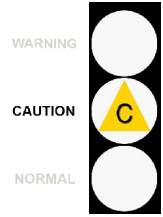


C Code : 1200
 U S Name :
 T O M Address : Map Ta Phut Industrial Estate,
 R Rayong 21150, Thailand.
 Site :
 Location : Lube Oil Tank
 Test code : T814

Unit ID : 22 11 10MAA10HA001
 Unit Type : Engine Turbine Steam
 Unit Make : GEC ALSTHOM
 Unit Model : VEGA306-1P-AF
 Oil type / Viscosity : MOBIL DTE MEDIUM ISO 46
 Oil System Capacity : 7700 Liters



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

Note abnormal wear metals. Recommend monitor the abnormal trend closely.
 Copper(Cu) is probably from wear of plane bearings, journal bearings or bushings.
 Varnish & Sludge Potential Index (VsPI) is in the Warning range and indicates the abnormal presence of sludge, varnish and other insoluble matter in the oil system.
 Suggest using an off-line filtration system, that is capable of varnish and sludge removal, to clean up the oil system. A variety of different suppliers of such machines can be supplied upon request.
 Recommend resample in 500 hours from the time this sample was taken, to monitor.

Wasan C.

			Current Sample			Previous Sample			Baseline and Alarm Limit										
Condition History			Wear	Oil	Cont.	Wear	Oil	Cont.	Wear	Oil	Cont.	Alarm Limit							
												Alarm Limit Matrix -Set Name (Equipment type / oil type)							
Lab ID	Test Method	Result	247298			223062			220099			Engine Turbine Steam GE MB DTE Medium 46 (Glow)							
Bottle ID			1033716			3000697			1012653										
Date Sampled			18-Feb-14			16-Jul-13			18-Jun-13										
Oil Hours (Kms)			56977			50975			50375										
Unit Hours (Kms)			134461			129320			128720										
Oil Change																			
Oil Added (Liters)																			
Filters Hours (Kms)																			
Wear Condition												The New Oil (TNO)	Fine wear		Coarse wear				
Wear Element	Method	Unit	Fine(small) Wear	Coarse(large) Wear	Fine(small) Wear	Coarse(large) Wear	Fine(small) Wear	Coarse(large) Wear	Fine(small) Wear	Coarse(large) Wear	Fine(small) Wear	Coarse(large) Wear	U-Caution	U-Warning	U-Caution	U-Warning			
Iron	D-6595	PPM	1.3	5.1	1.3	10.7 C	1.6	4.1	0	0	>2	>4	>7	>12					
Chromium	D-6595	PPM	0.0	0.0	0.1	0.1	0.2	0.0	0	0	>1	>2	>1	>3					
Lead	D-6595	PPM	0.0	0.0	0.9	0.0	0.4	0.8	0	0	>1	>2	>5	>9					
Copper	D-6595	PPM	11.1 W	1.5	10.6 W	1.3	10.0 W	1.7	0	0	>2	>4	>2	>4					
Tin	D-6595	PPM	0.0	0.0	0.6	0.0	0.0	0.8	0	0	>2	>4	>3	>5					
Aluminum	D-6595	PPM	0.4	0.0	0.0	0.0	0.0	1.0	0	0	>1	>2	>2	>3					
Nickel	D-6595	PPM	0.1	0.0	0.0	0.0	0.0	0.0	0	0	>1	>2	>2	>4					
Silver	D-6595	PPM	0.1	0.0	0.0	0.0	0.0	0.0	0	0									
Molybdenum	D-6595	PPM	0.0	0.4	0.0	0.7	0.1	0.0	0	0									
Titanium	D-6595	PPM	0.0	0.4	0.0	2.3	0.0	0.9	0	0									
Oil Condition												TNO	L-Warning	L-Caution	U-Caution	U-Warning			
Viscosity @ 40°C	D-445	cSt	45.6			45.6			46.2			47.0	<42.3	<44.7	>49.4	>51.7			
Viscosity @ 100°C	D-445	cSt																	
Oxidation	FTIR	Abs	11.5			11.6 C			10.7			7.7		>11.5	>15.4				
Nitration	FTIR	Abs	9.1			9.2			8.8			8.3		>12.5	>16.6				
TAN	D-974	mg KOH/g.	0.12			0.11			0.10			0.14		>0.24	>0.34				
TBN	D-4739	mg KOH/g.																	
Contamination												TNO	U-Caution			U-Warning			
Water	T-H2O Check™	% (Wt.)	0.019			0.012			0.015			0.020		>0.03	>0.05				
Sodium	D-6595	PPM	0			0			0			0							
Silicon	D-6595	PPM	0.6			3.5			0.9			6.0 C	0.4	>2	>5	>5	>8		
Additive Element												TNO							
Boron	D-6595	PPM	0			0			0			0							
Magnesium	D-6595	PPM	0			0			0			0							
Calcium	D-6595	PPM	0			0			0			0							
Barium	D-6595	PPM	0			0			0			0							
Phosphorus	D-6595	PPM	73			77			58			116							
Zinc	D-6595	PPM	22			3			27			10	24	23					
Additional Test												TNO	L-Caution	L-Warning	U-Caution	U-Warning			
Flash Point	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 : NORMAL, or : CAUTION (first level warning limit), or : 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.

