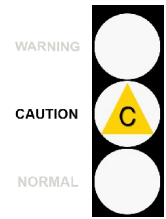


C Code : **28029**
 U Name : .
 T
 O Address : 33/1 Moo 3, T. Banpa
 M A.Kaeng Khoi
 E Saraburi 18110
 R
 Site :
 Location :
 Test code :

Unit ID : **11GR51**
 Unit Type : Gearbox General
 Unit Make : UBE
 Unit Model : PSD 250 200
 Oil type / Viscosity : MOBIL SPARTAN EP ISO 320
 Oil System Capacity : 2000 Liters



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

Note abnormal wear metals.
 Cutting wear indicates abnormal wear mode in progress. Suspect misalignment or abrasive wear.
 Please note comments on the following Ferrographic Analysis page.
 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				
Lab ID Bottle ID Date Sampled Oil Hours (Kms) Unit Hours (Kms) Oil Change Oil Added (Liters) Filters Hours (Kms)	Test Method	Result	W	N	N	W	C	C	W	C	C	Alarm Limit Matrix -Set Name (Equipment type / oil type)				
			250063	168178	164488	Gearbox Cement General										
			1034182	916395	927140	ESSO Spartan EP320 (SCI)										
			10-Mar-14	07-Sep-11	13-Jul-11											
			8685	6194	5666											
131837	115273	114745														
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								
Iron	D-6595	PPM	16.0	16.0	13.6	83.6	13.8	120.9	0	>30	>50	>100	>160			
Chromium	D-6595	PPM	0.1	0.0	0.3	0.4	0.2	0.6	0	>1	>2	>2	>3			
Lead	D-6595	PPM	0.1	0.0	0.0	4.1	0.7	2.3	0	>1	>2	>2	>3			
Copper	D-6595	PPM	12.1	6.9	8.4	13.2	8.0	17.6	0	>5	>8	>2	>3			
Tin	D-6595	PPM	7.5	5.3	10.0	67.4	8.2	83.1	0	>1	>2	>20	>40			
Aluminum	D-6595	PPM	0.3	0.0	0.6	4.3	0.0	5.4	0	>1	>2	>6	>12			
Nickel	D-6595	PPM	0.0	0.0	0.0	0.0	0.2	0.0	0	>1	>2	>1	>2			
Silver	D-6595	PPM	0.0	0.0	0.0	0.0	0.1	0.1	0							
Molybdenum	D-6595	PPM	0.0	0.0	0.0	0.6	0.0	1.4	0							
Titanium	D-6595	PPM	0.0	0.0	0.0	0.0	0.0	0.0	0							
Oil Condition												TNO	L-Warning	L-Caution	U-Caution	U-Warning
Viscosity @ 40°C	D-445	cSt	301.1		307.4		304.0		310.2	<279.2	<294.7	>325.7	>341.2			
Viscosity @ 100°C	D-445	cSt														
Oxidation	FTIR	Abs	4.6		5.3	C	5.6	C	3.4		>5.1	>6.8				
Nitration	FTIR	Abs	3.6		4.2		4.1		3.9		>5.8	>7.8				
TAN	D-974	mg KOH/g.	0.43		0.50				0.47		>0.97	>1.47				
TBN	D-4739	mg KOH/g.														
Contamination												TNO	U-Caution		U-Warning	
Water	T-H2O CheckTM	% (Wt.)	0.016		0.014		0.033	C	0.010		>0.03	>0.05				
Sodium	D-6595	PPM	1		0		0		0							
Silicon	D-6595	PPM	4.3	3.5	2.2	12.5	C	2.2	18.8	0	>10	>15	>10	>15		
Additive Element												TNO				
Boron	D-6595	PPM	8		9		11		25							
Magnesium	D-6595	PPM	0		0		0		0							
Calcium	D-6595	PPM	13		18		10		0							
Barium	D-6595	PPM	0		0		1		0							
Phosphorus	D-6595	PPM	133		144		128		125							
Zinc	D-6595	PPM	11	6	1	1	1	2	1							
Additional Test												TNO	L-Caution	L-Warning	U-Caution	U-Warning
Flash Point	D-3828	°C														
Viscosity Index	D-2270															


