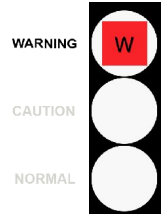


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 Test code : G884

Unit ID : **PC Extruder Line 9**
 Unit Type : Gearbox Extruder
 Unit Make : W & P
 Unit Model : (not given)
 Oil type/
 Viscosity : SHELL OMALA ISO 320
 Oil System Capacity :



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

Note abnormal wear metals.
 Dirt (silicon) is present and resulting in abrasive wear.
 Oil condition tests indicate that the oil is slightly degraded.
 Recommend check for other abnormal operating parameters, i.e., vibration, noise, heat etc. If abnormal condition exists, please inform laboratory with next sample.
 Recommend resample in 500 hours from the time this sample was taken, to monitor.

Patcharee K. / Wasan C.

			Current Sample			Previous Sample			Baseline and Alarm Limit										
Condition History			Wear	Oil	Cont.	Wear	Oil	Cont.	Wear	Oil	Cont.	Alarm Limit							
			W	C	W	W	W	W	C	C	C	Alarm Limit Matrix -Set Name (Equipment type / oil type)							
												Gearbox Extruder Gen Omala 320 (Bayer)							
												The New Oil (TNO)							
			RDE fine			RFS coarse			RDE fine			RFS coarse			RDE fine				
			U-Caution			U-Warning			U-Caution			U-Warning			U-Caution				
			U-Caution			U-Warning			U-Caution			U-Warning			U-Caution				
Lab ID	Test Method	Result	224070			215005			206037			Alarm Limit							
Bottle ID			1013024			1008951			1001826			Alarm Limit Matrix -Set Name (Equipment type / oil type)							
Date Sampled			26-Jul-13			25-Apr-13			18-Jan-13			Gearbox Extruder Gen Omala 320 (Bayer)							
Oil Hours (Kms)			Not Given			Not Given			Not Given										
Unit Hours (Kms)			Not Given			Not Given			Not Given										
Filters Hours (Kms)			Not Given			Not Given			Not Given										
Wear Condition			RDE fine			RFS coarse			RDE fine			RFS coarse			The New Oil (TNO)				
Wear Element	Method	Unit	RDE fine	RFS coarse	W	RDE fine	RFS coarse	W	RDE fine	RFS coarse	C	RDE fine	RFS coarse	U-Caution	U-Warning	U-Caution	U-Warning		
Iron	D-6595	PPM	10.8	115.3	W	26.0	102.5	W	24.4	22.8	0	0	0	>35	>60	>40	>70		
Chromium	D-6595	PPM	0.4	1.5		0.1	1.7		0.5	0.0	0	0	0	>1	>2	>2	>4		
Lead	D-6595	PPM	0.0	1.3		0.0	0.4		1.3	0.0	C	0	0	>1	>3	>7	>12		
Copper	D-6595	PPM	0.3	0.8		0.5	2.0		0.4	0.4		0	0	>2	>3	>3	>4		
Tin	D-6595	PPM	0.0	2.4	C	0.0	0.0		0.0	0.0		0	0	>1	>2	>2	>4		
Aluminum	D-6595	PPM	0.0	1.6		0.3	1.8		0.3	0.0		0	0	>1	>2	>2	>4		
Nickel	D-6595	PPM	0.1	1.6		0.0	0.0		0.0	0.0		0	0	>1	>2	>2	>3		
Silver	D-6595	PPM	0.0	0.0		0.0	0.0		0.0	0.1		0	0						
Molybdenum	D-6595	PPM	0.0	1.0		0.0	1.0		0.0	0.0		0	0						
Titanium	D-6595	PPM	0.0	3.9		0.0	3.7		0.0	1.2		0	0						
Oil Condition			TNO			L-Warning			L-Caution			U-Caution			U-Warning				
Viscosity @ 40°C	D-445	cSt	310.5	C		314.2	C		310.2			295.5	<265.9	<280.7	>310.3	>325.1			
Viscosity @ 100°C	D-445	cSt																	
Oxidation	FTIR	Abs	4.7	C		11.7	W		12.4	W		3.0			>4.5	>6			
Nitration	FTIR	Abs	3.6			3.9			3.6			2.8			>4.2	>5.6			
TAN	D-974	mg KOH/g.	0.43			0.52			0.54			0.50			>1	>1.5			
TBN	D-4739	mg KOH/g.																	
Contamination			TNO			U-Caution			U-Warning										
Water	T-H2O CheckTM	% (Wt.)	0.013			0.030	C		0.019			0.010			>0.03	>0.05			
			RDE fine			RFS coarse			RDE fine			RFS coarse							
			U-Caution			U-Warning			U-Caution			U-Warning							
Sodium	D-6595	PPM	0			1			0			0							
Silicon	D-6595	PPM	4.7	24.6	W	2.1	17.3	W	2.1	8.8	C	1	>5	>10	>5	>10			
Additive Element			TNO																
Boron	D-6595	PPM	0			2			2			9							
Magnesium	D-6595	PPM	0			0			0			0							
Calcium	D-6595	PPM	2			2			0			4							
Barium	D-6595	PPM	0			0			0			0							
Phosphorus	D-6595	PPM	197			110			142			150							
Zinc	D-6595	PPM	2	5		4	23		4	1		2							
Additional Test			TNO			L-Caution			L-Warning			U-Caution			U-Warning				
Flash Point	D-3828	°C																	
Viscosity Index	D-2270																		


