Station **POWER GENERATION PRODUCTS**

OIL ANALYSIS REPORT

WEAR NORMAL CONTAMINATION NORMAL **FLUID CONDITION ABNORMAL**

MOTION ELECTRICAL [86533] 1316 DICKIE SETTLEME 2016144045 2016144045

Right Diesel Engine

ESSO XD-3 EXTRA 15W40 (--- LTR)

RECOMMENDATION	
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No corrective action is recommended at this time. Resample at the next service interval to monitor.

	-	
WWH		

Area

Metal levels are typical for a new component breaking in.

CONTAMINATION

Fuel content negligible. There is no indication of any contamination in the oil.

CONDITION	
CONDITION	

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. The condition of the oil is acceptable for the time in service.

TestUOMMethodLimit/MCurrentHistory1History2Sample NumberClient Info28 May 2024Machine AgehrsClient Info23Oil AgehrsClient Info0Oil AgehrsClient Info0Filter AgehrsClient InfoChangedOil ChangedClient InfoChangedFilter ChangedClient InfoChangedSample StatusClient Info0IronppmASTMD5180m>100NickelppmASTMD5180m>50NickelppmASTMD5180m>50AluminumppmASTMD5180m>500AluminumppmASTMD5180m>101VanadiumppmASTMD5180m>101VanadiumppmASTMD5180m>201VanadiumppmASTMD5180m>201VanadiumppmASTMD5180m>201VanadiumppmASTMD5180m>201VanadiumppmASTMD5180m>201VanadiumppmASTMD5180m>201VanadiumppmASTMD5180m>20<							
Sample Date Client Info 28 May 2024 Machine Age hrs Client Info 0 Oil Age hrs Client Info 0 Filter Age hrs Client Info 0 Oil Age hrs Client Info Changed Filter Age hrs Client Info Changed Sample Status ABNORMAL Iron ppm ASTM D5186/m >10 0 Chromium ppm ASTM D5186/m >50 0 Silver ppm ASTM D5186/m >50 0 Aluminum ppm ASTM D5186/m >40 2 Vanadium ppm ASTM D5186/m >40 2 Vanadium ppm ASTM D5186/m >40 Vanadium ppm ASTM D5186/m >20 2	Test	UOM	Method	Limit/Abn	Current	History1	History2
Machine Age hrs Client Info Q3 Filter Age hrs Client Info O Filter Age hrs Client Info Changed Filter Changed Client Info Changed Sample Status Client Info Changed Iron ppm ASTMD5185(m) >10 0 Nickel ppm ASTMD5185(m) >5 0 Aluminum ppm ASTMD5185(m) >50 0 Vanadium ppm ASTMD5185(m) >40 2 Vanadum ppm ASTMD5185(m) >10 Vanadum ppm ASTMD5185(m) >20 1 Vanadum ppm ASTMD5185(m) >20 1	Sample Number		Client Info		PN0006110		
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Filter Age hrs Client Info 0 Oil Changed Client Info Changed Sample Status ABNORMAL Iron ppm ASTM05185(m) >120 4 Iron ppm ASTM05185(m) >10 0 Nickel ppm ASTM05185(m) >50 0 Titanium ppm ASTM05185(m) >50 0 Silver ppm ASTM05185(m) >20 1 Copper ppm ASTM05185(m) >40 2 Vanadum ppm ASTM05185(m) >10 1 Vanadum ppm ASTM05185(m) >20 1 Vanadum ppm ASTM05185(m) >20 2 Vanadum ppm ASTM05185(m) >20 2 Vanadum ppm	Machine Age	hrs	Client Info				