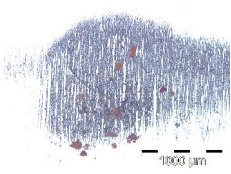
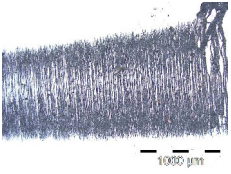
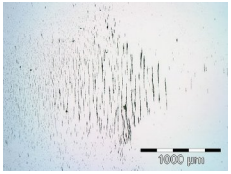
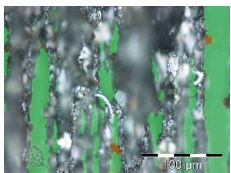
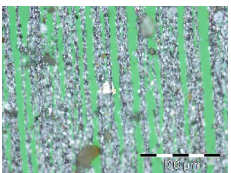
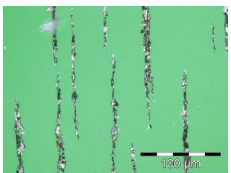
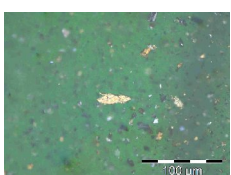

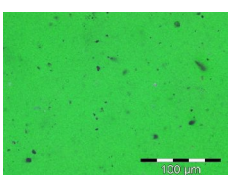
Note: Alarm Limits are variable and dependent upon dataset size and to be used as general guideline.
 No Sign or **N** : NORMAL , C or **C** : CAUTION (first level warning limit) , W or **W** : Warning (second level warning limit)
 U-Caution : Upper CAUTION Level L-Caution : Lower CAUTION Level First 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 U S T O M E R Code : **28029**
Name : **The Siam Cement (Kaeng Khoi) Co., Ltd.**
Address : 33/1 Moo 3, T. Banpa
A.Kaeng Khoi
Saraburi 18110
Site :
Location :
Test code : G884

Unit ID : **11GR51**
Unit Type : Gearbox General
Unit Make : UBE
Unit Model : PSD 250 200
Oil type / Viscosity : MOBIL SPARTAN EP ISO 320
Oil System Capacity : 2000 Liters

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

Cutting wear indicates abnormal wear mode in progress. Suspect misalignment or abrasive wear.
Fatigue particles found in the ferrogram.

	Current Sample		Previous Sample									
Lab ID	250063	168178	164488		 ASTM D 7690 M							
Bottle ID	1034182	916395	927140									
Date Sampled	10-Mar-14	07-Sep-11	13-Jul-11									
Oil Hours (Kms)	8685	6194	5666									
Unit Hours (Kms)	131837	115273	114745									
Oil Change												
Oil Added (Liters)												
Filters Hours (Kms)												
Wear Condition												
Ferrographic Analysis					Typical Normal Condition							
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	60	2-3	1	60	2-5	1				95	2-3	1
Fatigue Gear Wear	10	5-30	1	10	10-35	1						
Fatigue Bearing Wear												
Fatigue Sphere												
Severe Sliding Wear												
Cutting Wear	5	10-40	1									
Black Oxides	10	5-450	1	5	5-15	1						
Red Oxides	5	5-15	1	5	5-15	1						
Corrosive Wear												
Dirt and Dust	5	10-60	3	15	5-40	3				5	3-5	3
Copper	5	10-50	2									
White Metal				5	10-35	2						
Ferrographic Analysis Rating (FAR) rating in grade	A B C D F ☺			A B C D F ☺								

