

C Code : 29049
 U Name : Linde (Thailand) Public Company
 S Limited
 T Address : 10 I-4 Rd., Map Ta Phut Industrial Estate T. Map Ta Phut,
 O A.Muang
 M Rayong 21150
 E Site : RY-ASU
 R Location :
 Test code : C834

Unit ID : R 15 Before Filter
 Unit Type : Compressor Screw
 Unit Make : CARRIER
 Unit Model : 130(031)
 Oil type/
 I Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68
 L Oil System Capacity : 170 Liters



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

All wear conditions and wear tests appear in normal working range.
 All oil conditions and oil tests appear in normal working range.
 Gravimetric analysis (photos shown) indicate the oil is highly contaminated with sludge, dirt, metal and other debris.
 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							
			N	N	W	N	N	W	C	C	W	Alarm Limit Matrix -Set Name (Equipment type / oil type) Comp Refrig General MB Gargoyle Artic 300							
Lab ID	Test Method	Result										Reference Oil (RO)	RDE fine	RFS coarse					
Bottle ID												U-Caution	U-Warning	U-Caution	U-Warning				
Date Sampled																			
Oil Hours (Kms)																			
Unit Hours (Kms)																			
Oil Added (Liters)																			
Filters Hours (Kms)																			
222361						205590			197168										
959130						1004780			959160										
30-Jun-13						15-Jan-13			04-Oct-12										
26681						23514			21364										
142157						138990			136840										
Wear Condition												RDE fine	RFS coarse						
Wear Element	Method	Unit	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse	RDE fine	RFS coarse		U-Caution	U-Warning	U-Caution	U-Warning				
Iron	D-6595	PPM	3.3	12.1	3.6	2.4	14.7	35.1	0	0	0	>20	>30	>45	>75				
Chromium	D-6595	PPM	0.3	0.7	0.0	0.2	0.3	0.6	0	0	0	>1	>2	>1	>2				
Lead	D-6595	PPM	0.0	0.6	0.1	1.1	2.3	2.1	0	0	0	>1	>2	>3	>5				
Copper	D-6595	PPM	0.3	0.9	0.7	0.7	0.0	2.5	0	0	0	>35	>40	>35	>40				
Tin	D-6595	PPM	0.0	0.0	0.0	0.0	0.0	3.1	0	0	0	>5	>8	>8	>15				
Aluminum	D-6595	PPM	0.0	1.3	0.2	0.0	0.0	1.2	0	0	0	>2	>3	>13	>25				
Nickel	D-6595	PPM	0.1	0.9	0.0	0.0	0.1	0.0	0	0	0	>1	>2	>3	>6				
Silver	D-6595	PPM	0.0	0.1	0.0	0.0	0.1	0.0	0	0	0								
Molybdenum	D-6595	PPM	0.0	2.0	0.0	0.0	0.4	1.0	0	0	0								
Titanium	D-6595	PPM	0.0	0.6	0.0	0.1	0.0	0.7	0	0	0								
Oil Condition												RO	L-Warning	L-Caution	U-Caution	U-Warning			
Viscosity @ 40°C	D-445	cSt	70.7		70.7		74.0	C	68.0			<34	<44.2	>71.4	>74.8				
Viscosity @ 100°C	D-445	cSt							5.0					>7.1	>8.6				
Oxidation	FTIR	Abs	4.0		3.7		10.8	W	5.5					>7	>8.4				
Nitration	FTIR	Abs	3.8		2.3		4.5		0.01					>0.51	>1.01				
TAN	D-974	mg KOH/g.	0.03		0.03		0.31												
TBN	D-4739	mg KOH/g.																	
Contamination												RO			U-Caution	U-Warning			
Water	T-H2O CheckTM	% (Wt.)	0.026	C	0.053	W	0.028	C	0.010					>0.02	>0.03				
Sodium	D-6595	PPM	1		2		6		0										
Silicon	D-6595	PPM	1.2	2.9	0.6	0.4	0.7	1.8	0					>20	>30	>15	>20		
Additive Element												RO							
Boron	D-6595	PPM	0		0		1		0										
Magnesium	D-6595	PPM	1		0		1		0										
Calcium	D-6595	PPM	1		0		1		0										
Barium	D-6595	PPM	0		0		5		0										
Phosphorus	D-6595	PPM	0		0		0		0										
Zinc	D-6595	PPM	5	12	4	3	14	39	0										
Additional Test												RO	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.