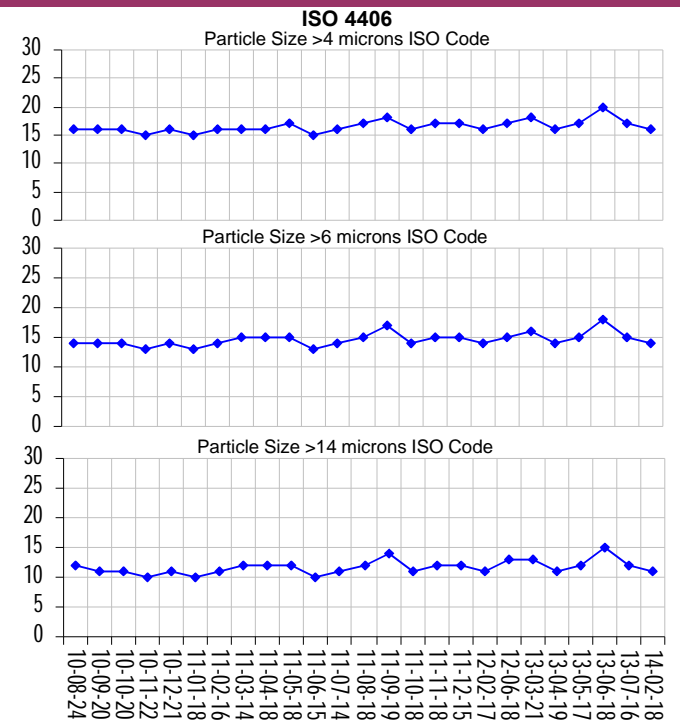
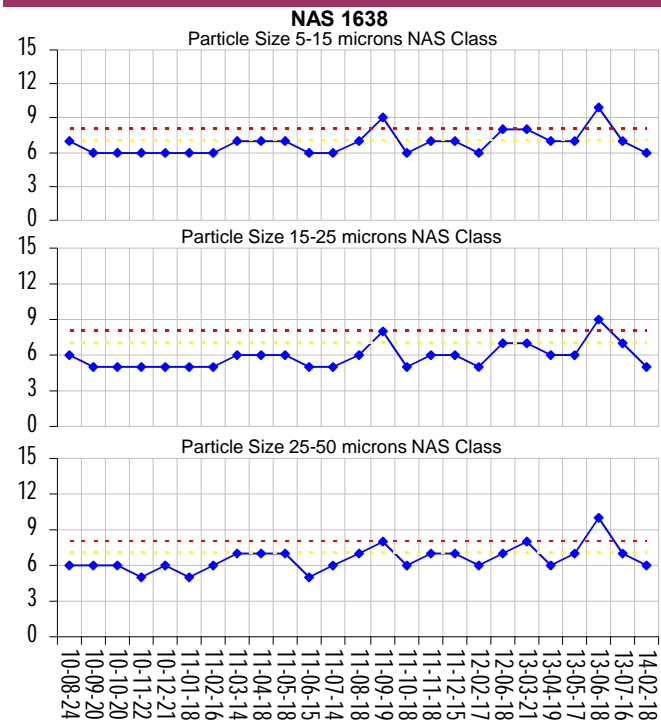
C Code : 1200
 U S Name :
 T O M Address :
 R Map Ta Phut Industrial Estate,
 Rayong 21150, Thailand.
 Site :
 Location : Lube Oil Tank
 Test code : T814

