-Caution	U-Warning	U-Caution	U-Warning							
0.011	T-H2O CheckTM	%(Wt.)	0.011		0.008		0.054	W	0.020		>0.03	>0.05								
Sodium	D-6595	PPM	0		0		0		0											
Silicon	D-6595	PPM	0.0	1.5	0.0	2.1	0.1	0.0	0	>3	>5	>5	>9							
Additive Element			RDE fine		RFS coarse		RDE fine		RFS coarse											
Boron	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RO	U-Caution	U-Warning	U-Caution	U-Warning							
0	D-6595	PPM	0		0		0		0											
Magnesium	D-6595	PPM	0		0		0		0											
Calcium	D-6595	PPM	0		0		1		0											
Barium	D-6595	PPM	0		0		0		0											
Phosphorus	D-6595	PPM	0		0		2		5											
Zinc	D-6595	PPM	1	1	0	1	1	2	1											
Additional Test			RDE fine		RFS coarse		RDE fine		RFS coarse											
Flash Point	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RO	U-Caution	U-Warning	U-Caution	U-Warning							
	D-3828	°C																		
Viscosity Index	D-2270																			

Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.  
 No Sign or **N** : NORMAL , **C** or **▲** : CAUTION (first level warning limit) , **W** or **W** : Warning (second level warning limit)  
 U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level First Level Alarm Alert Limit in Upper Level and/or Lower Level  
 U-Warning : Upper WARNING Level L-Warning : Lower WARNING required Level Second Level Alarm Alert Limit in Upper Level and/or Lower Level  
 Baseline will be data of either "The new oil" or "Reference oil" or "Oil specification". TNO = The new oil , RO = Reference oil , OS = Oil Specification  
 Accuracy of interpretation and recommendation are based on representatives sample and information supplied. No warranty is expressed or implied for this report.

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 Site :  
 Location : Mid Inter Tank  
 Test code : 814

Unit ID : **11 21 28MAB10HA005 INTER TANK MID**  
 E Unit Type : Engine Turbine Steam  
 O Unit Make : ALSTOM  
 I Unit Model : GT8C  
 P  
 M Oil type / Viscosity : CALTEX REGAL EP 46  
 E  
 N  
 T  
 L Oil System Capacity :

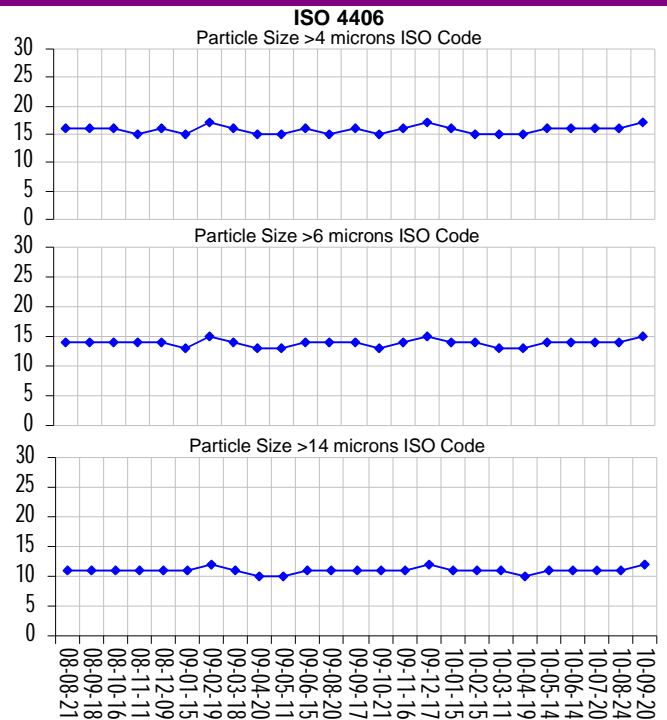
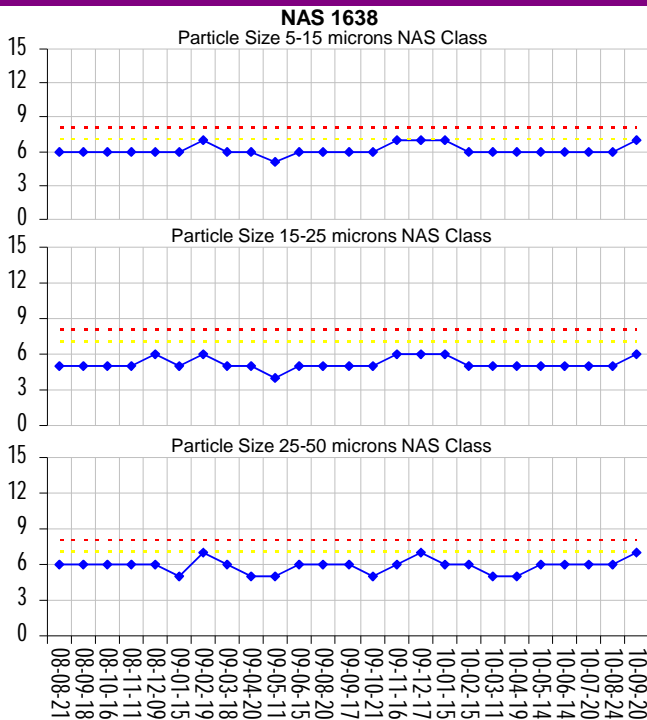
**Overall Condition Rating**