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Titanium ppm ASTM D5185(m) C Silver ppm ASTM D5185(m) >5 0 Aluminum ppm ASTM D5185(m) >20 1 Lead ppm ASTM D5185(m) >40 2 Copper ppm ASTM D5185(m) >10 1 Vanadium ppm ASTM D5185(m) >10 1 Vanadium ppm ASTM D5185(m) >10 1 Vanadium ppm ASTM D5185(m) >20 2 Vanadium ppm ASTM D5185(m) >20 2 Yellow Metal scalar Visual* NONE Sulfcon ppm ASTM D7833* >4.0 0 Water WC Method >0.1 <th>Chromium</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th>>10</th> <th>0</th> <th></th> <th></th>	Chromium	ppm	ASTM D5185(m)	>10	0		
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Aluminum ppm ASTM D5185(m) >20 1 Lead ppm ASTM D5185(m) >40 2 Copper ppm ASTM D5185(m) >300 64 Tin ppm ASTM D5185(m) >10 1 Vanadium ppm ASTM D5185(m) >10 0 White Metal scalar Visual* NONE NONE Yellow Metal scalar Visual* NONE NONE Silicon ppm ASTM D5185(m) >20 2 Fuel % ASTM D7593* >4.0 0.6 Glycol WC Method >0.1 NEG Soot % % ASTM D7624* >20 5.4 Sulfation Abs/Imm ASTM D7624* >20 <th>Titanium</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th></th> <th>0</th> <th></th> <th></th>	Titanium	ppm	ASTM D5185(m)		0		
Lead ppm ASTM DS185(m) >40 2 Copper ppm ASTM DS185(m) >300 64 Tin ppm ASTM DS185(m) >10 1 Vanadium ppm ASTM DS185(m) 0 White Metal scalar Visual* NONE NONE Yellow Metal scalar Visual* NONE NONE Solicon ppm ASTM DS185(m) >20 2 Potassium ppm ASTM D5185(m) >20 2 Water WC Method >0.1 NEG Solf % % ASTM D784* >20 5.4 Sulfation Abs/rm ASTM D784* >20 5.4 Sulfation Abs/rm ASTM D7	Silver	ppm	ASTM D5185(m)	>5	0		
Copper ppm ASTM D5185(m) >300 64 Tin ppm ASTM D5185(m) >10 1 Vanadium ppm ASTM D5185(m) 0 0 White Metal scalar Visual* NONE NONE Yellow Metal scalar Visual* NONE NONE Silicon ppm ASTM D5185(m) >20 2 Fuel % ASTM D5185(m) >20 2 Water WC Method >0.6 Giycol WC Method >0.1 NEG Sulfation Abs/rm ASTM D7624* >20 5.4 Sulfation Abs/rm ASTM D7624* >20 5.4 Sulfation Abs/rm NONE <th>Aluminum</th> <th>ppm</th> <th>ASTM D5185(m)</th> <th>>20</th> <th>1</th> <th></th> <th></th>	Aluminum	ppm	ASTM D5185(m)	>20	1		
Tin ppm ASTM D5185(m) >10 1 Vanadium ppm ASTM D5185(m) 0 White Metal scalar Visual* NONE NONE Yellow Metal scalar Visual* NONE NONE Silicon ppm ASTM D5185(m) >20 2 Potassium ppm ASTM D5185(m) >20 2 Fuel % ASTM D5185(m) >20 2 Water WC Method >0.1 NEG Glycol WC Method >0.1 NEG Solf % % ASTM D7624*<>20 5.4 Sulfation Abs/.tmm ASTM D7624*<>30 18.1 Debris scalar Visual* NONE NONE Appearance scalar Visual* NORML	Lead	ppm	ASTM D5185(m)	>40	2		
Vanadium ppm ASTM D5185(m) 0 White Metal scalar Visual* NONE NONE Yellow Metal scalar Visual* NONE NONE Silicon ppm ASTM D5185(m) >25 15 Potassium ppm ASTM D5185(m) >20 2 Fuel % ASTM D5185(m) >20 2 Water WC Method >0.6 Glycol WC Method >0.1 NEG Sott % % ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7644* NONE NONE Sulfation Abs/cm NONE NONE Sulfation Abs/cm Sand/Dirt<	Copper	ppm	ASTM D5185(m)	>300	64		
White Metal scalar Visual* NONE NONE Yellow Metal scalar Visual* NONE NONE Silicon ppm ASTM D5185(m) >20 2 Potassium ppm ASTM D5185(m) >20 2 Fuel % ASTM D5185(m) >20 2 Water WC Method >0.1 NEG Glycol WC Method >0.1 NEG Sott % % ASTM D7834* 0 Glycol WC Method >0.1 NEG Sott % % ASTM D7624* >20 5.4 Sulfation Abs/tmm ASTM D713* >30 18.1 Sulfation Abs/tmm ASTM D714* >30 18.1 Sulfation Abs/tmm NORE NORE <	Tin	ppm	ASTM D5185(m)	>10	1		