E O U I P M E N T Unit ID : **22 11 10MAA10HA001**
 Unit Type : Engine Turbine Steam
 Unit Make : GEC ALSTHOM
 Unit Model : VEGA306-1P-AF
 Oil type / Viscosity : MOBIL DTE MEDIUM ISO 46
 Oil System Capacity : 7700 Liters

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

Particle count shows oil cleanliness level acceptable.

Lab ID	Current Sample		Previous Sample				Particle Count				
	247298		223062		220099		NAS 1638 ISO 4406				
Bottle ID	1033716		3000697		1012653		Alarm Limit				
Date Sampled	18-Feb-14		16-Jul-13		18-Jun-13		Engine Turbine Steam GE MB DTE Medium 46 (Glow)				
Oil Hours (Kms)	56977		50975		50375						
Unit Hours (Kms)	134461		129320		128720						
Oil Change											
Oil Added (Liters)											
Filters Hours (Kms)											
Contamination											
Particle Count NAS 1638 System Standard											
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	15,000	6	31,800	7 C	214,200	10 W		>16000	7	>32000	8
Particle Size 15-25 microns	1,400	5	2,800	7 C	19,500	9 W		>2850	7	>5700	8
Particle Size 25-50 microns	400	6	900	7	5,600	10 W		>506	7	>1012	8
Particle Size 50-100 microns	<100	5	<100	6	500	9					
Particle Size >100 microns	<100	3	<100	5	<100	8					
Particle Count ISO 4406:1999 System Standard											
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	452	16	951	17	6,426	20					
Particle Size > 6 microns	126	14	266	15	1,799	18					
Particle Size > 14 microns	18	11	36	12	252	15					
ISO 4406 Class Rating	16 / 14 / 11		17 / 15 / 12		20 / 18 / 15						



