CUSTOMER
Code : **1200**
Name :
Address : Map Ta Phut Industrial Estate, Rayong 21150, Thailand.
Site :
Location : Main Lube oil tank
Test code : T814

EQUIPMENT
Unit ID : **22 21 2AMBA10HA001**
Unit Type : Engine Turbine Gas
Unit Make : GENERAL ELECTRIC
Unit Model : Frame 6

OIL
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

WARNING
CAUTION C
NORMAL

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

All wear conditions and wear tests appear in normal working range.
Particle count indicates that oil cleanliness level is near to unacceptable range.
Varnish & Sludge Potential Index (VsPI) is in the moderate range and indicates that varnish & sludge is present in the oil system.
Recommend check the oil filters for proper operation and suggest using an off-line filtration system to clean up the oil system.
Recommend resample in 500 hours from the time this sample was taken, to monitor.

Wasan C.

Condition History	Test Method	Result	Current Sample Wear	Current Sample Oil	Current Sample Cont.	Previous Sample Wear	Previous Sample Oil	Previous Sample Cont.	Wear	Oil	Cont.
			N	C	C	N	C	C	N	C	W
Lab ID			247303			223067			220103		
Bottle ID			1033714			3000728			1015646		
Date Sampled			18-Feb-14			16-Jul-13			18-Jun-13		
Oil Hours (Kms)			71184			66779			66115		
Unit Hours (Kms)			142939			139246			138582		
Oil Change											
Oil Added (Liters)											
Filters Hours (Kms)											
Wear Condition											
Wear Element	**Method**	**Unit**	**Fine(small) Wear**	**Coarse(large) Wear**		**Fine(small) Wear**	**Coarse(large) Wear**		**Fine(small) Wear**	**Coarse(large) Wear**	
Iron	D-6595	PPM	0.1	3.0 C		0.2	2.5		0.8	4.2 C	
Chromium	D-6595	PPM	0.0	0.0		0.0	0.2		0.0	0.0	
Lead	D-6595	PPM	0.0	0.0		0.0	0.0		0.2	0.0	
Copper	D-6595	PPM	0.4	0.2		0.1	0.2		0.2	0.1	
Tin	D-6595	PPM	0.0	0.5		1.1	0.0		2.7 C	0.0	
Aluminum	D-6595	PPM	0.1	0.0		0.0	0.1		0.1	0.0	
Nickel	D-6595	PPM	0.0	0.1		0.0	0.0		0.4	0.0	
Silver	D-6595	PPM	0.0	0.0		0.0	0.1		0.0	0.0	
Molybdenum	D-6595	PPM	0.6	1.5		0.0	2.7		0.0	0.0	
Titanium	D-6595	PPM	0.0	0.3		0.0	2.6		0.0	0.9	
Oil Condition											
Viscosity @ 40 °C	D-445	cSt	33.5			32.8			32.5		
Viscosity @ 100 °C	D-445	cSt									
Oxidation	FTIR	Abs	15.1			15.4 C			14.7		
Nitration	FTIR	Abs	12.2			12.0			11.6		
TAN	D-974	mg KOH/g.	0.12			0.18			0.20 C		
TBN	D-4739	mg KOH/g.									
Contamination											
Water	T-H2O Check™	% (Wt.)	0.013			0.027			0.012		
Sodium	D-6595	PPM	0			0			0		
Silicon	D-6595	PPM	0.5	0.2		0.1	0.0		0.4	0.0	
Additive Element											
Boron	D-6595	PPM	0			0			0		
Magnesium	D-6595	PPM	0			0			0		
Calcium	D-6595	PPM	1			0			0		
Barium	D-6595	PPM	0			0			0		
Phosphorus	D-6595	PPM	949			913			905		
Zinc	D-6595	PPM	2	1		1	1		1	2	
Additional Test											
Flash Point	D-3828	°C									
Viscosity Index	D-2270										

Baseline and Alarm Limit

Alarm Limit
Alarm Limit Matrix -Set Name (Equipment type / oil type)
Engine Turbine Gas GE Mobil DTE 832 (Glow)