<p>%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</p>	<p>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</p>
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C Code	: 28029	E Unit ID	: 11GR51
U Name	: The Siam Cement (Kaeng Khoi) Co., Ltd.	P Unit Type	: Gearbox General
T Address	: 33/1 Moo 3, T. Banpa	M Unit Make	: UBE
M A.Kaeng Khoi		N Unit Model	: PSD 250 200
E Saraburi 18110		O Oil type /	: MOBIL SPARTAN EP ISO 320
R Site	:	I Viscosity	
Location	:	L Oil System Capacity	: 2000 Liters
Test code	: G884		

Lab ID : 250063 Date sampled : 10-Mar-14 Hours on Oil : 8685 Hours on Unit : 131837 Bottle ID : 1034182

ส่วนที่ 1 : หน้าหลัก[Section 1 : Main Page](#)

สังเกต-อนุภาคเศษโลหะสึกหรอที่ผิดปกติ

เกิดเศษโลหะแบบตัดเฉือน ซึ่งว่าได้เกิดการสึกหรออย่างผิดปกติ สงสัยเนื่องจากการเยื้องศูนย์ของเพลาหรือมีอนุภาคสึกหรอแบบขูดขีด

กรุณาดูคำแนะนำที่หน้าเฟอร์โรกราฟฟิค หน้าถัดไป

แนะนำให้ตรวจสอบถึงความผิดปกติของปัจจัยการทำงานอื่นๆ อาทิ การสั่นสะเทือน เสียง ความร้อน ฯลฯ ถ้าหากยังมีสภาพผิดปกติอยู่ แจ้งให้ห้องแลบพร้อมกับเก็บและส่งตัวอย่างครั้งต่อไป

แนะนำให้เก็บตัวอย่างซ้ำอีกครั้งภายใน 500 ชั่วโมง หลังจากเก็บตัวอย่างครั้งนี้ เพื่อเฝ้าติดตาม

ส่วนที่ 2 : หน้าของ Particle Count[Section 2 : Particle Count](#)**ส่วนที่ 3 : หน้าของ Ferrographic Analysis**[Section 3 : Ferrographic Analysis](#)

เกิดเศษโลหะแบบตัดเฉือน ซึ่งว่าได้เกิดการสึกหรออย่างผิดปกติ สงสัยเนื่องจากการเยื้องศูนย์ของเพลาหรือมีอนุภาคสึกหรอแบบขูดขีด