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Silicon ppm ASTM D5185(m) >25 15 Potassium ppm ASTM D5185(m) >20 2 Fuel % ASTM D5185(m) >20 2 Water WC Method >0.1 NEG Glycol WC Method >0.1 NEG Soot % % ASTM D784* 0 Soot % % ASTM D762* >20 5.4 Sulfation Abs/tmm ASTM D715* >30 18.1 Sulfation Abs/tmm ASTM D714* >30 18.1 Debris scalar Visual* NONE Appearance scalar Visual* NORM NORML Odor scalar Visual* NORM NORML Boron ppm ASTM D5185(m) >10 Manganese pm </th <th>White Metal</th> <th>scalar</th> <th>Visual*</th> <th>NONE</th> <th>NONE</th> <th></th> <th></th>	White Metal	scalar	Visual*	NONE	NONE		
Potassium ppm ASTM D5185(m) >20 2 Fuel % ASTM D5793* >4.0 0.6 Water WC Method >0.1 NEG Glycol WC Method >0.1 NEG Soot % % ASTM D784* 0 Nitration Abs/cm ASTM D762* >20 5.4 Sulfation Abs/rm ASTM D762* >20 5.4 Sulfation Abs/rm ASTM D762* >20 5.4 Sulfation Abs/rm ASTM D716* >30 18.1 Sulfation Abs/rm ASTM D716* >30 18.1 Sulfation scalar Visual* NONE NONE Appearance scalar Visual* NORM NORML	Yellow Metal	scalar	Visual*	NONE	NONE		
Potassium ppm ASTM D5185(m) >20 2 Fuel % ASTM D5793* >4.0 0.6 Water WC Method >0.1 NEG Glycol WC Method >0.1 NEG Soot % % ASTM D784* 0 Nitration Abs/cm ASTM D762* >20 5.4 Sulfation Abs/rm ASTM D762* >20 5.4 Sulfation Abs/rm ASTM D762* >20 5.4 Sulfation Abs/rm ASTM D716* >30 18.1 Sulfation Abs/rm ASTM D716* >30 18.1 Sulfation scalar Visual* NONE NONE Appearance scalar Visual* NORM NORML							
Fuel % ASTM D7593* >4.0 0.6 Water WC Method >0.1 NEG Glycol WC Method >0.1 NEG Soot % % ASTM D7593* >4.0 NEG Nitration Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7415* >30 18.1 Sulfation Abs/cm ASTM D7415* >30 18.1 Solar Scalar Visual* NONE NONE Debris scalar Visual* NORM NORM Appearance scalar Visual* NORM NORML Sodium ppm ASTM D5185(m) >102 1	Silicon	ppm	ASTM D5185(m)	>25	15		
Water WC Method >0.1 NEG Glycol WC Method NEG Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7844* 0 Sulfation Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/.tmm ASTM D7415* >30 18.1 Sulfation Abs/.tmm ASTM D7415* >30 18.1 Sulfation scalar Visual* NONE NONE Debris scalar Visual* NORM NORML Appearance scalar Visual* NORM NORML Odor scalar Visual* NORM NORM	Potassium	ppm	ASTM D5185(m)	>20	2		
Glycol WC Method NEG Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >30 18.1 Sulfation Abs/cm ASTM D7415* >30 18.1 Sulfation Abs/cm Visual* NONE NONE Debris scalar Visual* NONE NONE Sand/Dirt scalar Visual* NORM NORML Appearance scalar Visual* NORML Odor scalar Visual* NORML NORML Sodium ppm ASTM D5185(m) >192 1 Boron ppm ASTM D5185(m) 300 Mo	Fuel	%	ASTM D7593*	>4.0	0.6		
Soot % % ASTM D7844* 0 Nitration Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >20 5.4 Sulfation Abs/cm ASTM D7624* >30 18.1 Silt scalar Visual* NONE NONE Debris scalar Visual* NONE NONE Sand/Dirt scalar Visual* NORM NORML Appearance scalar Visual* NORM NORML Odor scalar Visual* NORM NORML Boron ppm ASTM D5185(m) >192 1 Barium ppm ASTM D5185(m) 300 Magnese ppm ASTM D5185(m)	Water		WC Method	>0.1	NEG		