Wear Condition	<b>NORMAL</b>	Oil Condition	<b>WARNING</b>	Contamination	<b>NORMAL</b>

**Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)**

Particle count indicates oil cleanliness level is clean.

Lab ID	Current Sample		Previous Sample			Particle Count		NAS 1638		ISO 4406	
	Bottle ID	Date Sampled	144574	142563	140132	BASELINE	Alarm Limit				
<b>Date Sampled</b>	919281	20-Sep-10	919258	24-Aug-10	917473		Engine Turbine Steam Alstom				
<b>Oil Hours (Kms)</b>	59393	20-Sep-10	58959	24-Aug-10	57879		Regal EP46 (Glow SPP1)				
<b>Unit Hours (Kms)</b>	96462	20-Sep-10	96028	24-Aug-10	94948						
<b>Oil Added (Liters)</b>											
<b>Filters Hours (Kms)</b>											
<b>Contamination</b>											
<b>Particle Count NAS 1638 System Standard</b>											
Particle Size Range	No. of Particles / 100ml.	Class	No. of Particles / 100ml.	Class	No. of Particles / 100ml.	Class	Class	No. of Particles / 100ml.	Class	No. of Particles / 100ml.	Class
Particle Size 5-15 microns	29,200	7	11,200	6	13,800	6		>16000	7	>32000	8
Particle Size 15-25 microns	2,600	6	1,000	5	1,300	5		>2850	7	>5700	8
Particle Size 25-50 microns	800	7	300	6	300	6		>506	7	>1012	8
Particle Size 50-100 microns	<100	6	<100	5	<100	5					
Particle Size >100 microns	<100	5	<100	2	<100	3					
<b>Particle Count ISO 4406:1999 System Standard</b>											
Particle Size Range	No. of Particles / ml.	Class	No. of Particles / ml.	Class	No. of Particles / ml.	Class	Class	No. of Particles / ml.	Class	No. of Particles / ml.	Class
Particle Size > 4 microns	875	17	336	16	413	16		>1000		>1500	
Particle Size > 6 microns	245	15	94	14	116	14					
Particle Size > 14 microns	33	12	13	11	16	11					
ISO 4406 Class Rating	17/15/12		16/14/11		16/14/11						



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E Q U I P M E N T  
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Unit Type : Engine Turbine Steam  
Unit Make : ALSTOM  
Unit Model : GT8C  
Oil type / Viscosity : CALTEX REGAL EP 46  
Oil System Capacity :

