

C Code : 20002
 U Name :
 T
 O Address : 112 Moo 8 Thongneian
 M Amphur Khanom
 E Nakornsrihammarat 80210
 R
 Site :
 Location :
 Test code : H813

Unit ID : **KNCC**
 Unit Type : EHC Control Unit
 Unit Make : GENERAL ELECTRIC
 Unit Model : (not given)
 Oil type / Viscosity : FYRQUEL EHC
 Oil System Capacity : 600 Liters



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

All wear conditions and wear tests appear in normal working range.
 Note viscosity is lower than normal limits.
 Note water level detected.
 Note increase in SPI.
 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.

			Current Sample			Previous Sample			Baseline and Alarm Limit							
Condition History			Wear	Oil	Cont.	Wear	Oil	Cont.	Wear	Oil	Cont.	Alarm Limit				
Lab ID			Test Method	Result	N	C	C	N	C	C	N	Alarm Limit Matrix -Set Name (Equipment type / oil type)				
Bottle ID					238178	1001761		234978	1001759		231157	1001758	EHC General Fyrquel (Khanom Electricity)			
Date Sampled					29-Nov-13			01-Nov-13			30-Sep-13					
Oil Hours (Kms)					Not Given			Not Given			12					
Unit Hours (Kms)					Not Given			Not Given			Not Given					
Oil Change											650					
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		U-Caution	U-Warning	U-Caution	U-Warning	
Iron	D-6595	PPM	0.0	2.0	0.3	9.2 C	0.0	1.3	0	0	>3	>5	>7	>12		
Chromium	D-6595	PPM	0.2	0.0	0.2	0.3	0.2	0.0	0	0	>1	>2	>2	>3		
Lead	D-6595	PPM	0.1	0.0	0.0	0.8	0.0	0.0	0	0	>1	>2	>7	>12		
Copper	D-6595	PPM	0.9	0.0	0.0	0.3	0.4	0.4	0	0	>1	>2	>1	>1		
Tin	D-6595	PPM	0.0	0.0	0.0	2.2	0.0	1.6	0	0	>1	>2	>3	>3		
Aluminum	D-6595	PPM	0.8	0.0	0.1	2.3	0.6	0.8	0	0	>10	>20	>10	>20		
Nickel	D-6595	PPM	1.3 C	1.4	0.9	2.2 C	0.5	0.9	0	0	>1	>2	>2	>4		
Silver	D-6595	PPM	0.6	0.0	0.7	0.1	0.6	0.0	0	0						
Molybdenum	D-6595	PPM	0.4	0.0	0.0	1.1	0.0	0.0	0	0						
Titanium	D-6595	PPM	0.0	0.0	0.0	2.4	0.0	1.8	0	0						
Oil Condition												TNO	L-Warning	L-Caution	U-Caution	U-Warning
Viscosity @ 40 °C	D-445	cSt	39.6 C		39.3 C		40.5 C		43.3		<38.9	<41.1	>45.5	>47.6		
Viscosity @ 100 °C	D-445	cSt														
Oxidation	FTIR	Abs	9.0		10.8		9.7									
Nitration	FTIR	Abs	33.8		39.7		37.9									
TAN	D-974	mg KOH/g.	0.05		0.04		0.03		0.02			>0.08	>0.15			
TBN	D-4739	mg KOH/g.														
Contamination												TNO	Fine wear		Coarse wear	
Water	T-H2O CheckTM	% (Wt.)	0.207 W		0.198 W		0.105 C		0.041			>0.08	>0.12			
Sodium	D-6595	PPM	2		1		2		0		>10	>20				
Silicon	D-6595	PPM	0.0	0.4	0.0	3.2	0.0	5.4 C	0	0	>3	>5	>4	>7		
Additive Element												TNO	Fine wear		Coarse wear	
Boron	D-6595	PPM	0		0		0		0							
Magnesium	D-6595	PPM	0		0		0		0		>10	>20				
Calcium	D-6595	PPM	0		1		0		0		>10	>20				
Barium	D-6595	PPM	0		0		0		0							
Phosphorus	D-6595	PPM	53877		62681		44550		41970							
Zinc	D-6595	PPM	64	4	59	5	48	6	49							
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 **N** : NORMAL , **C** or **▲** : CAUTION (first level warning limit) , **W** 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.