NitrationAbs/cmASTM D7624*>205.4SulfationAbs/1mmASTM D7415*>3018.1SiltscalarVisual*NONENONEDebrisscalarVisual*NONENONESand/DirtscalarVisual*NORNONEAppearancescalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLSodiumppmASTM D5185(m)>1921BoronppmASTM D5185(m)>1921MolybdenumppmASTM D5185(m)>100MaganeseppmASTM D5185(m)MagnesiumppmASTM D5185(m)37803394ZincppmASTM D5185(m)15001130SulfurppmASTM D5185(m)15001130NophorusppmASTM D5185(m)38007287MagnesiumppmASTM D5185(m)38007287CalciumppmASTM D5185(m)15001130SulfurppmASTM D5185(m)38007287 <th>Glycol</th> <th></th> <th>WC Method</th> <th></th> <th>NEG</th> <th></th> <th></th>	Glycol		WC Method		NEG		
Sulfation Abs/.tmm ASTM D7415* >30 18.1 Silt scalar Visual* NONE NONE Debris scalar Visual* NONE NONE Sand/Dirt scalar Visual* NONE NONE Appearance scalar Visual* NORM NORML Odor scalar Visual* NORM NORML Odor scalar Visual* NORM NORML Sodium ppm ASTM D5185(m) >192 1 Boron ppm ASTM D5185(m) >192 30 Molybdenum ppm ASTM D5185(m) 14 Maganese ppm ASTM D5185(m) 3780 3394 Magnesium ppm	Soot %	%	ASTM D7844*		0		
SiltscalarVisual*NONENONEDebrisscalarVisual*NONENONESand/DirtscalarVisual*NONENONEAppearancescalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLOdorscalarVisual*NORMNORMLEmulsified WaterscalarVisual*NORMNORMLSodiumppmASTM D5185(m)>1921BoronppmASTM D5185(m)>1921BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)14MaganeseppmASTM D5185(m)37803394PhosphorusppmASTM D5185(m)15001130ZincppmASTM D5185(m)15001130MufurppmASTM D5185(m)38007287	Nitration	Abs/cm	ASTM D7624*	>20	5.4		
DebrisscalarVisual*NONENONESand/DirtscalarVisual*NONENONEAppearancescalarVisual*NORMLNORMLOdorscalarVisual*NORMLNORMLOdorscalarVisual*NORMLNORMLEmulsified WaterscalarVisual*>0.1NEGSodiumppmASTM D5185(m)>1921BoronppmASTM D5185(m)300BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)MagneseppmASTM D5185(m)MagnesiumppmASTM D5185(m)37803394PhosphorusppmASTM D5185(m)13701020ZincppmASTM D5185(m)15001130SulfurppmASTM D5185(m)38007287OxidationAbs/.1mmASTM D7414*>2512.1	Sulfation	Abs/.1mm	ASTM D7415*	>30	18.1		
Sand/DirtscalarVisual*NONENONEAppearancescalarVisual*NORMLNORMLOdorscalarVisual*NORMLNORMLEmulsified WaterscalarVisual*>0.1NEGSodiumppmASTM D5185(m)>1921BoronppmASTM D5185(m)>19210BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)0ManganeseppmASTM D5185(m)MagnesiumppmASTM D5185(m)37803394PhosphorusppmASTM D5185(m)13701020ZincppmASTM D5185(m)15001130SulfurppmASTM D5185(m)38007287OxidationAbs/.1mmASTM D7414*>2512.1	Silt	scalar	Visual*	NONE	NONE		
Appearance scalar Visual* NORML NORML Odor scalar Visual* NORML NORML Emulsified Water scalar Visual* >0.1 NEG Sodium ppm ASTM D5185(m) >192 1 Boron ppm ASTM D5185(m) >192 30 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 14 Magnesium ppm ASTM D5185(m) <1 Calcium ppm ASTM D5185(m) 3780 3394 Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1500 1130 Sulfur ppm ASTM D51	Debris	scalar	Visual*	NONE	NONE		
