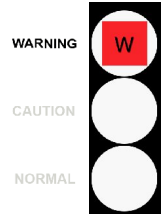


C Code : 25037
 U Name :
 T
 O
 M Address : No.9, I-8 Rd.,
 R Map Ta Phut Industrial Estate,
 E Map Ta Phut, Muang, Rayong 21150
 Site : BLCP Power Limited
 Location :
 Test code : B824

Unit ID : 02HLD01AC101 U2 Air Preheater B Upper
Bearing
 Unit Type : Bearing General
 Unit Make : MITSUBISHI
 Unit Model : (not given)
 Oil type / Viscosity : IDEMITSU DAPHNE GEAR ISO 460
 Oil System Capacity : 30 Liters



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

Note abnormal wear metals.
 Note viscosity is lower than normal limits.
 Particle count indicates that oil cleanliness level is in unacceptable range.
 Recommend check to determine how dirt is entering the system and correct the problem to prevent further dirt entry.
 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	N	N	N	W	W	C	Alarm Limit Matrix -Set Name (Equipment type / oil type)				
												Bearing Main General DAPHNE GEAR ISO 460 (BLCP)				
												Reference Oil (RO)				
												RDE fine		RFS coarse		
												U-Caution	U-Warning	U-Caution	U-Warning	
Lab ID	Test Method	Result	223373			171666			145627			B A S E L I N E				
Bottle ID			2001029			942468			922590			Alarm Limit Matrix -Set Name (Equipment type / oil type)				
Date Sampled			16-Jul-13			21-Oct-11			05-Oct-10			Bearing Main General DAPHNE GEAR ISO 460 (BLCP)				
Oil Hours (Kms)			13536			8616			34259							
Unit Hours (Kms)			58163			42875			34259							
Filters Hours (Kms)																
Wear Condition			RDE fine	RFS coarse		RDE fine	RFS coarse		RDE fine	RFS coarse						
Wear Element	Method	Unit														
Iron	D-6595	PPM	8.6	36.4 W		1.0	2.7		8.5	77.5 W		0	>20	>35	>25	>30
Chromium	D-6595	PPM	0.3	0.7		0.0	0.0		0.4	0.8		0	>1	>2	>2	>3
Lead	D-6595	PPM	0.0	0.4		0.0	0.3		0.0	3.5		0	>2	>3	>6	>10
Copper	D-6595	PPM	6.0 C	7.3 C		2.5	1.2		4.4	15.2 W		0	>5	>10	>5	>10
Tin	D-6595	PPM	1.0	4.5 C		2.7 C	6.2 W		1.9	3.3 C		0	>2	>3	>3	>6
Aluminum	D-6595	PPM	0.2	0.0		0.6	0.6		0.3	1.9		0	>1	>2	>2	>4
Nickel	D-6595	PPM	0.0	0.1		0.0	0.5		0.0	0.0		0	>1	>2	>2	>3
Silver	D-6595	PPM	0.0	0.0		0.0	0.0		0.0	0.0		0				
Molybdenum	D-6595	PPM	93.2	66.6		132.4	135.6		103.4	111.6		140				
Titanium	D-6595	PPM	0.0	1.8		0.0	0.0		0.0	0.3		0				
Oil Condition			RDE fine	RFS coarse		RDE fine	RFS coarse		RDE fine	RFS coarse						
Viscosity @ 40°C	D-445	cSt	413.3 C			439.9			412.0 W			435.8	<392.2	<414	>457.6	>479.4
Viscosity @ 100°C	D-445	cSt														
Oxidation	FTIR	Abs	3.0			4.7			3.9			3.5		>5.3	>7	
Nitration	FTIR	Abs	3.9			4.2			4.4			3.5		>5.3	>7	
TAN	D-974	mg KOH/g.	0.49			0.45			0.50			0.45		>0.95	>1.45	
TBN	D-4739	mg KOH/g.														
Contamination			RDE fine	RFS coarse		RDE fine	RFS coarse		RDE fine	RFS coarse						
Water	T-H2O CheckTM	% (Wt.)	0.016			0.016			0.023			0.020		>0.05	>0.08	
Sodium	D-6595	PPM	2			1			0			0				
Silicon	D-6595	PPM	1.6	0.8		1.6	2.4		1.8	6.9		3	>8	>13	>10	>15
Additive Element			RDE fine	RFS coarse		RDE fine	RFS coarse		RDE fine	RFS coarse						
Boron	D-6595	PPM	0			1			0			0				
Magnesium	D-6595	PPM	0			0			0			0				
Calcium	D-6595	PPM	2			12			1			0				
Barium	D-6595	PPM	0			0			0			0				
Phosphorus	D-6595	PPM	61			102			96			90				
Zinc	D-6595	PPM	4	1		2	3		4	6		1				
Additional Test			RDE fine	RFS coarse		RDE fine	RFS coarse		RDE fine	RFS coarse						
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.