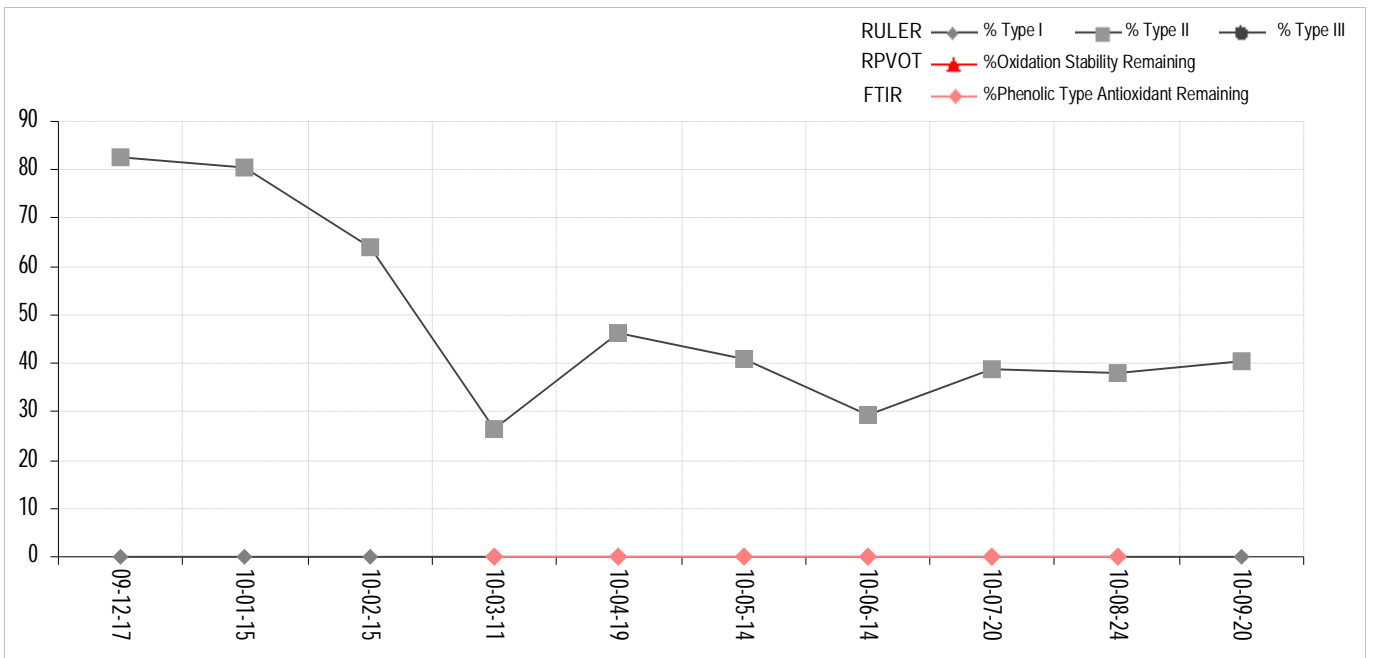
**Overall Condition Rating**

Wear Condition	<b>NORMAL</b>	Oil Condition	<b>WARNING</b>	Contamination	<b>NORMAL</b>

**Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)**

Ruler (Voltammetry) shows phenolic-type anti-oxidant additive to be depleted.

Lab ID	Bottle ID	Date Sampled	Oil Hours (Kms)	Unit Hours (Kms)	Oil Added (Liters)	Filters Hours (Kms)	Test Method	Result	Current Sample			Previous Sample			RULER <sup>TM</sup> RPVOT (RBOT) FTIR			
									144574	919281	20-Sep-10	59393	96462	142563	919258	24-Aug-10	58959	96028
<b>Oil Condition</b>																		
<b>RULER<sup>TM</sup>(Remaining Useful Life Evaluation Routine)</b>															Reference Oil	U-Caution	U-Warning	
% Type I Antioxidant Remaining							D-6971-04	%	n/p		n/p		n/p			100	>50	>25
% Type II Antioxidant Remaining							D-6810-02	%	40.6	W	38.0	C	38.9	C	100	>50	>25	
% Type III Antioxidant Remaining								%	0	W	0	W	0	W	100	>50	>25	
RULER Test Solution								Color	G & Y		G & Y							
<b>RPVOT (Rotating Pressure Vessel Oxidation Test) or previously known as RBOT</b>																U-Caution	U-Warning	
Oxidation Stability							D-2272	Minutes							916			
%Oxidation Stability Remaining								%							100	>50	>25	
<b>FTIR (Fourier Transform Infrared)</b>																U-Caution	U-Warning	
%Phenolic Type Antioxidant Remaining							D-2668	%			0	W	0	W	100	>50	>25	