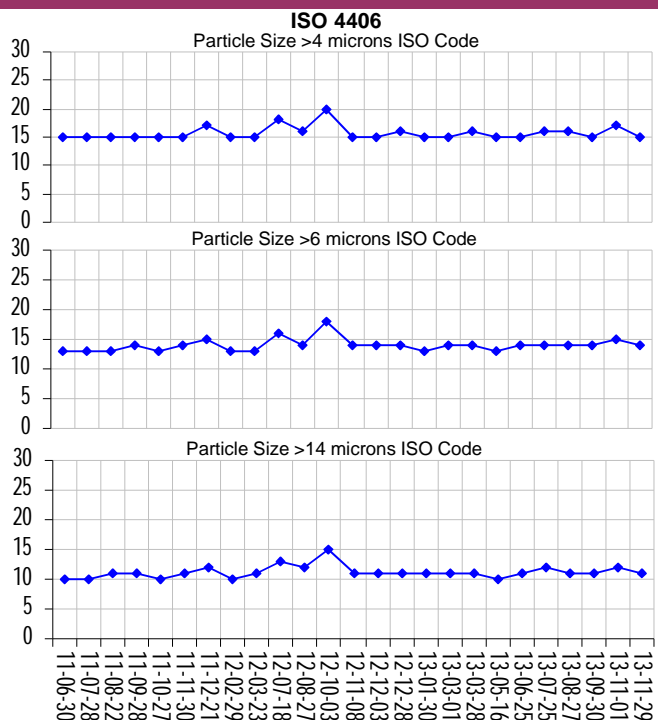
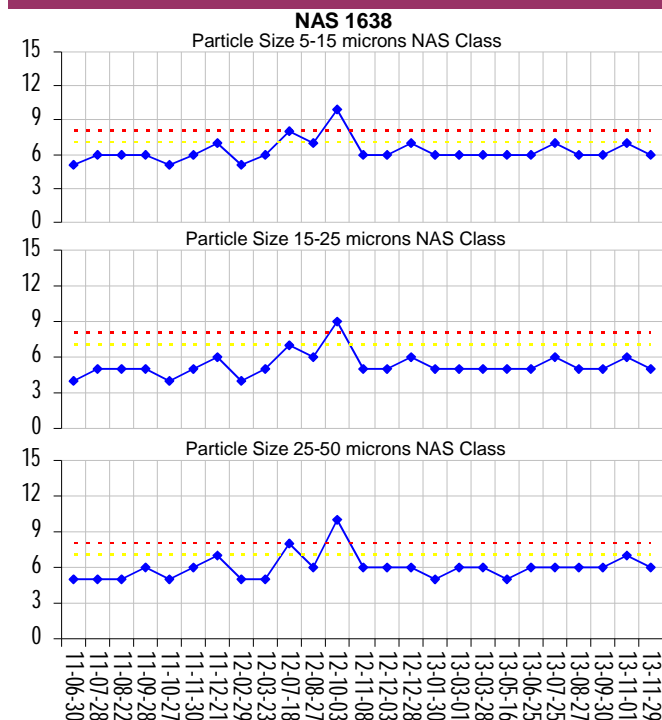
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 Oil System Capacity : 600 Liters

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

Particle count shows oil cleanliness level acceptable.