C Code : 25037
 U Name :
 S :
 T :
 O :
 M Address : No.9, I-8 Rd.,
 E Map Ta Phut Industrial Estate,
 R Map Ta Phut, Muang, Rayong 21150
 Site : BLCP Power Limited
 Location :
 Test code : B824

Unit ID : 02HLD01AC101 U2 Air Preheater B Upper Bearing
 Unit Type : Bearing General
 Unit Make : MITSUBISHI
 Unit Model : (not given)
 Oil type / Viscosity : IDEMITSU DAPHNE GEAR ISO 460
 Oil System Capacity : 30 Liters

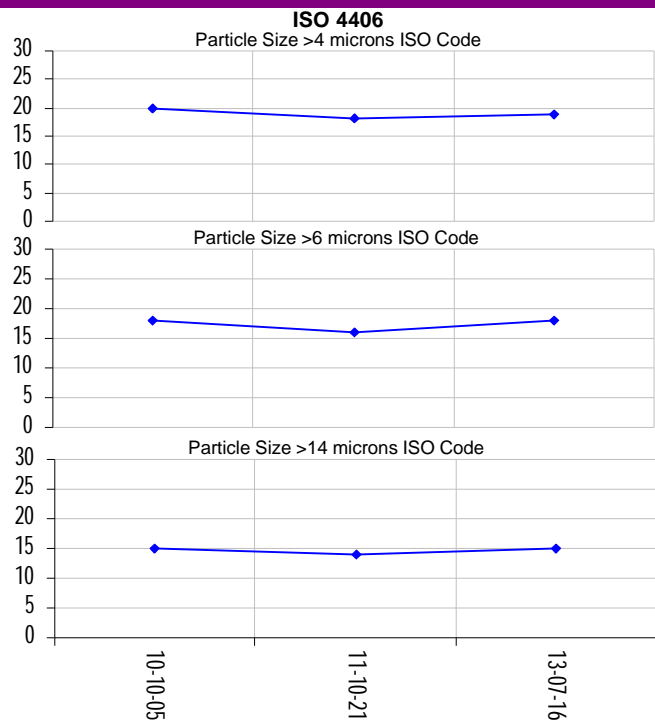
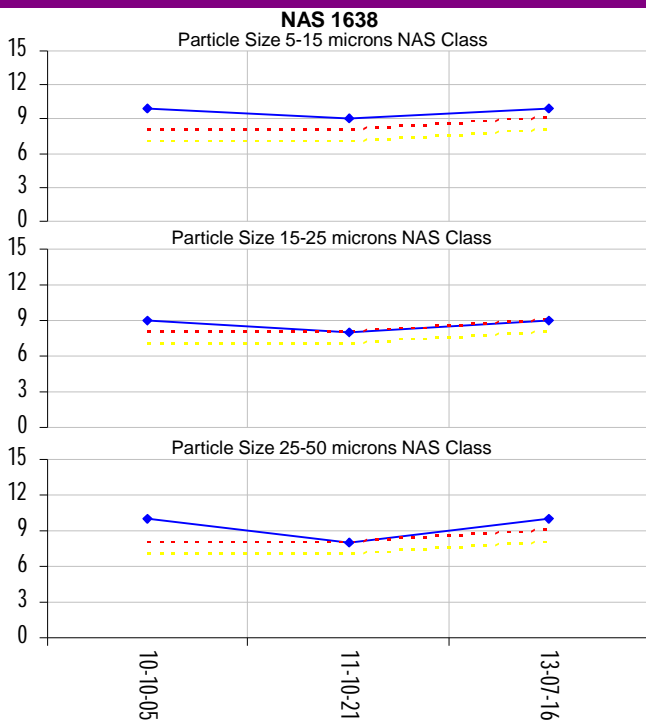
Notes (Finding, Evaluation, Interpretation, Suggestion and Recommendation)