BASELINE	The New Oil (TNO)	Fine wear U-Caution	Fine wear U-Warning	Coarse wear U-Caution	Coarse wear U-Warning
	0	>3	>5	>3	>5
	0	>1	>2	>1	>2
	0	>1	>2	>2	>4
	0	>4	>7	>1	>2
	0	>2	>4	>3	>5
	0	>1	>2	>2	>3
	0	>1	>2	>1	>2
	0				
	0				
	0				
	TNO	L-Warning	L-Caution	U-Caution	U-Warning
	33.5	<30.2	<31.8	>35.2	>36.9
	14.2			>15.1	>15.8
	11.6			>14.5	>15.9
	0.08			>0.18	>0.28
	TNO			U-Caution	U-Warning
	0.010			>0.03	>0.05
		Fine wear U-Caution	Fine wear U-Warning	Coarse wear U-Caution	Coarse wear U-Warning
	0				
	0	>3	>5	>3	>5
	TNO				
	0				
	0				
	0				
	0				
	1285				
	0				
	TNO	L-Caution	L-Warning	U-Caution	U-Warning

Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.
No Sign or N : NORMAL , C or C : CAUTION (first level warning limit) , W or W : Warning (second level warning limit)
U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level
U-Warning : Upper WARNING Level L-Warning : Lower WARNING required Level
First Level Alarm ,Alert Limit in Upper Level and/or Lower 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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Test code : T814

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Unit Type : Engine Turbine Gas
Unit Make : GENERAL ELECTRIC
Unit Model : Frame 6

OIL
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

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

Particle count indicates that oil cleanliness level is near to unacceptable range.

	Current Sample	Previous Sample	
Lab ID	247303	223067	220103
Bottle ID	1033714	3000728	1015646
Date Sampled	18-Feb-14	16-Jul-13	18-Jun-13
Oil Hours (Kms)	71184	66779	66115
Unit Hours (Kms)	142939	139246	138582
Oil Change			
Oil Added (Liters)			
Filters Hours (Kms)			

Particle Count NAS 1638 ISO 4406

BASELINE — **Alarm Limit**

Engine Turbine Gas GE Mobil DTE 832 (Glow)

Contamination

Particle Count NAS 1638 System Standard

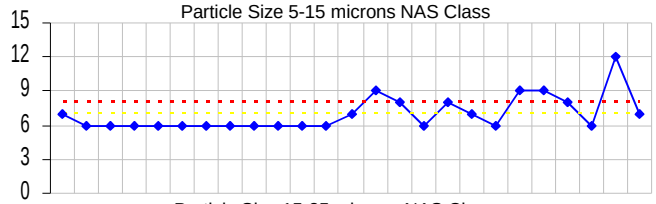
Particle Size Range	No. of Particles / 100ml.	Class	No. of Particles / 100ml.	Class	No. of Particles / 100ml.	Class	Class	U-Caution No. of Particles / 100ml.	U-Caution Class	U-Warning No. of Particles / 100ml.	U-Warning Class
Particle Size 5-15 microns	17,600	7 C	8,978,500	12 W	13,800	6		>16000	7	>32000	8
Particle Size 15-25 microns	1,600	6	816,700	12 W	1,300	5		>2850	7	>5700	8
Particle Size 25-50 microns	500	6	232,800	12 W	300	6		>506	7	>1012	8
Particle Size 50-100 microns	<100	6	23,500	12	<100	5					
Particle Size >100 microns	<100	4	1500	12	<100	3					