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Unit ID : **11 21 28MAB10HA005 INTER TANK MID**  
 Unit Type : Engine Turbine Steam  
 Unit Make : ALSTOM  
 Unit Model : GT8C  
 Oil type / Viscosity : CALTEX REGAL EP 46  
 Oil System Capacity :

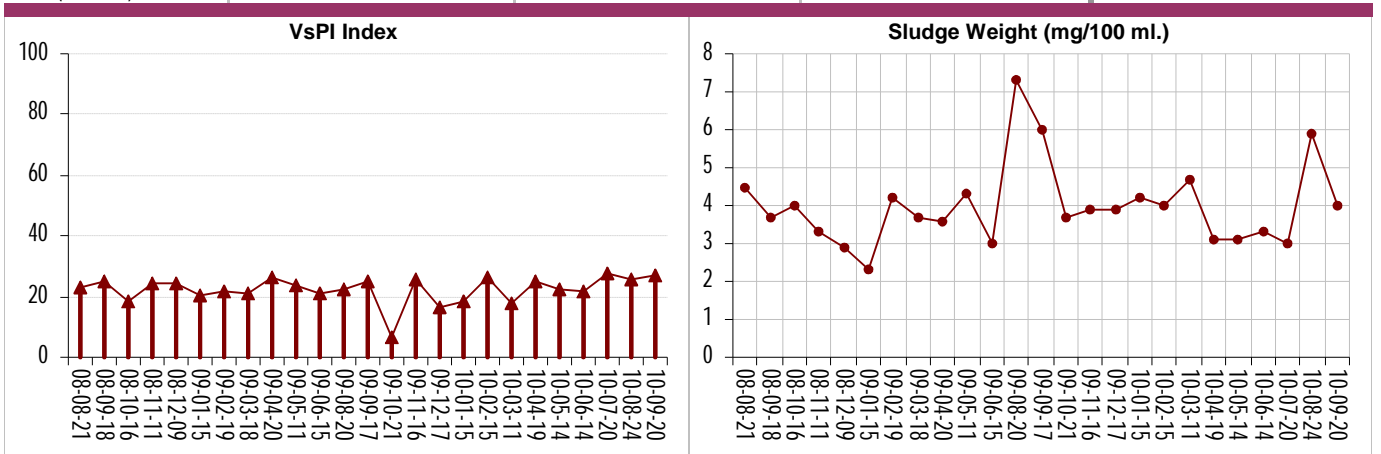
**Overall Condition Rating**

Wear Condition	<b>NORMAL</b>	Oil Condition	<b>WARNING</b>	Contamination	<b>NORMAL</b>

**Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)**

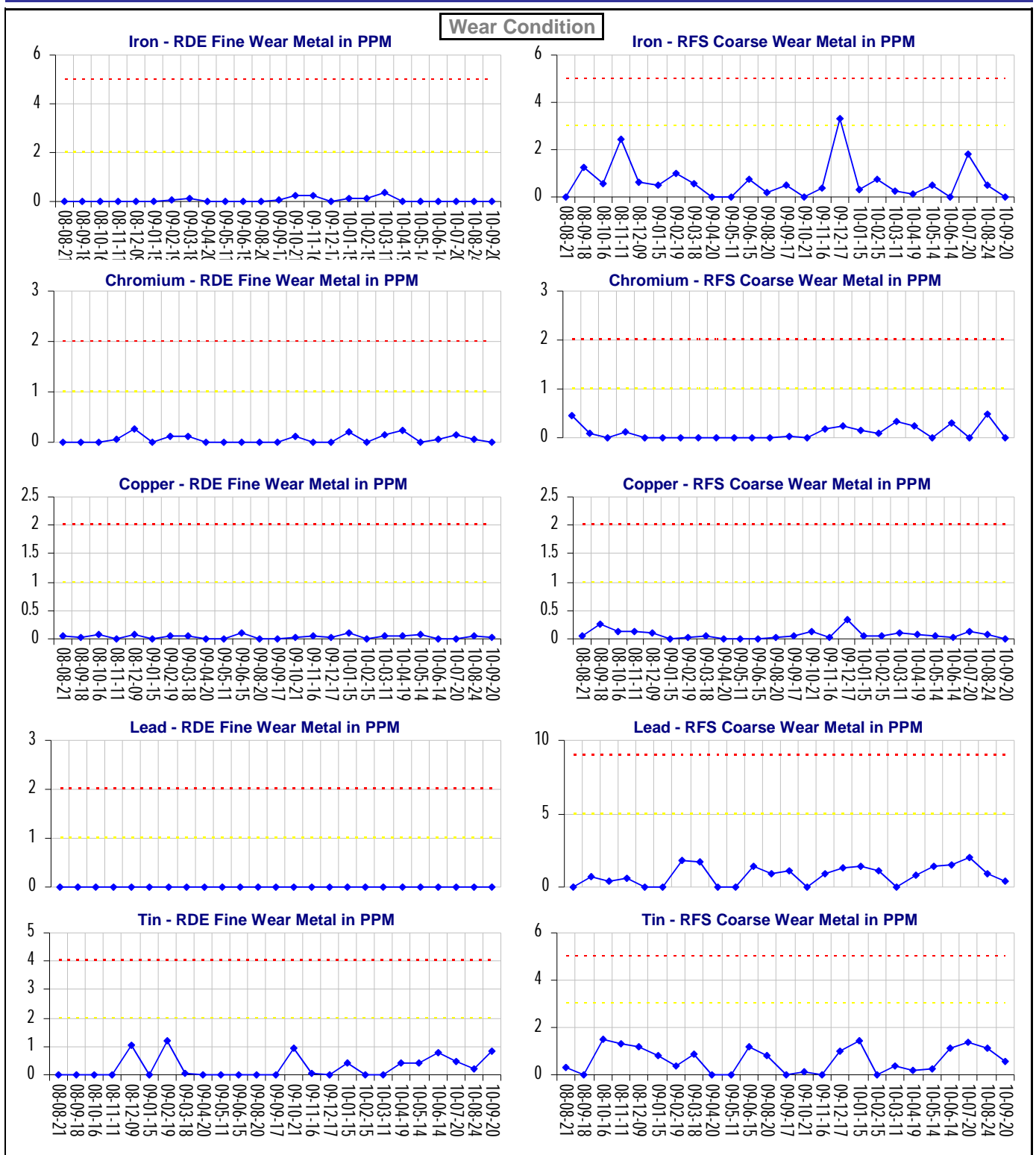
Varnish & Sludge Potential Index (VsPI) indicates some varnish & sludge products are present in the oil, but the level is ACCEPTABLE at this time.

	Current Sample	Previous Sample		
<b>Lab ID</b>	144574	142563	140132	
<b>Bottle ID</b>	919281	919258	917473	
<b>Date Sampled</b>	20-Sep-10	24-Aug-10	20-Jul-10	
<b>Oil Hours (Kms)</b>	59393	58959	57879	
<b>Unit Hours (Kms)</b>	96462	96028	94948	
<b>Oil Added (Liters)</b>				
<b>Filters Hours (Kms)</b>				
<b>Contamination</b>				
<b>Varnish and Sludge Potential Index™ ( VsPI™ )</b>				
VPI (Varnish Potential Index) : Soluble Varnish Contamination in Oil				
	VPI View	VPI View	VPI View	<b>Reference Oil</b>
VPI				VPI View
(Varnish Potential Index) Soluble Varnish Contaminant				
VPI Rating	43.2	38.2	44.2	
SPI (Sludge Potential Index) : or MPC test (Membrane Patch Colorimetric Test) : Insoluble Varnish Contamination in Oil				
	SPI View	SPI View	SPI View	<b>Reference Oil</b>
SPI				SPI View
(Sludge Potential Index) Insoluble Varnish Contaminant				
SPI Rating	11.4	12.5	11.6	
Sludge Weight	4.0 mg/100 ml	5.9 mg/100 ml	3.0 mg/100 ml	
<b>Alarm Limit Name</b>				
Engine Turbine Steam Alstom Regal EP46 (Glow SPP1)				
				<b>U-Caution</b> <b>U-Warning</b>
VsPI	27.3	25.4	27.9 *	>28    >33
VsPI = (VPI + SPI) / 2				