Particle count indicates that oil cleanliness level is in unacceptable range.

Lab ID	Current Sample	Previous Sample		Particle Count	
	Bottle ID	223373	171666	145627	NAS 1638
Date Sampled	2001029	942468	922590	BASELINE	Alarm Limit
Oil Hours (Kms)	16-Jul-13	21-Oct-11	05-Oct-10	Bearing Main General DAPHNE GEAR ISO 460 (BLCP)	
Unit Hours (Kms)	13536	8616	34259		
Oil Added (Liters)	58163	42875	34259		
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	161,200	10 W	73,600	9 W	227,200	10 W		>32000	8	>64000	9
Particle Size 15-25 microns	14,700	9 W	6,600	8 W	20,700	9 W		>5700	8	>11400	9
Particle Size 25-50 microns	4,200	10 W	1,900	8 W	5,900	10 W		>1012	8	>2025	9
Particle Size 50-100 microns	400	9	200	8	600	9					
Particle Size >100 microns	<100	7	<100	6	<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	4,837	19	2,205	18	6,817	20					
Particle Size > 6 microns	1,354	18	617	16	1,908	18					
Particle Size > 14 microns	190	15	86	14	268	15					
ISO 4406 Class Rating	19 / 18 / 15		18 / 16 / 14		20 / 18 / 15						


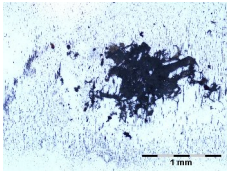
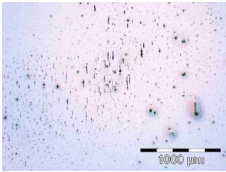
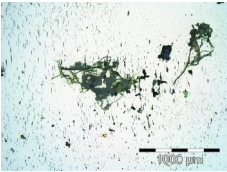
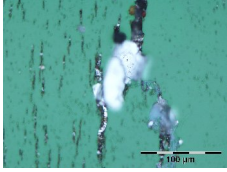
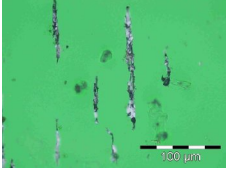
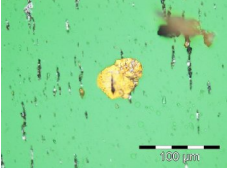
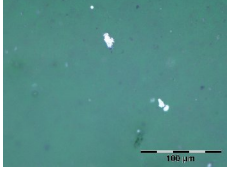

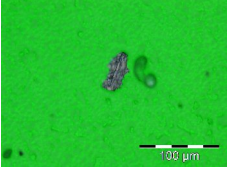


C Code : 25037
 U Name :
 S
 T
 O
 M Address : No.9, I-8 Rd.,
 E Map Ta Phut Industrial Estate,
 R Map Ta Phut, Muang, Rayong 21150
 Site : BLC Power Limited
 Location :
 Test code : B824