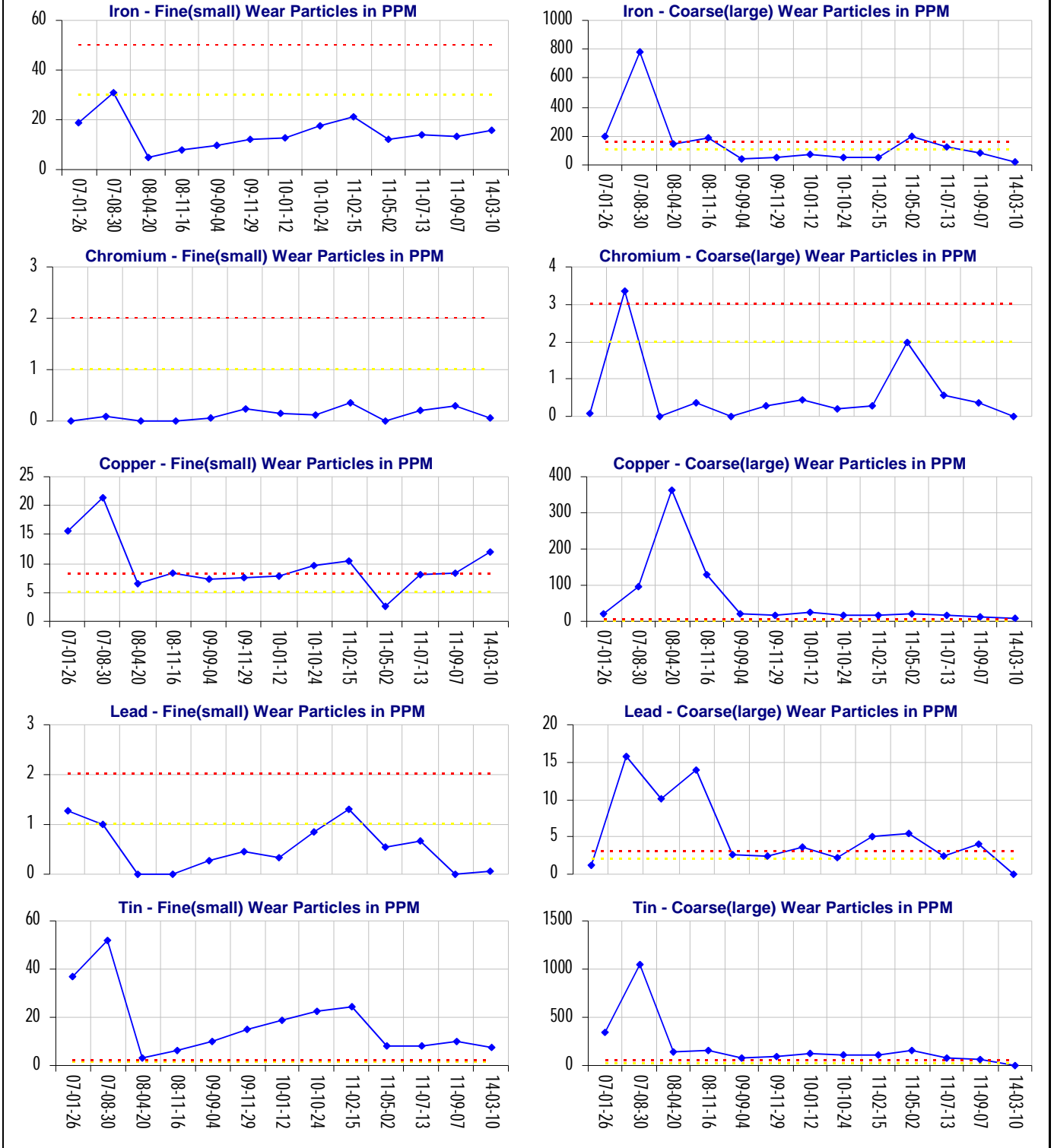
พบเศษโลหะแบบล้าตัวบวมบนสไลด์เฟอร์โรแกรม

ส่วนที่ 4 : หน้าของ Varnish and Sludge Potential[Section 4 : Varnish and Sludge Potential](#)**ส่วนที่ 5 : หน้าของ Gravimetric Analysis**[Section 5 : Gravimetric Analysis](#)

C Code : 28029
 U Name : The Siam Cement (Kaeng Khoi) Co., Ltd.
 S Address : 33/1 Moo 3, T. Banpa
 T A.Kaeng Khoi
 O Saraburi 18110
 M Site :
 E Location :
 R Test code : G884