Particle Count ISO 4406:1999 System Standard

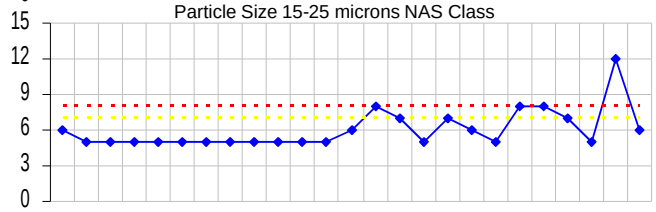
Particle Size Range	No. of Particles / ml.	Class	No. of Particles / ml.	Class	No. of Particles / ml.	Class	Class	U-Caution No. of Particles / ml.	U-Caution Class	U-Warning No. of Particles / ml.	U-Warning Class
Particle Size > 4 microns	528	16	269,345	25	413	16					
Particle Size > 6 microns	148	14	75,398	23	116	14					
Particle Size > 14 microns	21	12	10,584	21	16	11					
ISO 4406 Class Rating	16 / 14 / 12		25 / 23 / 21		16 / 14 / 11						

NAS 1638

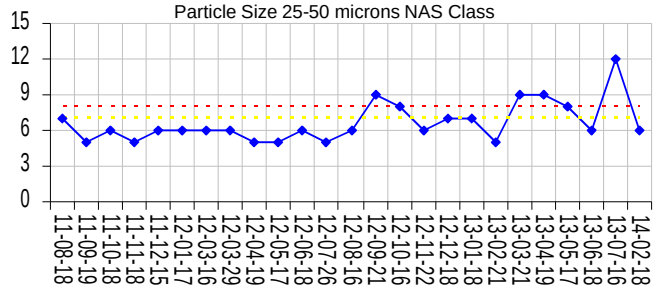
Particle Size 5-15 microns NAS Class



Particle Size 15-25 microns NAS Class

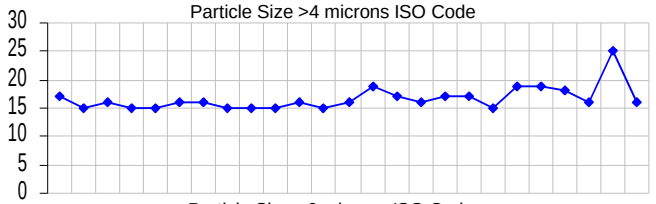


Particle Size 25-50 microns NAS Class

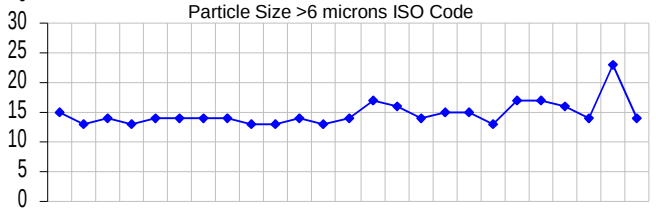


ISO 4406

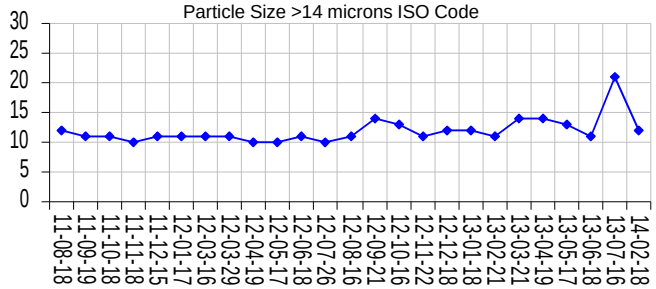
Particle Size >4 microns ISO Code



Particle Size >6 microns ISO Code



Particle Size >14 microns ISO Code



CUSTOMER
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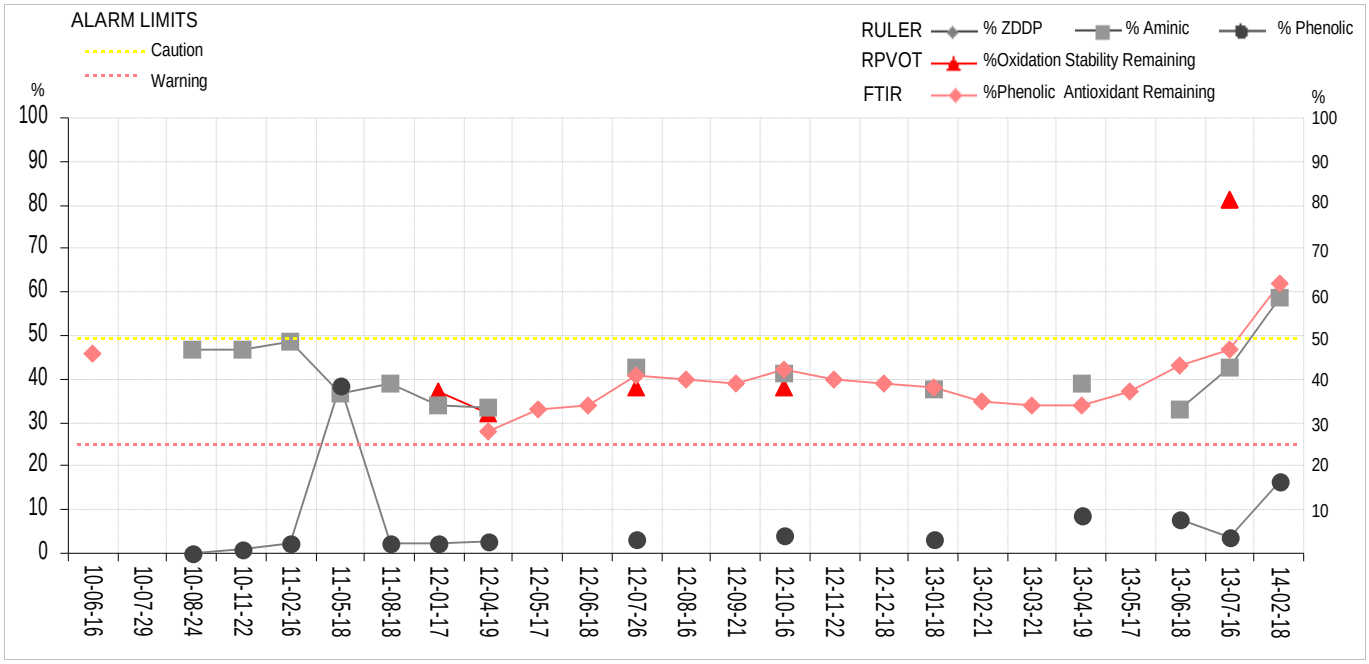
Site :
Location : Main Lube oil tank
Test code : T814

EQUIPMENT
Unit ID : **22 21 2AMBA10HA001**
Unit Type : Engine Turbine Gas
Unit Make : GENERAL ELECTRIC
Unit Model : Frame 6

OIL
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

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

	Test Method		Result	Current Sample	Previous Sample			RULER™ RPVOT (RBOT) FTIR		