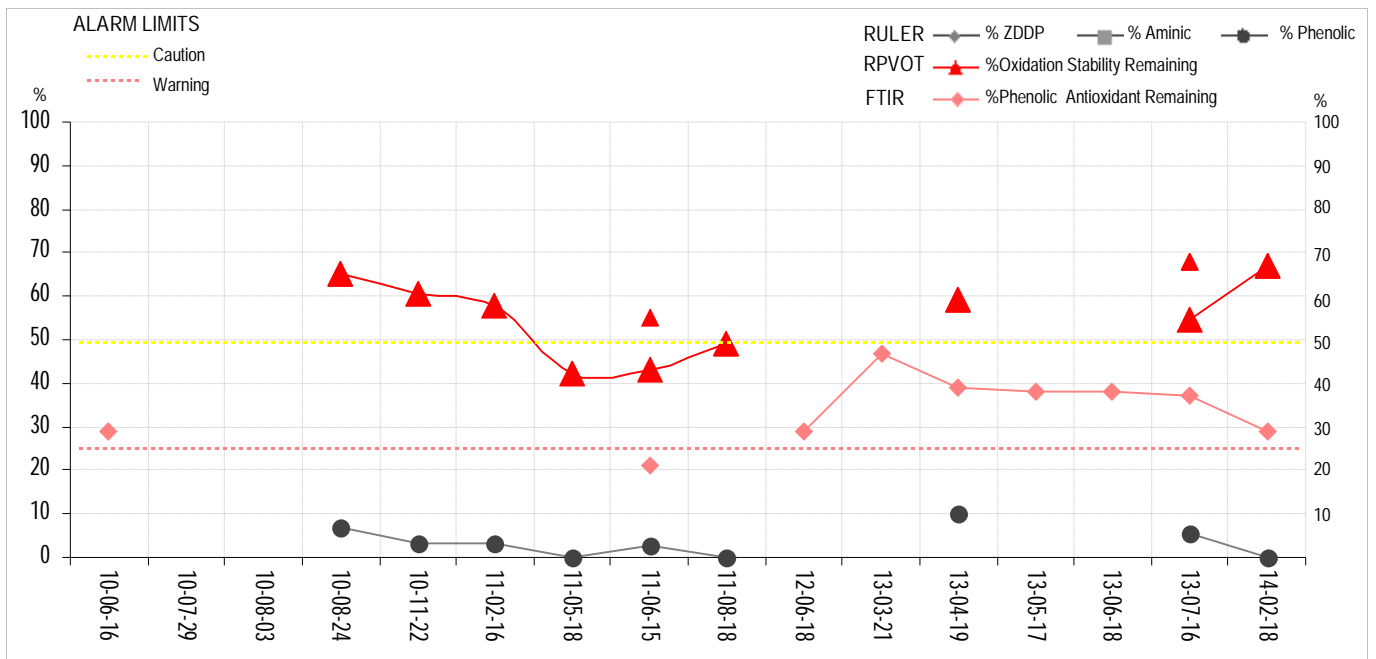
C Code : 1200
 U Name :
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 M Address : Map Ta Phut Industrial Estate,
 E Rayong 21150, Thailand.
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 Test code : T814

Unit ID : **22 11 10MAA10HA001**
 Unit Type : Engine Turbine Steam
 Unit Make : GEC ALSTHOM
 Unit Model : VEGA306-1P-AF
 Oil type / Viscosity : MOBIL DTE MEDIUM ISO 46
 Oil System Capacity : 7700 Liters

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

Note that AO Additive Type III depletion is Cautionary (below 50% remaining). However, the AO Type II still appears to be satisfactory.

Lab ID	Bottle ID	Date Sampled	Oil Hours (Kms)	Unit Hours (Kms)	Oil Added (Liters)	Oilchange	Filters Hours (Kms)	Test Method	Result	Current Sample		Previous Sample		RULER™ RPVOT (RBOT) FTIR Based on and referred to ASTM D-4378-0 Alarm Limit based on ASTM D-4378-08		
										247298	1033716	18-Feb-14	56977		134461	223062
Oil Condition																
RULER™(Remaining Useful Life Evaluation Routine)										The New Oil	Caution	Warning				
% ZDDP Antioxidant Remaining	D-6971-04	%	67	54.6										100	<50	<25
%Aminic Antioxidant Remaining	D-6810-02	%	n/p	n/p										100	<50	<25
%Phenolic Antioxidant Remaining		%	0	5.4	W									100	<50	<25
RULER Test Solution		Color	Green	Green												
FTIR (Fourier Transform Infrared)											Caution	Warning				
%Phenolic Antioxidant Remaining	D-2668	%	29	37	C									100	<50	<25
RPVOT (Rotating Pressure Vessel Oxidation Test) or previously known as RBOT											Caution	Warning				
Oxidation Stability	D-2272	Minutes		212										309	<155	<77
%Oxidation Stability Remaining		%		68										100	<50	<25





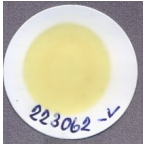




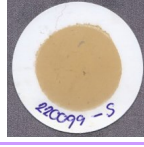
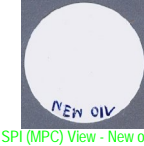
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 U Name :
 S Address : Map Ta Phut Industrial Estate,
 T Rayong 21150, Thailand.
 O Site :
 M Location : Lube Oil Tank
 E Test code : T814