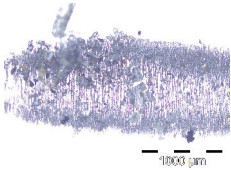
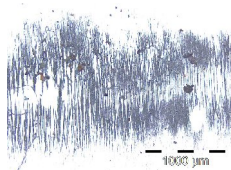
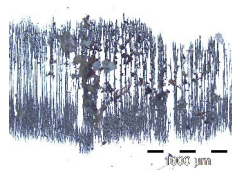
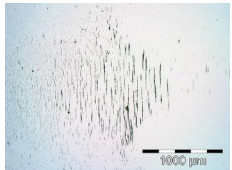
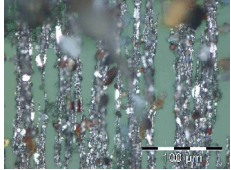
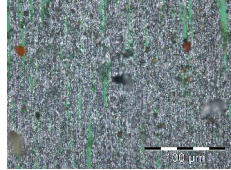
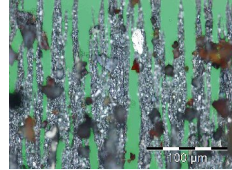
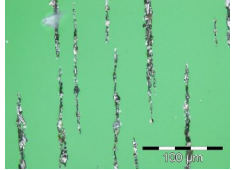
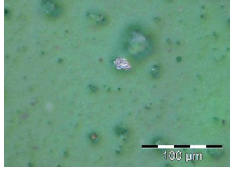
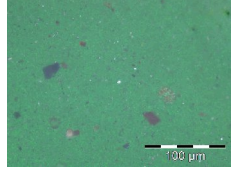
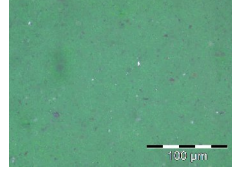
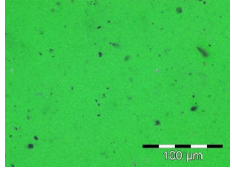
Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.
 No Sign or **N** : NORMAL , **C** or **W** : CAUTION (first level warning limit) , **W** or **W** : Warning (second level warning limit)
 U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level 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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Unit ID : **PC Extruder Line 9**
 Unit Type : Gearbox Extruder
 Unit Make : W & P
 Unit Model : (not given)
 Oil type / Viscosity : SHELL OMALA ISO 320
 Oil System Capacity :

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

Fatigue wear appears to be one of the major abnormal wear mode in progress.
 Fatigue particles found in the ferrogram may be an indication of the dirt related fatigue wear.