Unit ID : 02HLD01AC101 U2 Air Preheater B Upper Bearing
 Unit Type : Bearing General
 Unit Make : MITSUBISHI
 Unit Model : (not given)
 Oil type / Viscosity : IDEMITSU DAPHNE GEAR ISO 460
 Oil System Capacity : 30 Liters

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

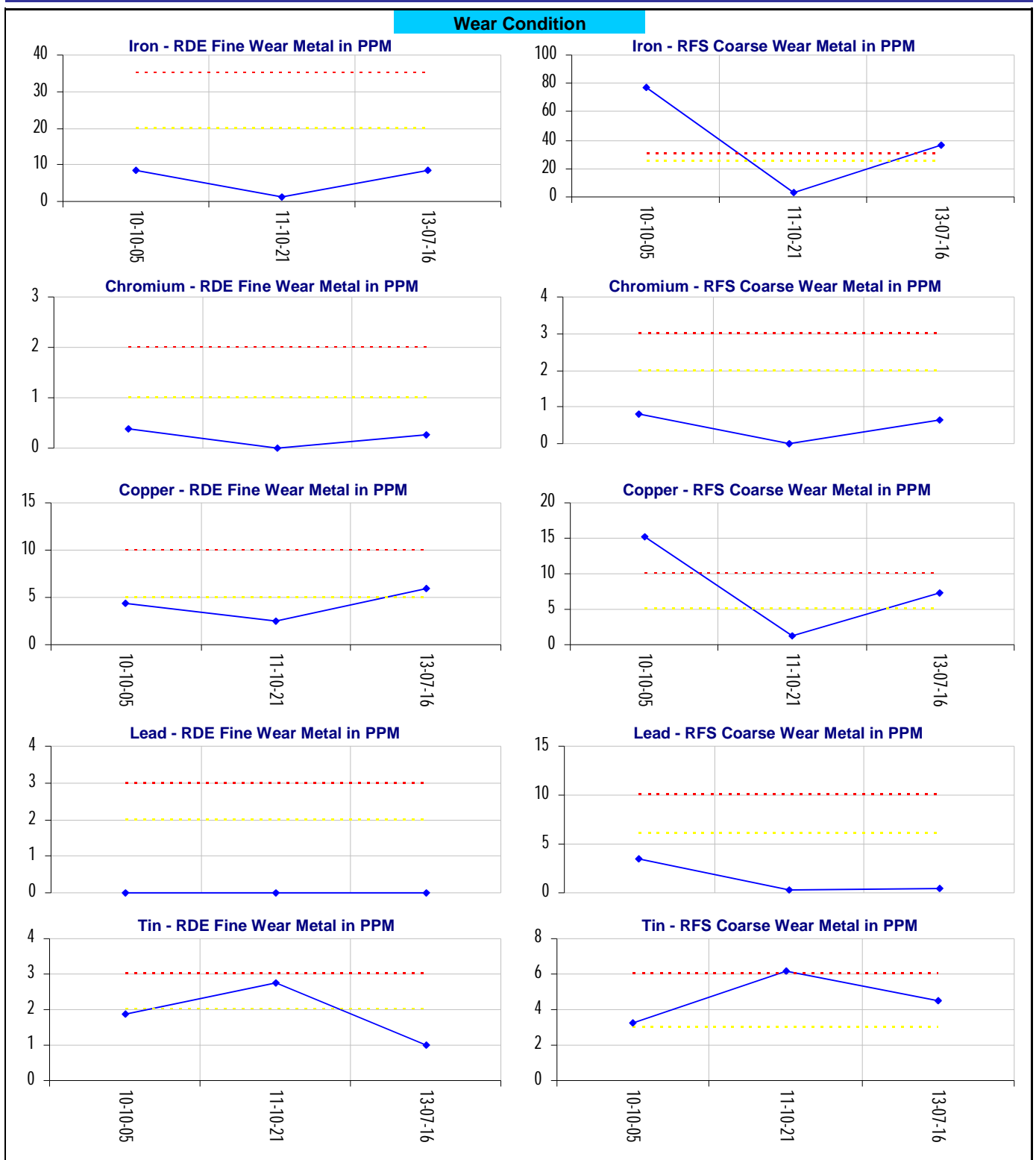
Cutting wear noted in ferrogram.
 Fatigue wear appears to be one of the major abnormal wear mode in progress.