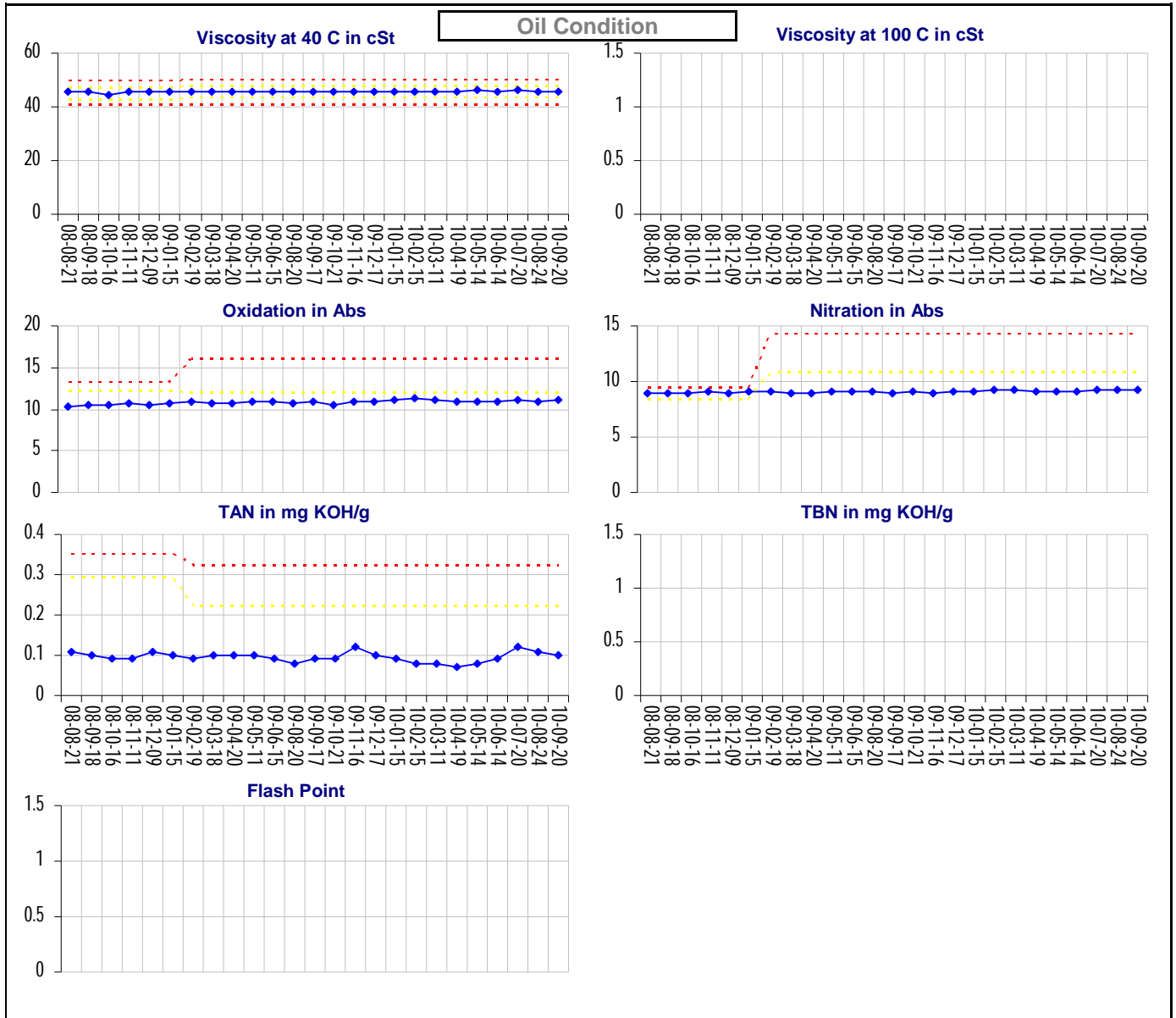
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