	Current Sample			Previous Sample								
Lab ID	224070	215005	206037									
Bottle ID	1013024	1008951	1001826									
Date Sampled	26-Jul-13	25-Apr-13	18-Jan-13									
Oil Hours (Kms)	Not Given	Not Given	Not Given									
Unit Hours (Kms)	Not Given	Not Given	Not Given									
Oil Added (Liters)				Typical Normal Ferrography								
Filters Hours (Kms)												
Wear Condition												
Ferrographic Analysis												
Volume of Sample Used	3.00 ml	3.00 ml	3.00 ml	3.00 ml								
Image of Wear & Contaminants (Ferrogram) Magnification 50X												
Image of Wear & Contaminants (Ferrogram) Magnification 500X												
Image of Wear & Contaminants (Filtergram) Magnification 500X												
Wear & Contaminants Particles	%Rating	Size (Micron)	Particle Type	%Rating	Size (Micron)	Particle Type	%Rating	Size (Micron)	Particle Type	%Rating	Size (Micron)	Particle Type
Normal Rubbing Wear	70	2-3	1	80	2-3	1	75	2-3	1	95	2-3	1
Fatigue Gear Wear	15	5-40	1	5	5-20	1	10	5-30	1			
Fatigue Bearing Wear												
Fatigue Sphere												
Severe Sliding Wear												
Cutting Wear												
Black Oxides	5	5-30	1	5	5-10	1	10	5-20	1			
Red Oxides	5	5-20	1									
Corrosive Wear												
Dirt and Dust	5	10-100	3	10	5-60	3	5	5-40	3	5	3-5	3
Copper												
White Metal												
Ferrographic Analysis Rating (FAR) rating in grade	C			C			C			C		

%Rating : Percent area covered by wear debris particles or contaminant particles. Size : Size in micron unit (0.001 mm) Particle Type : 1 : Ferrous Wear Particles 1.1: Low Alloy 1.2 :Medium Alloy 1.3: High Alloy 1.4 Case Hardened 2 : Non-ferrous Wear Particles 2.1: Copper 2.2 : White Metal 2.3: Babbiting 3 : Contamination Particles 3.1:Fibers	Ferrographic Analysis Rating (FAR) , rating in grade A : Excellent - normal rubbing wear condition B : Good - normal rubbing wear condition C : Fair or moderate - normal rubbing wear condition D : Severe and/or critical - wear condition F : Extreme severe and/or extreme critical - wear condition
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U
I
P Unit Type : Gearbox Extruder
M Unit Make : W & P
E Unit Model : (not given)
T
Oil type/
I Viscosity : SHELL OMALA ISO 320
L
Oil System Capacity :

Lab ID : 224070 Date sampled : 26-Jul-13 Hours on Oil : Not Given Hours on Unit : Not Given Bottle ID : 1013024

ส่วนที่ 1 : หน้าหลัก

[Section 1 : Main Page](#)

สังเกต-อนุภาคเศษโลหะสึกหรอที่ผิดปกติ

พบฝุ่นละออง (ซิลิกอน) ส่งผลให้เกิดการสึกหรอแบบขูดขีด (abrasive wear)

ผลทดสอบคุณสมบัติน้ำมัน ชีวามันเสื่อมสภาพไปเล็กน้อย

แนะนำให้ตรวจสอบถึงความผิดปกติของปัจจัยการทำงานอื่นๆ อาทิ การสิ้นสะท้อน เสียง ความร้อน ฯลฯ ถ้าหากยังมีสภาพผิดปกติอยู่ แจ้งให้ห้องแลบพร้อม กับเก็บและส่งตัวอย่างครั้งต่อไป

แนะนำให้เก็บตัวอย่างซ้ำอีกครั้งภายใน 500 ชั่วโมง หลังจากเก็บตัวอย่างครั้งนี้ เพื่อเฝ้าติดตาม

ส่วนที่ 2 : หน้าของ Particle Count

[Section 2 : Particle Count](#)

ส่วนที่ 3 : หน้าของ Ferrographic Analysis

[Section 3 : Ferrographic Analysis](#)