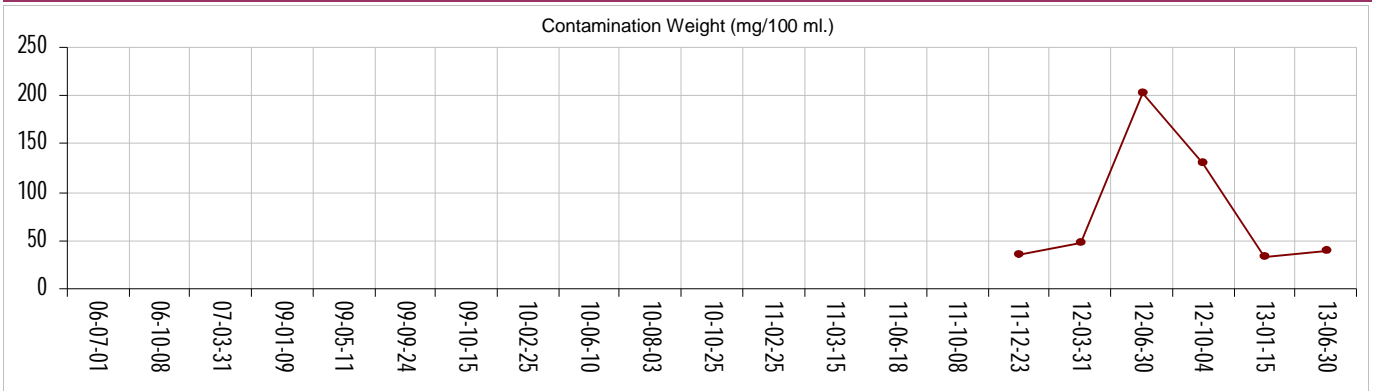
C Code : 29049
 U S T O M E R Name : Limited
 Address : 10 I-4 Rd., Map Ta Phut Industrial Estate T. Map Ta Phut, A.Muang Rayong 21150
 Site : RY-ASU
 Location :
 Test code : C834

Unit ID : R 15 Before Filter
 Unit Type : Compressor Screw
 Unit Make : CARRIER
 Unit Model : 130(031)
 Oil type / Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68
 Oil System Capacity : 170 Liters

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

Gravimetric analysis (photos shown) indicate the oil is highly contaminated with sludge, dirt, metal and other debris.

	Current Sample		Previous Sample		
Lab ID	222361		205590		197168
Bottle ID	959130		1004780		959160
Date Sampled	30-Jun-13		15-Jan-13		04-Oct-12
Oil Hours (Kms)	26681		23514		21364
Unit Hours (Kms)	142157		138990		136840
Oil Added (Liters)					
Filters Hours (Kms)					
Contamination					
Gravimetric Analysis : Test Method for Insoluble Contamination of Fluid					
Fluid Volume	10 ml		10 ml		10 ml
Filter Type	0.8 micron		0.8 micron		0.8 micron
Photo of Insoluble Contamination Retained on Filter Membrane Disc					
Photo of Insoluble Contamination Retained on Filter Membrane Disc					
Photo of Insoluble Contamination Retained on Filter Membrane Disc - Magnification 100x					
Photo of Insoluble Contamination Retained on Filter Membrane Disc Magnification 100x					
Contaminant Retain on Filter Disk	% Visual Rating		% Visual Rating		% Visual Rating
Grey & Black Metal	20		10		
Copper Base Metal					
Bright & White Metal			10		
Rust & Corrosion					
Dirt & Dust	30		70		100
Fibers / Filters / Seals					
Sludge & Varnish	50		10		50
Contamination Weight (mg/100 ml)	39.8 mg/100 ml W		34.0 mg/100 ml W		130.0 mg/100 ml W
					TNO 2 Caution >20 Warning >30



Gravimetric Analysis:
 - determines total solid and soft compound contamination level by weight
 - identifies particle contamination in oils by microscopic analysis
 - determines oil contamination level by colorimetric (color density)
 In brief, will analyze oil cleanliness and source(s) of contamination.