	Current Sample			Previous Sample								
Lab ID	223373			171666			145627					
Bottle ID	2001029			942468			922590					
Date Sampled	16-Jul-13			21-Oct-11			05-Oct-10					
Oil Hours (Kms)	13536			8616			34259					
Unit Hours (Kms)	58163			42875			34259					
Oil Added (Liters)												
Filters Hours (Kms)												
Wear Condition												
Ferrographic Analysis										Typical Normal Ferrography		
Volume of Sample Used	3.00	ml		3.00	ml		3.00	ml		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	60	2-3	1			
Fatigue Gear Wear	5	5-60	1	5	5-10	1	10	10-50	1			
Fatigue Bearing Wear												
Fatigue Sphere												
Severe Sliding Wear												
Cutting Wear	5	5-60	1									
Black Oxides	5	5-30	1	5	5-10	1	10	10-50	1			
Red Oxides												
Corrosive Wear												
Dirt and Dust	10	10-80	3	5	5-10	3	10	10-80	3			
Copper												
White Metal	5	5-20	2									
				5	3-5	2	10	20-80	2			
Ferrographic Analysis Rating (FAR) rating in grade	C			C								

%Rating :	Percent area covered by wear debris particles or contaminant particles.	Ferrographic Analysis Rating (FAR) , rating in grade
Size :	Size in micron unit (0.001 mm)	A : Excellent - normal rubbing wear condition
Particle Type :	1 : Ferrous Wear Particles	B : Good - normal rubbing wear condition
	1.1: Low Alloy 1.2 :Medium Alloy 1.3: High Alloy 1.4 Case Hardened	C : Fair or moderate - normal rubbing wear condition
	2 : Non-ferrous Wear Particles	D : Severe and/or critical - wear condition
	2.1: Copper 2.2 : White Metal 2.3: Babbiting	F : Extreme severe and/or extreme critical - wear condition
	3 : Contamination Particles	
	3.1:Fibers	