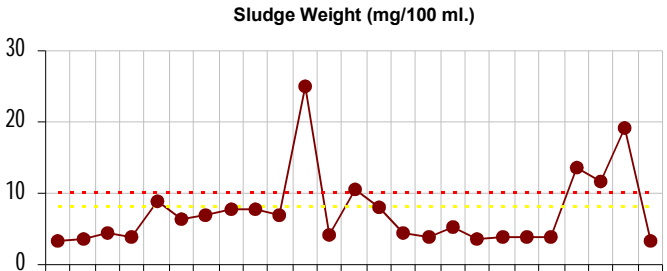
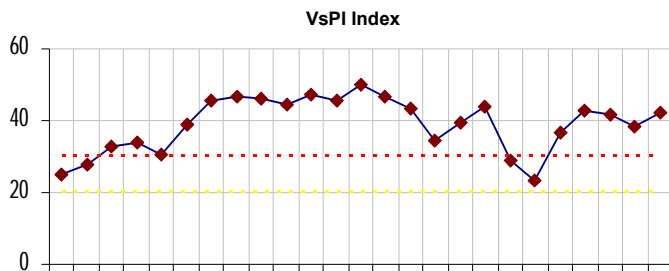
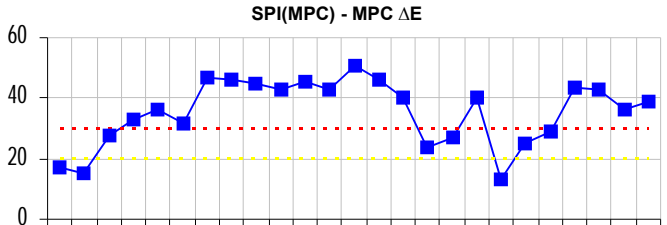
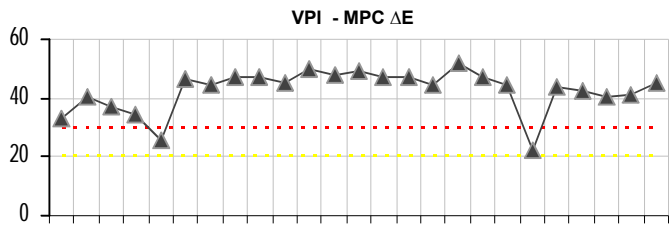
Unit ID : 22 11 10MAA10HA001
 Unit Type : Engine Turbine Steam
 Unit Make : GEC ALSTHOM
 Unit Model : VEGA306-1P-AF
 Oil type / Viscosity : MOBIL DTE MEDIUM ISO 46
 Oil System Capacity : 7700 Liters

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

Varnish & Sludge Potential Index (VsPI) is in the Warning range and indicates the abnormal presence of sludge, varnish and other insoluble matter in the oil system.

Wasan C.

	Current Sample		Previous Sample		ASTM D7843 M VsPI™ Varnish & Sludge Potential Index 						
Lab ID Bottle ID Date Sampled Oil Hours (Kms) Unit Hours (Kms) Oil Change Oil Added (Liters) Filters Hours (Kms)	247298	223062	220099	220099							
Contamination Varnish and Sludge Potential Index™ (VsPI™)					New Oil and Alarm Limit Name New Oil Limit Name Engine Turbine Steam GE MB DTE Medium 46 (Glow)						
VPI (Varnish Potential Index) : Soluble Varnish Type Contamination in Oil VPI™ Varnish Potential Index Soluble Varnish Contaminant	 VPI View	 VPI View	 VPI View	 VPI View - New oil	<table border="1"> <tr> <th>New Oil</th> <th>Caution</th> <th>Warning</th> </tr> <tr> <td>1</td> <td>>20</td> <td>>30</td> </tr> </table>	New Oil	Caution	Warning	1	>20	>30
New Oil	Caution	Warning									
1	>20	>30									
VPI Rating	45.2 W	40.8 W	40.7								
SPI (Sludge Potential Index) : Conform to ASTM D7843 - MPC (Membrane Patch Colorimetry) : Insoluble Varnish Type Contamination in Oil SPI™ Sludge Potential Index (MPC Membrane Patch Colorimetry) Insoluble Varnish Contaminant	 SPI View	 SPI View	 SPI View	 SPI (MPC) View - New oil	<table border="1"> <tr> <th>New Oil</th> <th>Caution</th> <th>Warning</th> </tr> <tr> <td>1</td> <td>>20</td> <td>>30</td> </tr> </table>	New Oil	Caution	Warning	1	>20	>30
New Oil	Caution	Warning									
1	>20	>30									
SPI(MPC) Rating	38.9 W	36.2 W	42.8								
VsPI™	42.1 W	38.5 W	41.7 W								
Sludge Weight	3.3 mg/100 ml	19.2 W mg/100 ml	11.6 mg/100 ml		<table border="1"> <tr> <th>New Oil</th> <th>Caution</th> <th>Warning</th> </tr> <tr> <td>2</td> <td>>8</td> <td>>10</td> </tr> </table>	New Oil	Caution	Warning	2	>8	>10
New Oil	Caution	Warning									
2	>8	>10									