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M Address : Rayong 21150	M Unit Model : 130(031)
E Site : RY-ASU	N Oil type/ Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68
R Location : C834	L Oil System Capacity : 170 Liters

Lab ID : 222361 Date sampled : 30-Jun-13 Hours on Oil : 26681 Hours on Unit : 142157 Bottle ID : 959130

ส่วนที่ 1 : หน้าหลัก

[Section 1 : Main Page](#)

สภาพการสึกหรอและผลทดสอบการสึกหรอทั้งหมด พบว่าอยู่ในช่วงปกติ
คุณสมบัติของน้ำมันและผลทดสอบน้ำมันทั้งหมด พบว่าอยู่ในช่วงปกติ
ผลวิเคราะห์จากการกรองผ่านกระดาษกรอง (แสดงดังภาพ) พบว่าน้ำมันมีการปนเปื้อนปริมาณ สูงของคราบยางเหนียว ฝุ่นละออง เศษโลหะ และเศษโลหะสึกหรออื่นๆ
แนะนำให้ตรวจสอบการทำงานของกรองน้ำมัน เพื่อตรวจสอบหาการทำงานที่ผิดปกติ และแนะนำใช้ระบบกรองภายนอกพร้อมด้วย เพื่อจัดการให้ระบบน้ำมันสะอาดขึ้น
แนะนำให้เก็บตัวอย่างซ้ำอีกครั้งภายใน 500 ชั่วโมง หลังจากเก็บตัวอย่างครั้งนี้ เพื่อเฝ้าติดตาม

ส่วนที่ 2 : หน้าของ Particle Count

[Section 2 : Particle Count](#)

ส่วนที่ 3 : หน้าของ Ferrographic Analysis

[Section 3 : Ferrographic Analysis](#)

ส่วนที่ 4 : หน้าของ Varnish and Sludge Potential

[Section 4 : Varnish and Sludge Potential](#)

ส่วนที่ 5 : หน้าของ Gravimetric Analysis

[Section 5 : Gravimetric Analysis](#)

ผลวิเคราะห์จากการกรองผ่านกระดาษกรอง (แสดงดังภาพ) พบว่าน้ำมันมีการปนเปื้อนปริมาณ สูงของคราบยางเหนียว ฝุ่นละออง เศษโลหะ และเศษโลหะสึกหรออื่นๆ