Lab ID				247303	223067		220103	Based on and referred to ASTM D-4378-0		
Bottle ID				1033714	3000728		1015646	Alarm Limit based on ASTM D-4378-08		
Date Sampled				18-Feb-14	16-Jul-13		18-Jun-13			
Oil Hours (Kms)				71184	66779		66115			
Unit Hours (Kms)				142939	139246		138582			
Oil Added (Liters)										
Oilchange					No		No			
Filters Hours (Kms)										
Oil Condition										
RULER™(Remaining Useful Life Evaluation Routine)								The New Oil	Caution	Warning
% ZDDP Antioxidant Remaining	D-6810-02	D-6971-04	%	n/p	n/p		n/p			
%Aminic Antioxidant Remaining			%	58.6	42.8	C	33.0	100	<50	<25
%Phenolic Antioxidant Remaining			%	16.3	3.7	W	7.9	100	<50	<25
RULER Test Solution			Color	Green	Green		Green			
FTIR (Fourier Transform Infrared)									Caution	Warning
%Phenolic Antioxidant Remaining	D-2668		%	62	47	C	43	100	<50	<25
RPVOT (Rotating Pressure Vessel Oxidation Test) or previously known as RBOT									Caution	Warning
Oxidation Stability	D-2272		Minutes		1450			1790	<895	<448
%Oxidation Stability Remaining			%		81			100	<50	<25



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Unit Model : Frame 6

OIL
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

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

Varnish & Sludge Potential Index (VsPI) is in the moderate range and indicates that varnish & sludge is present in the oil system.