C Code : 1200

U Name :

Address : Map Ta Phut Industrial Estate,
Rayong 21150, Thailand.

S Site :

Location : Lube Oil Tank

Test code : T814

E Unit ID : 22 11 10MAA10HA001

Unit Type : Engine Turbine Steam

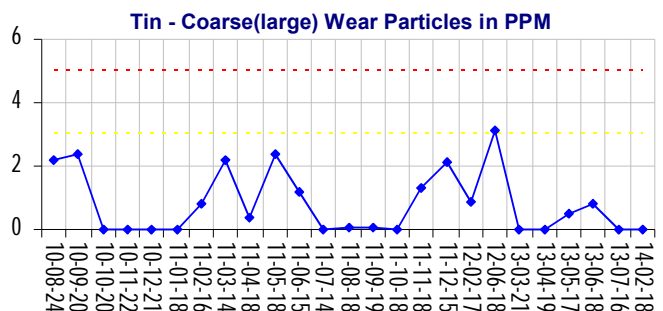
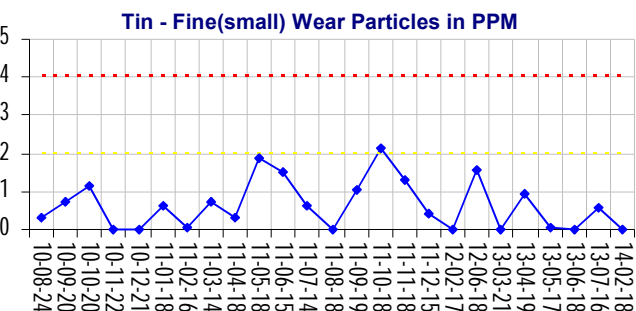
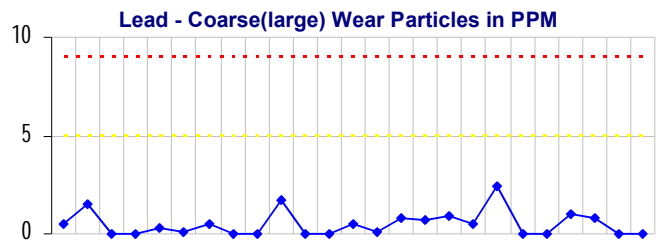