พบอนุภาคการสึกหรอแบบล้าตัว ซึ่งเป็นการสึกหรออย่างผิดปกติที่รุนแรงตัวหนึ่ง

อนุภาคการสึกหรอแบบล้าตัวที่พบ อาจเกี่ยวเนื่องมาจากอนุภาคสิ่งสกปรกในระบบ

ส่วนที่ 4 : หน้าของ Varnish and Sludge Potential

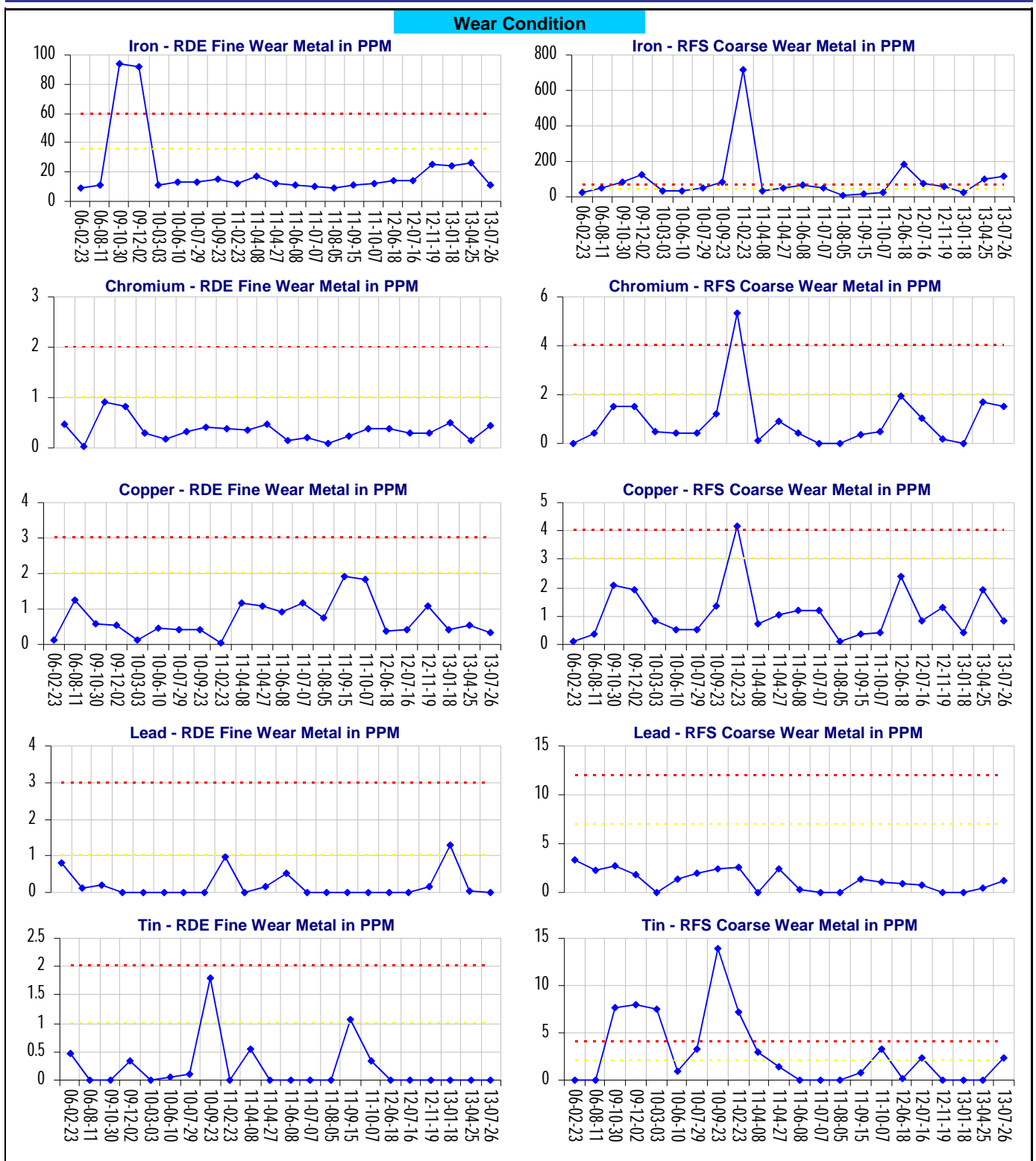
[Section 4 : Varnish and Sludge Potential](#)

ส่วนที่ 5 : หน้าของ Gravimetric Analysis

[Section 5 : Gravimetric Analysis](#)