Lab ID	Current Sample		Previous Sample				Particle Count				
	Bottle ID	Date Sampled	238178	234978	231157	NAS 1638 ISO 4406					
Date Sampled	1001761	29-Nov-13	1001759	1001758	1001758	EHC General Fyrquel (Khanom Electricity)					
Oil Hours (Kms)	29-Nov-13	Not Given	01-Nov-13	30-Sep-13	12	Alarm Limit					
Unit Hours (Kms)	Not Given	Not Given	Not Given	Not Given	Not Given	U-Caution U-Warning					
Oil Change	Not Given	Not Given	Not Given	Not Given	Not Given	EHC General Fyrquel (Khanom Electricity)					
Oil Added (Liters)					650						
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	10,600	6	21,800	7 C	10,600	6		>16000	7	>32000	8
Particle Size 15-25 microns	900	5	2,000	6	900	5		>2850	7	>5700	8
Particle Size 25-50 microns	300	6	600	7	300	6		>506	7	>1012	8
Particle Size 50-100 microns	<100	5	<100	6	<100	5					
Particle Size >100 microns	<100	2	<100	4	<100	2					
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	317	15	654	17	317	15					
Particle Size > 6 microns	89	14	183	15	89	14					
Particle Size > 14 microns	12	11	26	12	12	11					
ISO 4406 Class Rating	15 / 14 / 11		17 / 15 / 12		15 / 14 / 11						




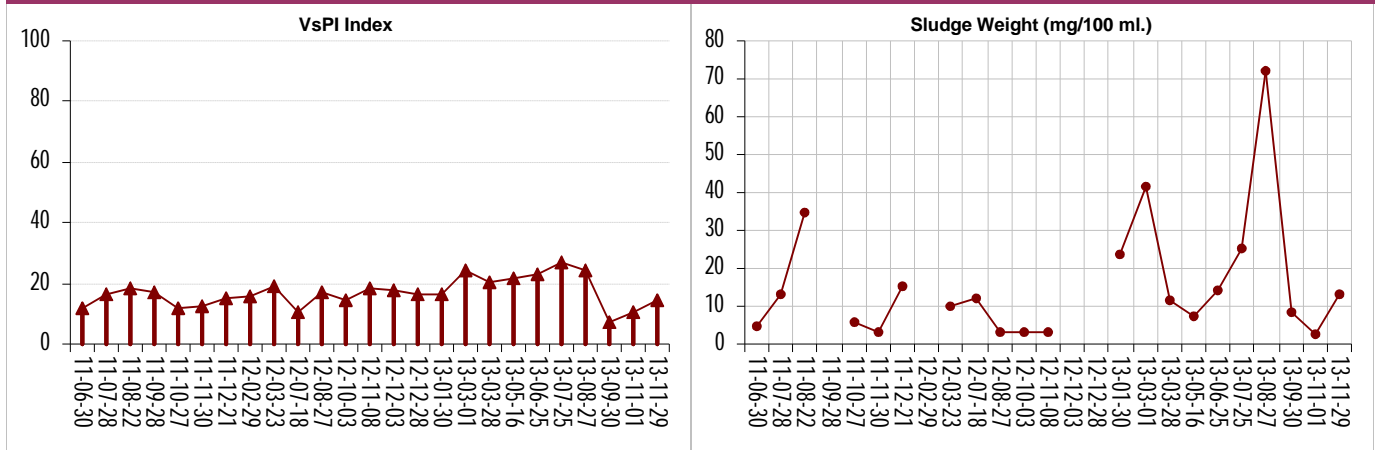
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Varnish & Sludge Potential Index (VsPI) is in the moderate range and indicates that varnish & sludge is present in the oil system.