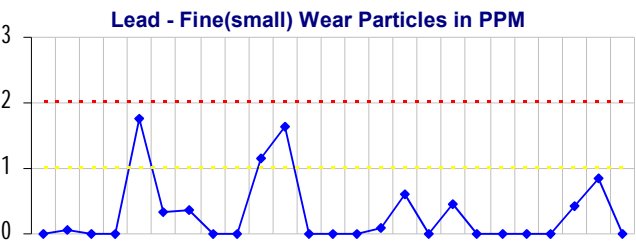
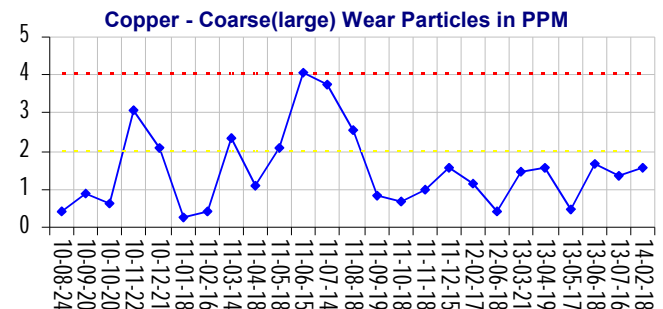
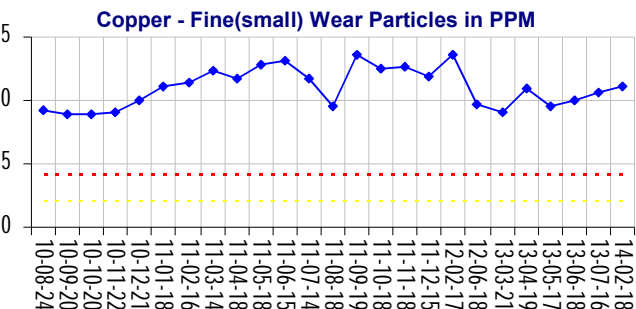
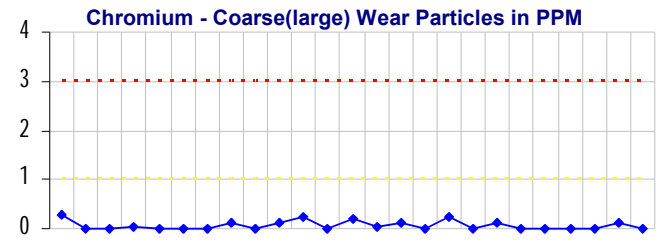
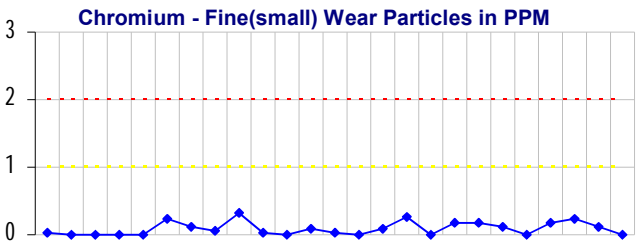
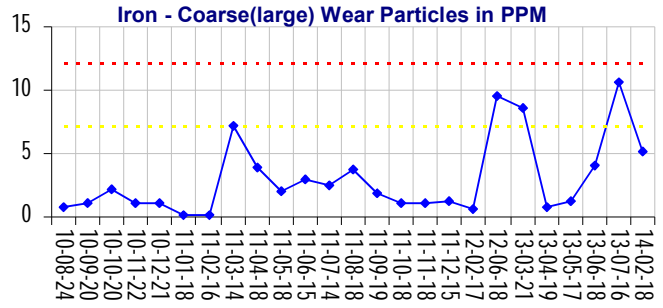
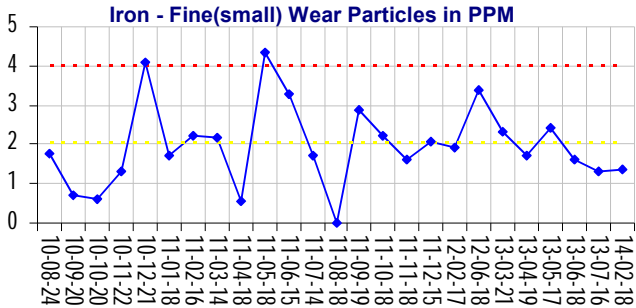
Unit Make : GEC ALSTHOM