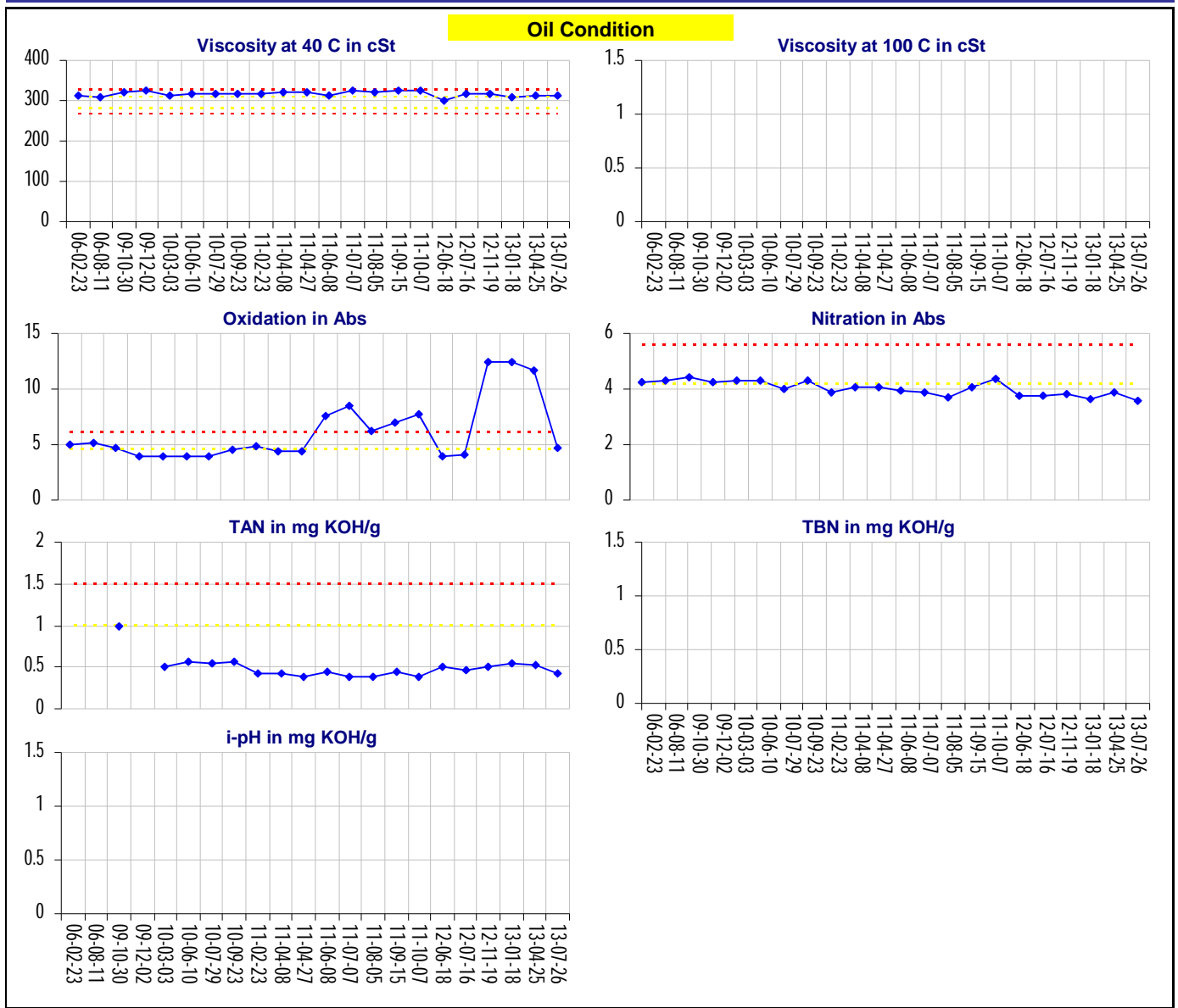
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 Unit Model : (not given)
 Oil type / Viscosity : SHELL OMALA ISO 320
 Oil System Capacity :



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 E
 N
 L Oil System Capacity :