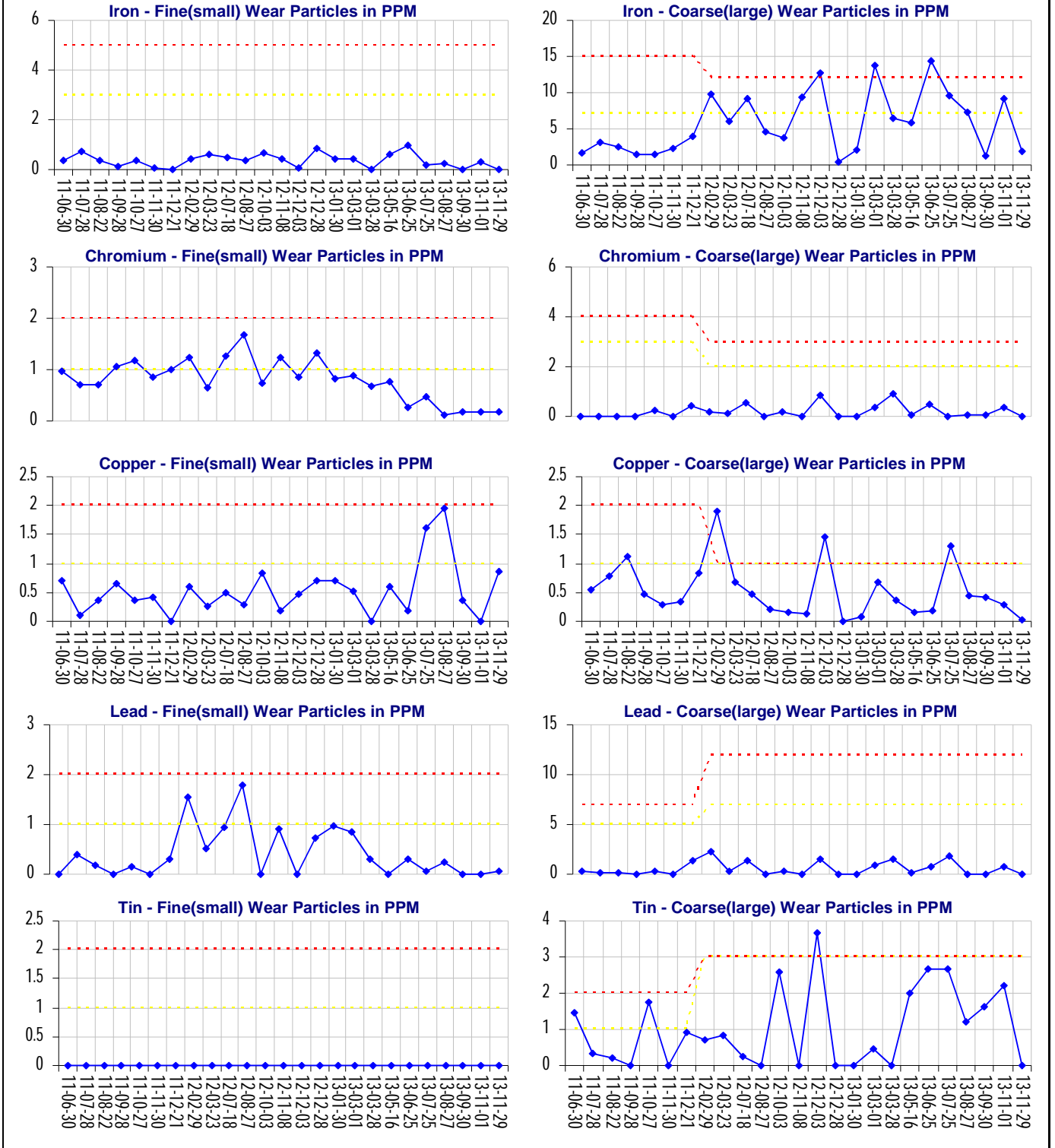
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Oil Added (Liters)					
Filters Hours (Kms)			650		
Contamination					
Varnish and Sludge Potential Index™ (VsPI™)					
VPI (Varnish Potential Index) : Soluble Varnish Type Contamination in Oil				The New Oil (TNO)	
	VPI View	VPI View	VPI View	VPI View	
VPI™ Varnish Potential Index Soluble Varnish Contaminant					
VPI Rating	5.7	5.7	4.9	1	
SPI (Sludge Potential Index) : Conform to ASTM D7843 - MPC (Membrane Patch Colorimetry) : Insoluble Varnish Type Contamination in Oil				The New Oil (TNO)	
	SPI View	SPI View	SPI View	SPI View	
SPI™ Sludge Potential Index (MPC Membrane Patch Colorimetry) Insoluble Varnish Contaminant					
SPI Rating	23	14.6	10.2	1	
Sludge Weight	13.0 mg/100 ml	2.5 mg/100 ml	8.4 mg/100 ml	2 mg/100 ml	
Alarm Limit Name					
EHC General Fyrquel (Khanom Electricity)					
				TNO Caution Warning	
VsPI™	14.4 C	10.2 C	7.5	1 >10 >15	
VsPI = (VPI + SPI) / 2					