Unit Model : VEGA306-1P-AF

Oil type / Viscosity : MOBIL DTE MEDIUM ISO 46

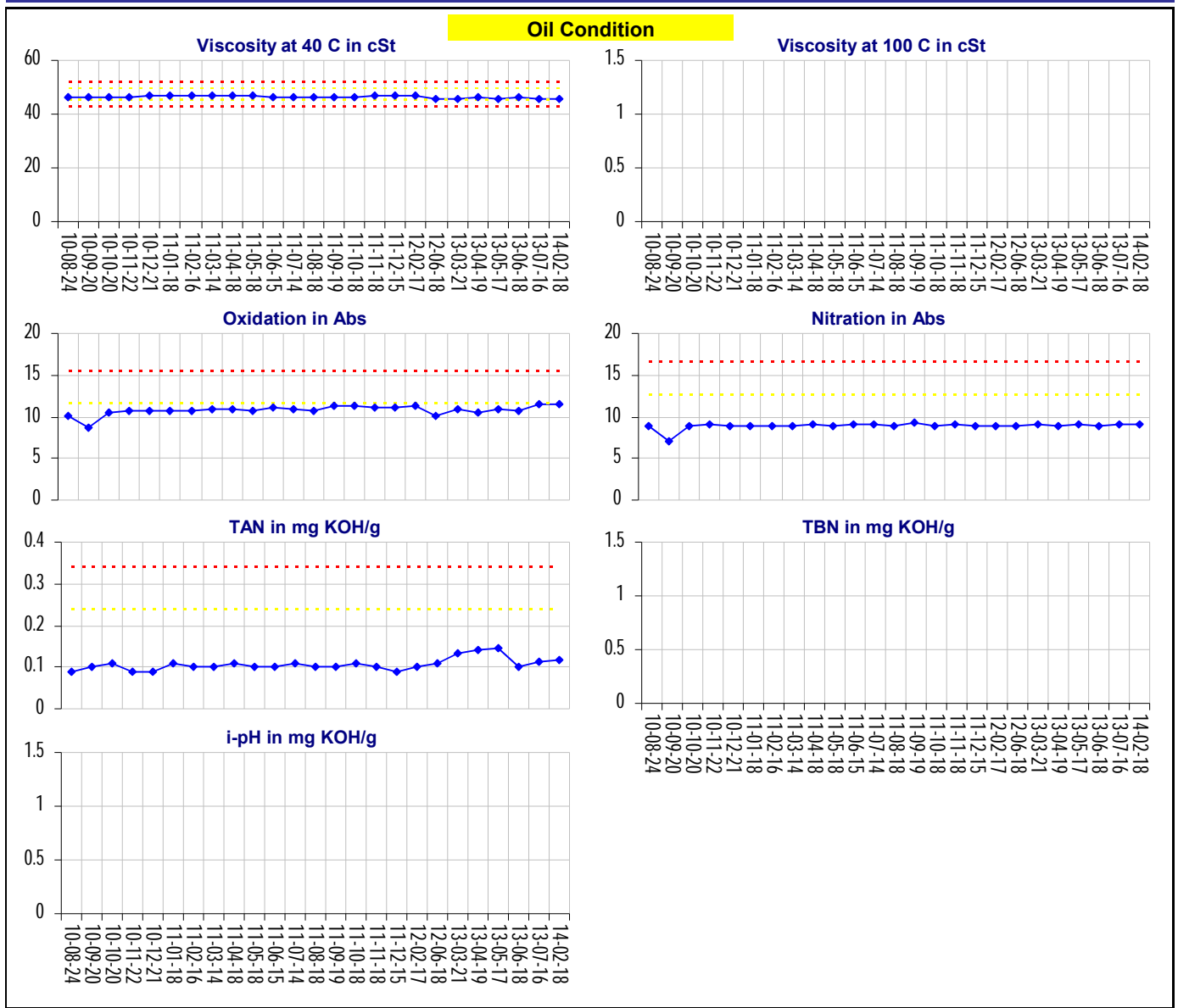
Oil System Capacity : 7700 Liters

Wear Condition



C Code : 1200
 U Name :
 S Address : Map Ta Phut Industrial Estate,
 T Rayong 21150, Thailand.
 O M Site :
 E Location : Lube Oil Tank
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Unit ID : 22 11 10MAA10HA001
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