Wasan C.

	Current Sample	Previous Sample	
Lab ID	247303	223067	220103
Bottle ID	1033714	3000728	1015646
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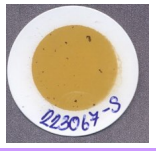
Oil Hours (Kms)	71184	66779	66115
Unit Hours (Kms)	142939	139246	138582
Oil Change			
Oil Added (Liters)			
Filters Hours (Kms)			
Contamination			
Varnish and Sludge Potential Index™(VsPI™)			
VPI (Varnish Potential Index)		: Soluble Varnish Type Contamination in Oil	
VPI™ Varnish Potential Index Soluble Varnish Contaminant	 VPI View	 VPI View	 VPI View
VPI Rating	45 C	43.2	46.7
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 Colormetry) Insoluble Varnish Contaminant	 SPI View	 SPI View	 SPI View
SPI(MPC) Rating	40.9	61.4	74.5
VsPI™	42.9	52.3 C	60.6 W
Sludge Weight	3.4 mg/100 ml	45.8 mg/100 ml	7.9 mg/100 ml

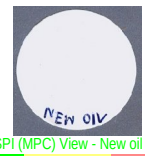
ASTM D7843 M

New Oil and Alarm Limit Name

New Oil	Limit Name
Engine Turbine Gas GE Mobil DTE 832 (Glow)	