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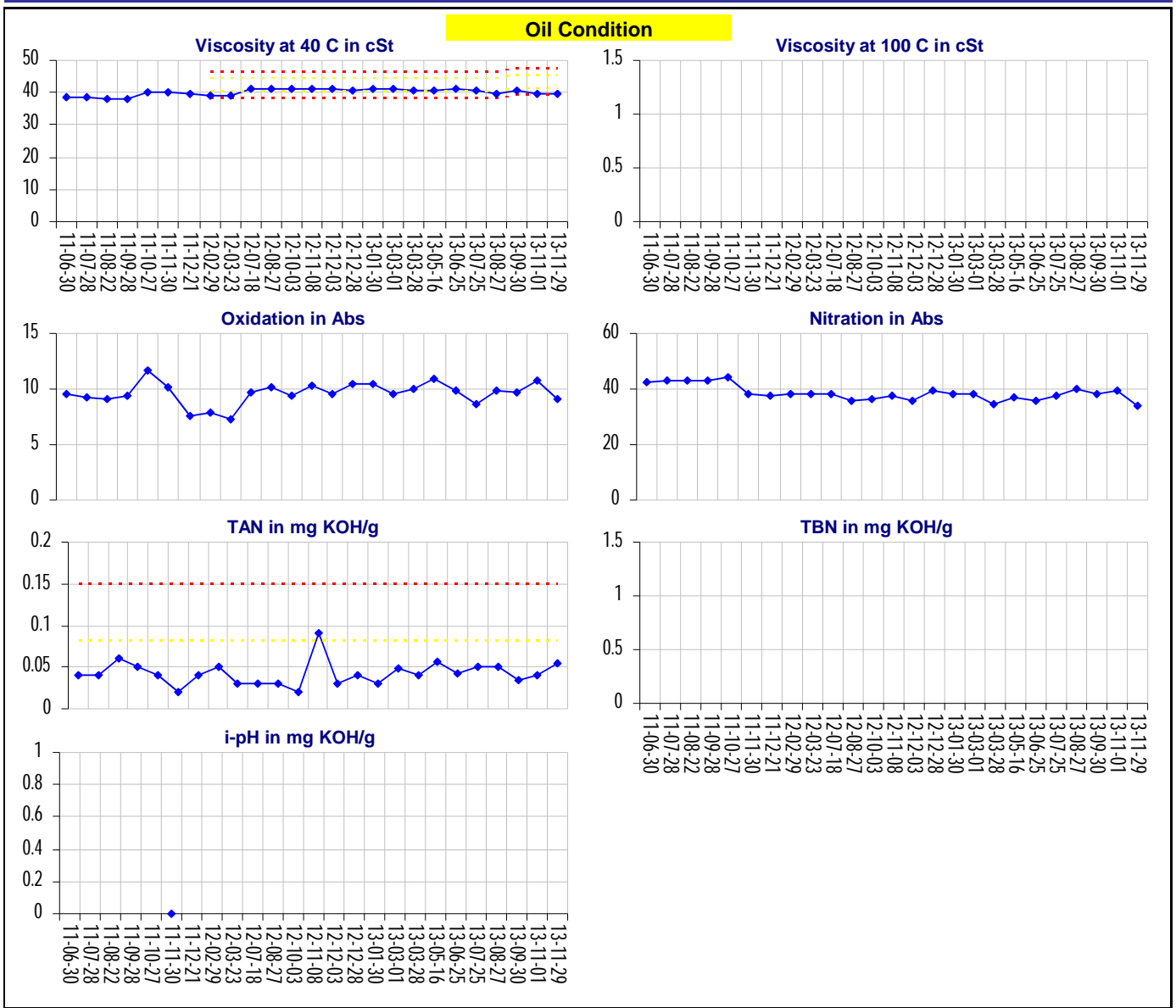
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Wear Condition



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