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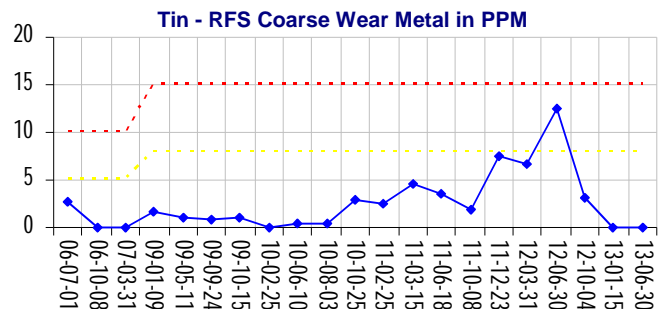
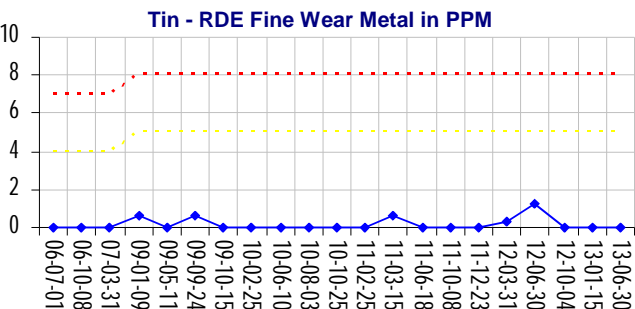
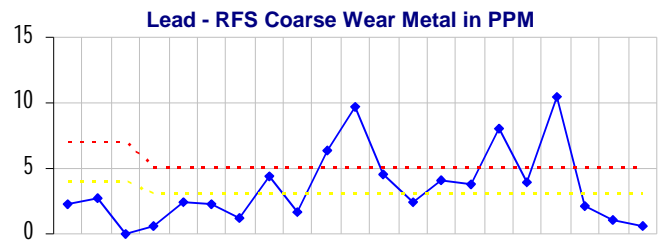
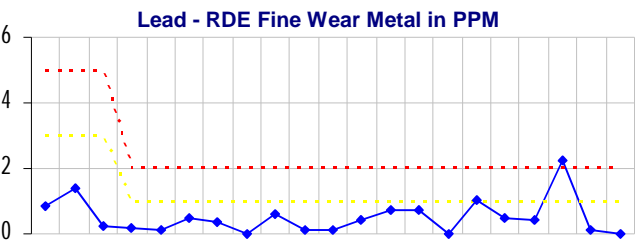
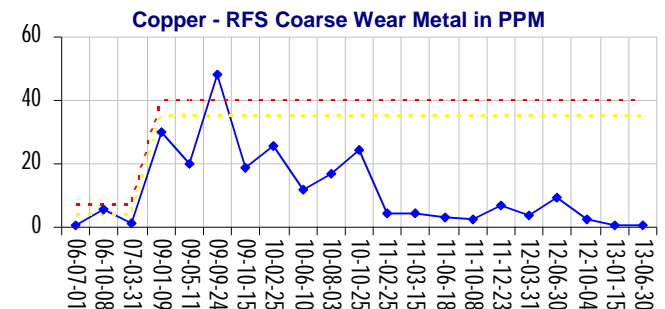
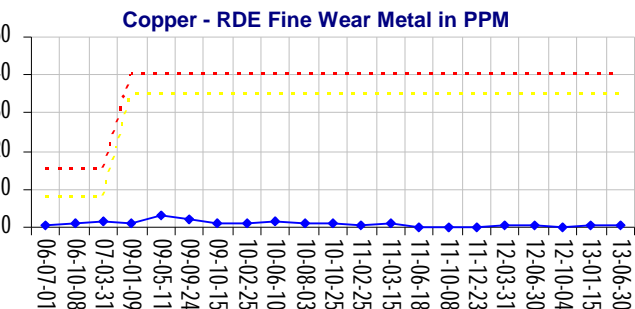
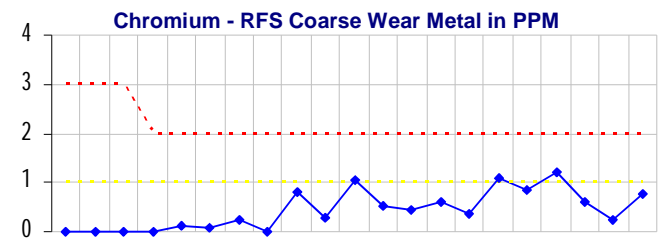
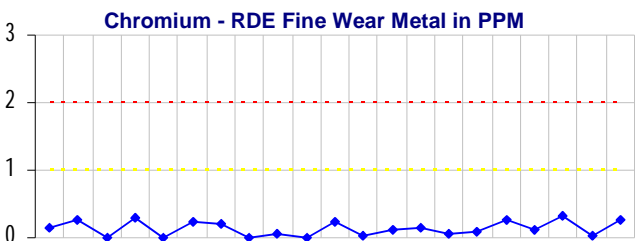
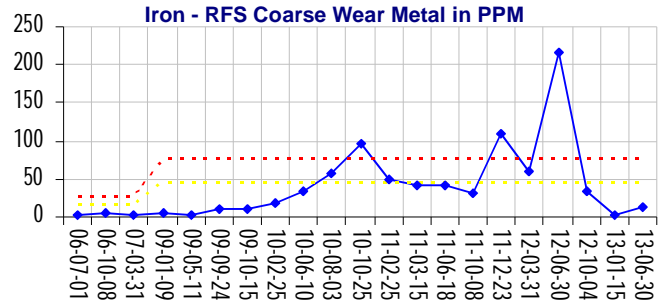
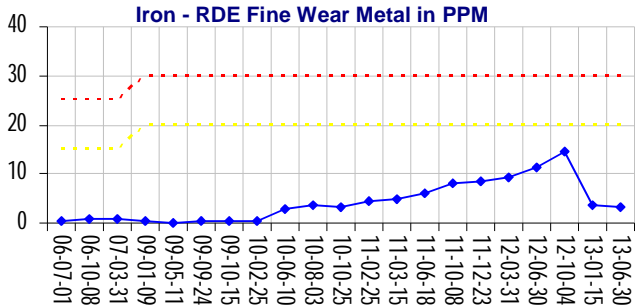
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Unit Type : Compressor Screw
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 Unit Model : 130(031)