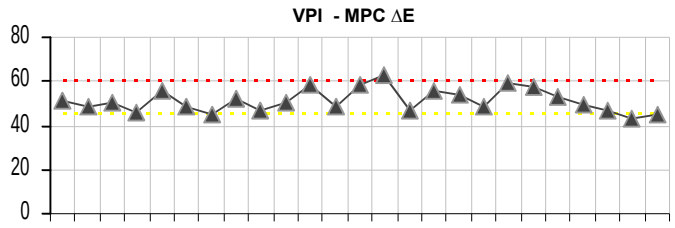
VPI View - New oil

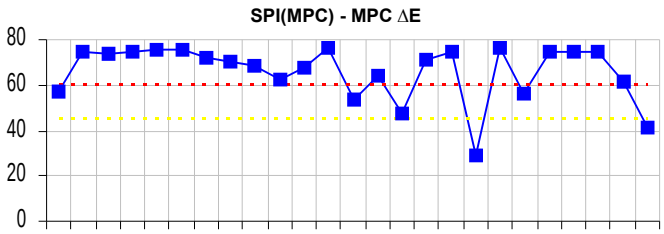
New Oil	Caution	Warning
1	>45	>60

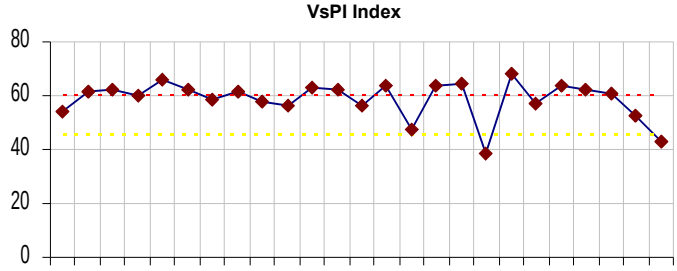


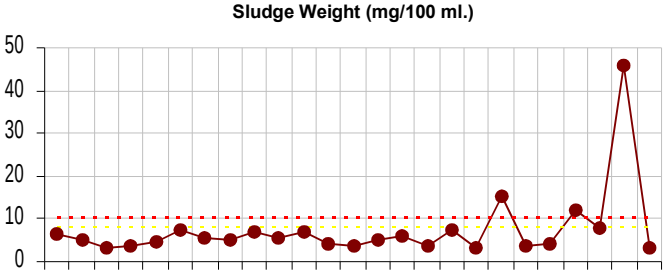
SPI (MPC) View - New oil

New Oil	Caution	Warning
1	>45	>60
1	>45	>60
2	>8	>10









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EQUIPMENT
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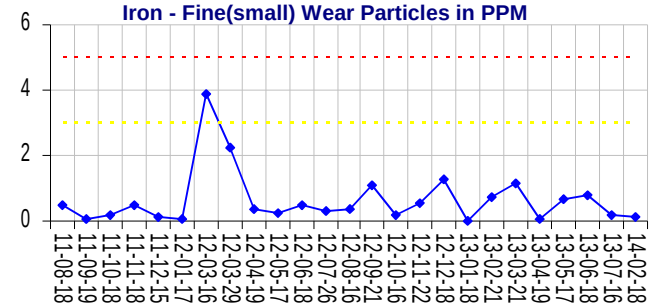
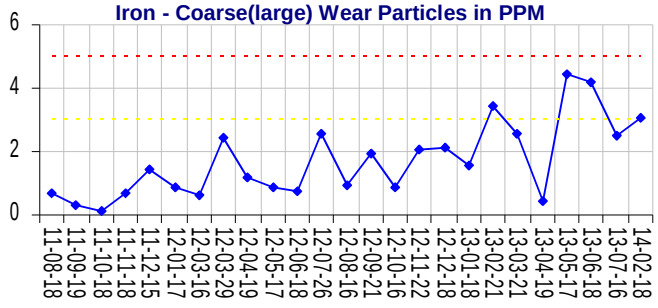
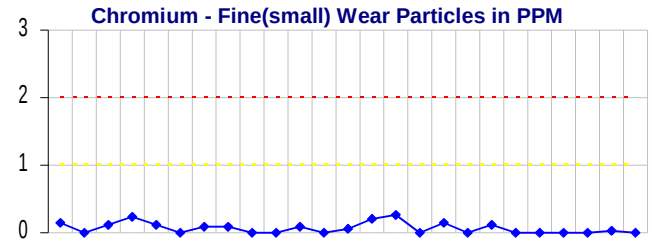
Unit Make : GENERAL ELECTRIC
Unit Model : Frame 6

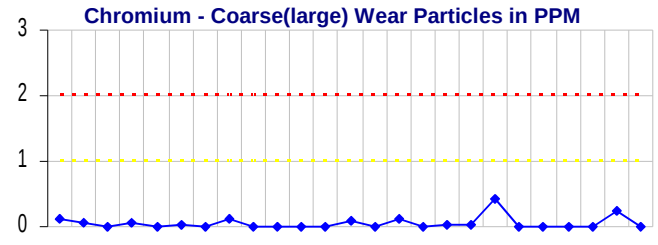
OIL
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