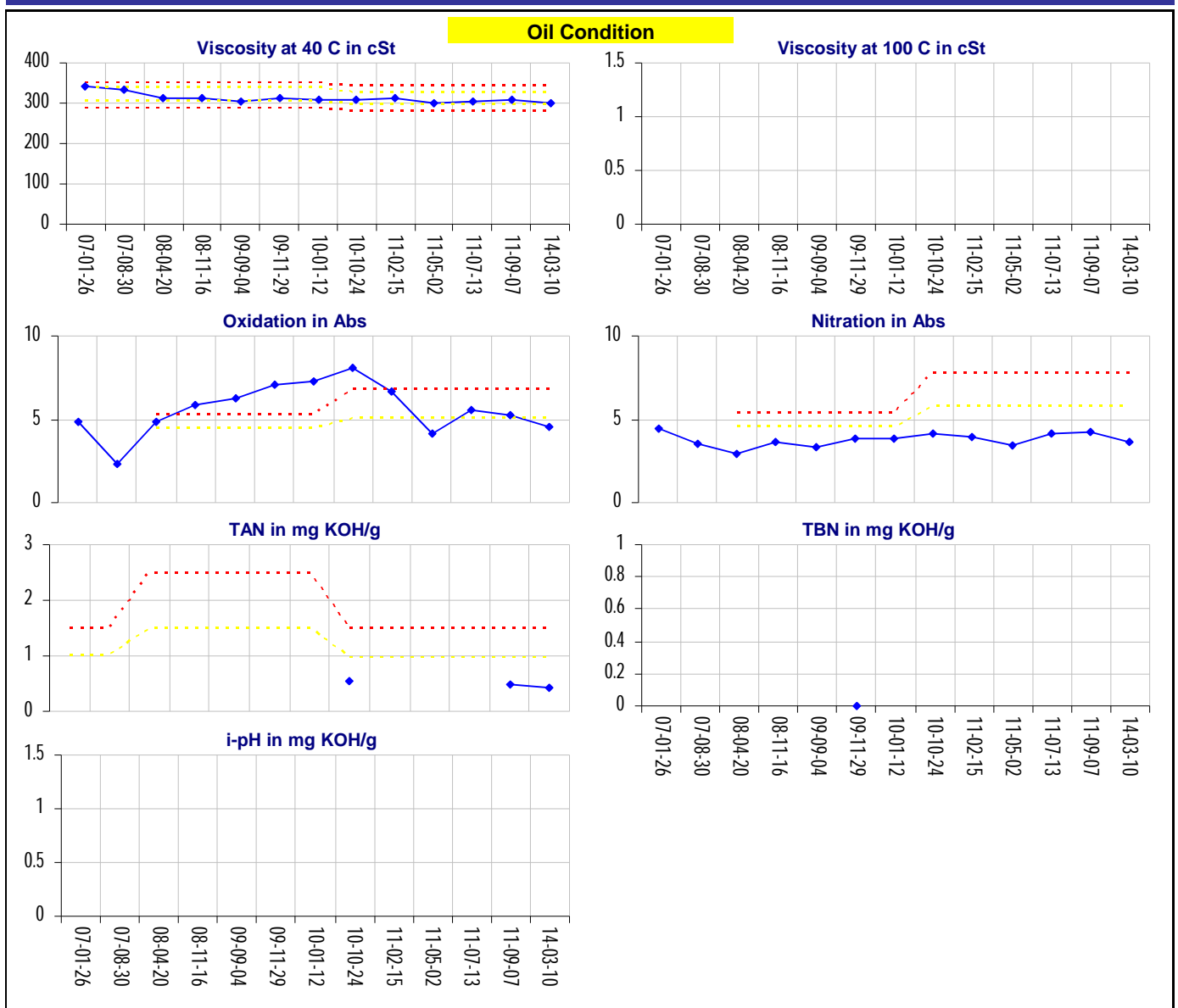
Unit ID : 11GR51
 Unit Type : Gearbox General
 Unit Make : UBE
 Unit Model : PSD 250 200
 Oil type / Viscosity : MOBIL SPARTAN EP ISO 320
 Oil System Capacity : 2000 Liters

Wear Condition



C Code : 28029
 U Name : The Siam Cement (Kaeng Khoi) Co., Ltd.
 M Address : 33/1 Moo 3, T. Banpa
 E A.Kaeng Khoi
 R Saraburi 18110
 Site :
 Location :
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Unit ID : 11GR51
 Unit Type : Gearbox General
 Unit Make : UBE
 Unit Model : PSD 250 200
 Oil type / Viscosity : MOBIL SPARTAN EP ISO 320
 Oil System Capacity : 2000 Liters



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Unit ID : 11GR51
 Unit Type : Gearbox General
 Unit Make : UBE
 Unit Model : PSD 250 200
 Oil type / Viscosity : MOBIL SPARTAN EP ISO 320
 Oil System Capacity : 2000 Liters