Oil type / Viscosity : MOBIL GARGOYLE ARCTIC 300 ISO 68

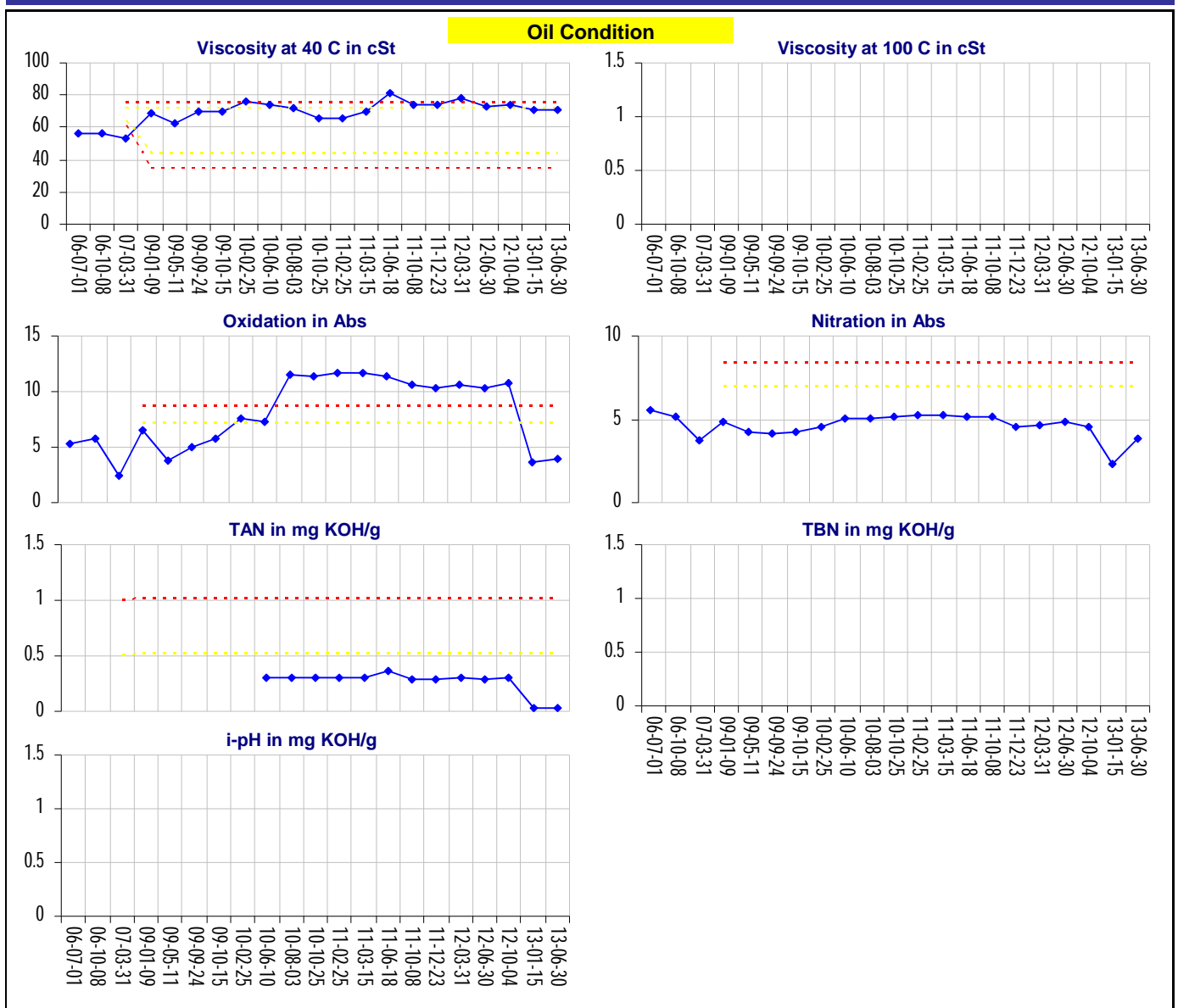
Oil System Capacity : 170 Liters

Wear Condition



C Code : 29049
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