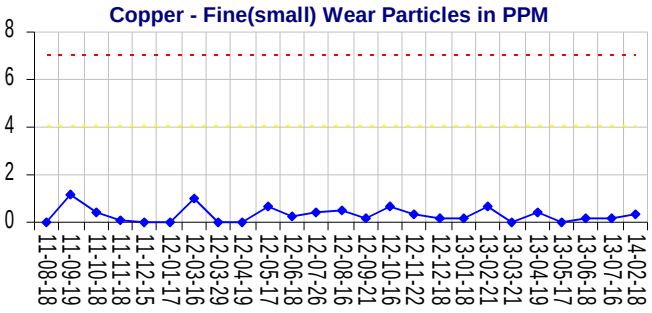
Wear Condition

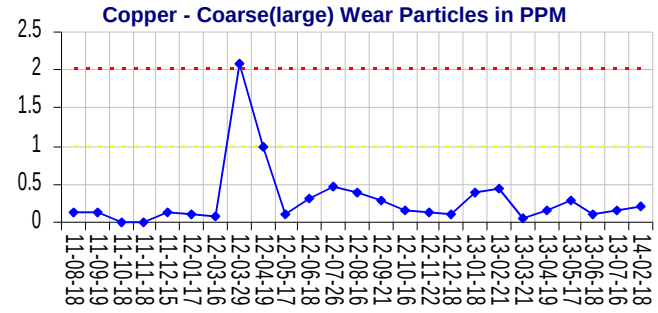


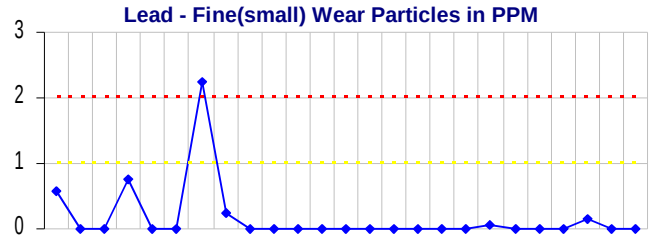


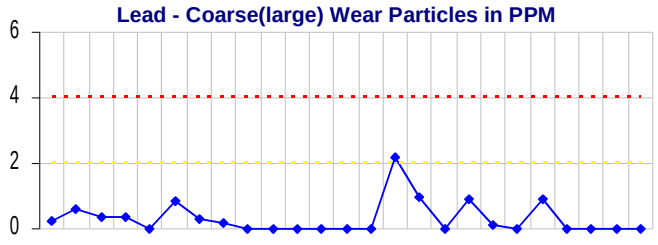


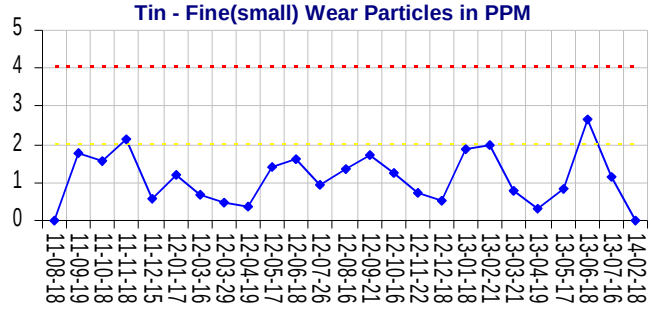


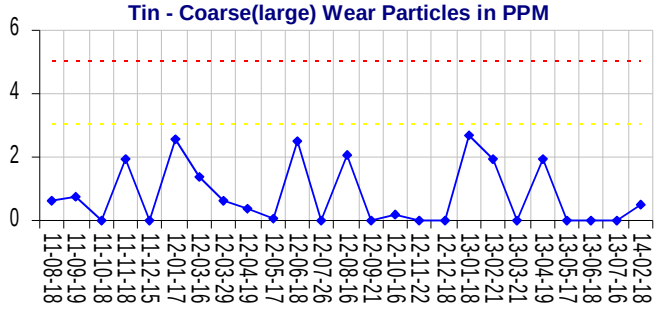












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Unit Model : Frame 6

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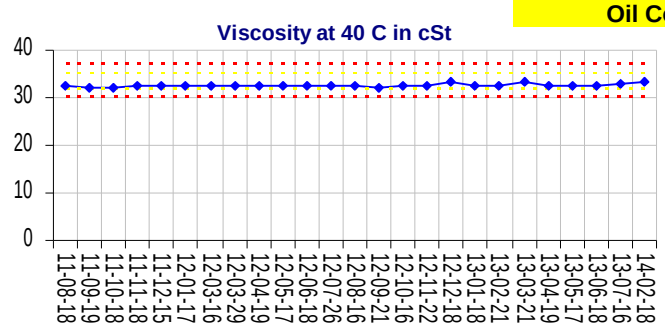
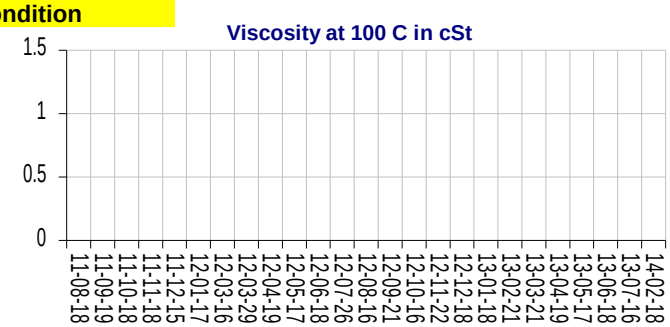
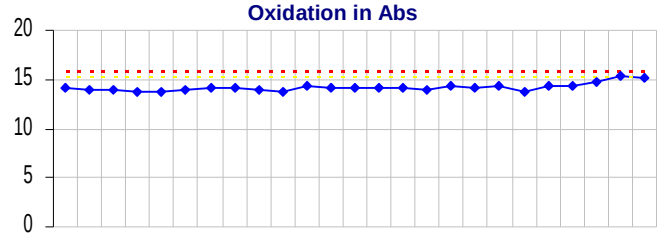
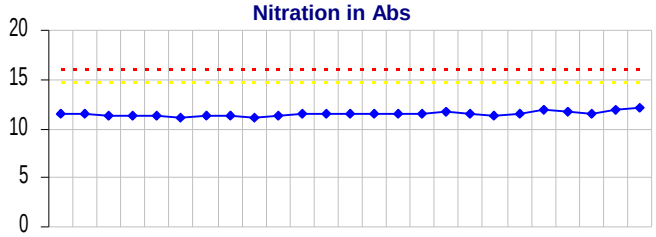