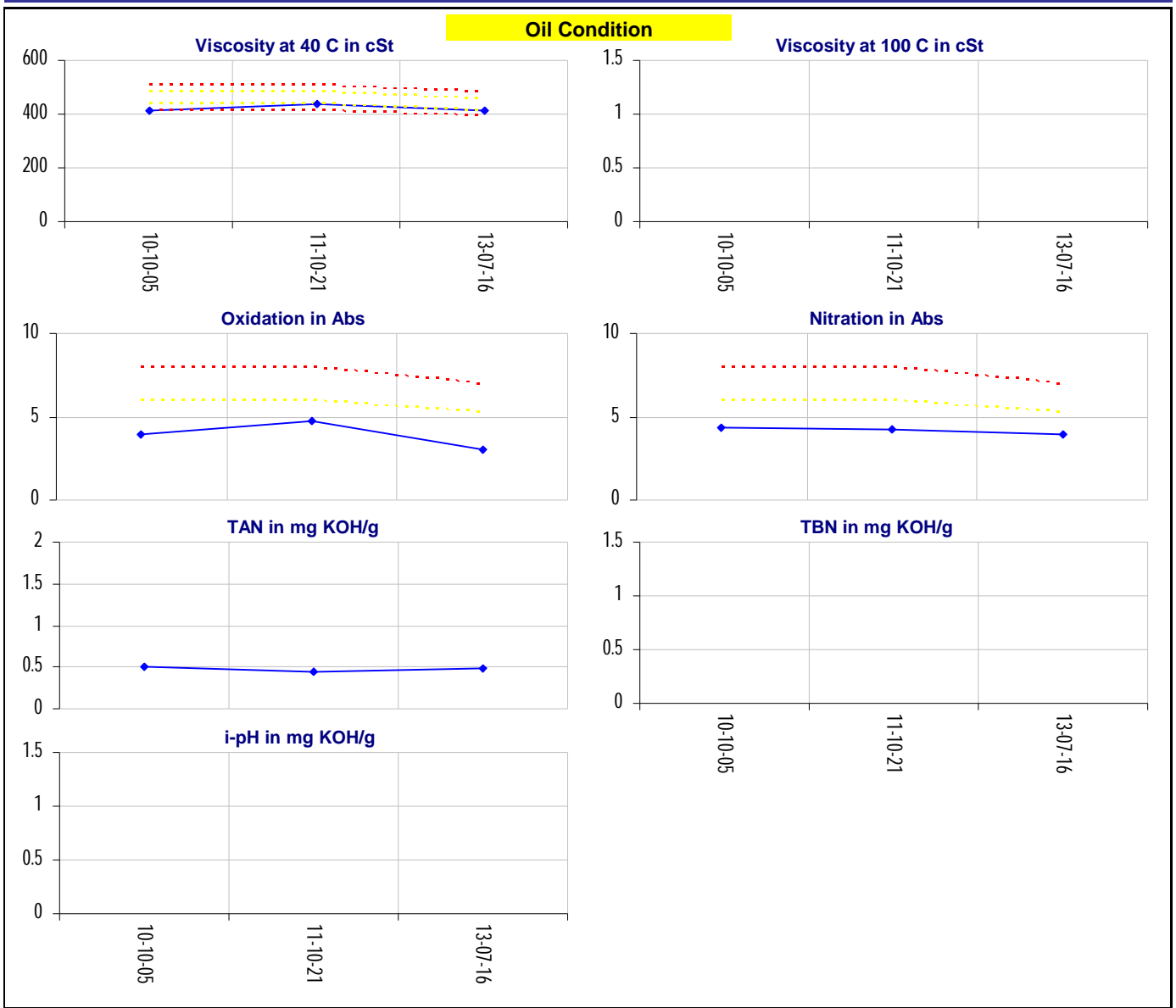
C Code : 25037
 U Name :
 S Address : No.9, I-8 Rd.,
 T Map Ta Phut Industrial Estate,
 O Map Ta Phut, Muang, Rayong 21150
 M Site : BLC Power Limited
 E Location :
 R Test code : B824

E Unit ID : 02HLD01AC101 U2 Air Preheater B Upper
 O Bearing
 U Unit Type : Bearing General
 P Unit Make : MITSUBISHI
 M Unit Model : (not given)
 E Oil type / Viscosity : IDEMITSU DAPHNE GEAR ISO 460
 L Oil System Capacity : 30 Liters



C Code : 25037
 U Name :
 S
 T
 O
 M Address : No.9, I-8 Rd,
 E Map Ta Phut Industrial Estate,
 R Map Ta Phut, Muang, Rayong 21150
 Site : BLCP Power Limited
 Location :
 Test code : B824

E Unit ID : 02HLD01AC101 U2 Air Preheater B Upper
 O Unit Type : Bearing General
 I Unit Make : MITSUBISHI
 L Unit Model : (not given)
 Oil type/
 I Viscosity : IDEMITSU DAPHNE GEAR ISO 460
 Oil System Capacity : 30 Liters



C Code : 25037
 U Name :
 S
 T
 O Address : No.9, I-8 Rd,
 M Map Ta Phut Industrial Estate,
 E Map Ta Phut, Muang, Rayong 21150
 R Site : BLC Power Limited
 Location :
 Test code : B824

E Unit ID : 02HLD01AC101 U2 Air Preheater B Upper
 O Unit Name : Bearing
 U Unit Type : Bearing General
 I Unit Make : MITSUBISHI
 P Unit Model : (not given)
 M
 E
 L Oil type / Viscosity : IDEMITSU DAPHNE GEAR ISO 460
 Oil System Capacity : 30 Liters