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

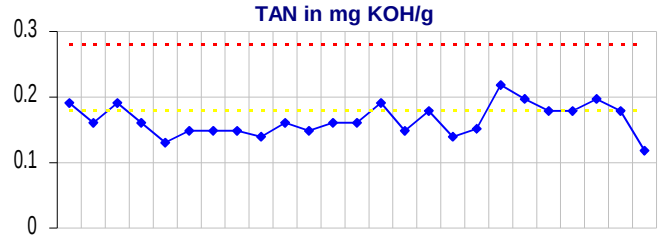
Oil Condition

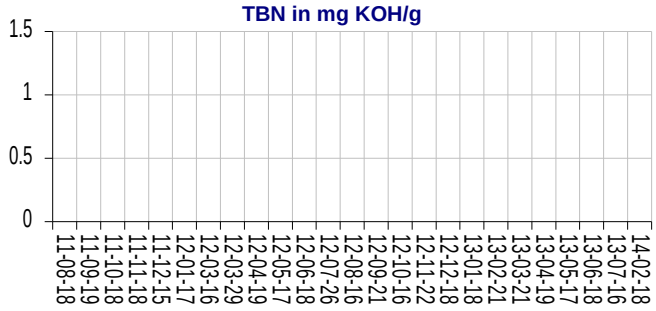


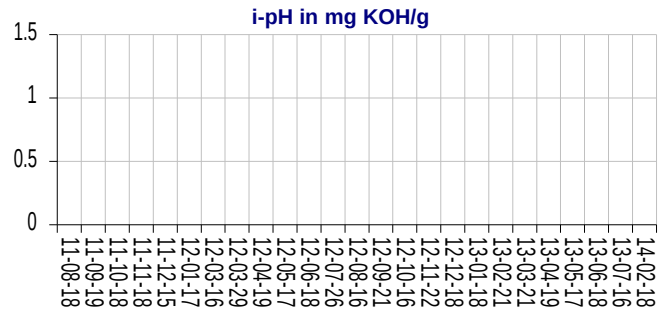












CUSTOMER
Code : **1200**
Name :
Address : Map Ta Phut Industrial Estate, Rayong 21150, Thailand.
Site :
Location : Main Lube oil tank
Test code : T814

EQUIPMENT
Unit ID : **22 21 2AMBA10HA001**
Unit Type : Engine Turbine Gas
Unit Make : GENERAL ELECTRIC
Unit Model : Frame 6

OIL
Oil type / Viscosity : MOBIL DTE 832 ISO 32
Oil System Capacity : 6435 Liters

Contamination Condition