OdorscalarVisual*NORMLNORRMLEmulsified WaterscalarVisual*>0.1NEGSodiumppmASTM D5185(m)>1921BoronppmASTM D5185(m)>192300BariumppmASTM D5185(m)<	Sand/Dirt	scalar	Visual*	NONE	NONE		
Emulsified Water scalar Visual* >0.1 NEG Sodium ppm ASTM D5185(m) >192 1 Boron ppm ASTM D5185(m) >192 1 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 0 Maganese ppm ASTM D5185(m) 14 Magnesium ppm ASTM D5185(m) <102 Calcium ppm ASTM D5185(m) 3780 3394 Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1500 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* <t< th=""><th>Appearance</th><th>scalar</th><th>Visual*</th><th>NORML</th><th>NORML</th><th></th><th></th></t<>	Appearance	scalar	Visual*	NORML	NORML		
Sodium ppm ASTM D5185(m) >192 1 Boron ppm ASTM D5185(m) 30 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 0 Manganese ppm ASTM D5185(m) 114 Magnesium ppm ASTM D5185(m) <102 Calcium ppm ASTM D5185(m) 3780 3394 Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1370 1020 Sulfur ppm ASTM D5185(m) 1500 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414' >2	Odor	scalar	Visual*	NORML	NORML		
Boron ppm ASTM D5185(m) 30 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 14 Manganese ppm ASTM D5185(m) <1 Magnesium ppm ASTM D5185(m) <102 Calcium ppm ASTM D5185(m) 3780 3394 Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1370 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* >25 12.1	Emulsified Water	scalar	Visual*	>0.1	NEG		
Boron ppm ASTM D5185(m) 30 Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 14 Manganese ppm ASTM D5185(m) <1 Magnesium ppm ASTM D5185(m) <102 Calcium ppm ASTM D5185(m) 3780 3394 Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1370 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* >25 12.1							
Barium ppm ASTM D5185(m) 0 Molybdenum ppm ASTM D5185(m) 14 Manganese ppm ASTM D5185(m) <11				>192			
Molybdenum ppm ASTM D5185(m) 14 Manganese ppm ASTM D5185(m) <1 Magnesium ppm ASTM D5185(m) <102 Calcium ppm ASTM D5185(m) 3394 Phosphorus ppm ASTM D5185(m) 1020 Zinc ppm ASTM D5185(m) 1370 1020 Sulfur ppm ASTM D5185(m) 1370 1020 Qxidation ASTM D5185(m) 1500 1130		ppm	1 I I I I I I I I I I I I I I I I I I I				
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Calcium ppm ASTM D5185(m) 3780 3394 Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1500 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* >25 12.1		ppm	ASTM D5185(m)				
Phosphorus ppm ASTM D5185(m) 1370 1020 Zinc ppm ASTM D5185(m) 1500 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* >25 12.1	Magnesium	ppm	ASTM D5185(m)		102		
Zinc ppm ASTM D5185(m) 1500 1130 Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* >25 12.1	Calcium	ppm	ASTM D5185(m)	3780	3394		
Sulfur ppm ASTM D5185(m) 3800 7287 Oxidation Abs/.1mm ASTM D7414* >25 12.1	Phosphorus	ppm	ASTM D5185(m)	1370	1020		
Oxidation Abs/.1mm ASTM D7414* >25 12.1	Zinc	ppm	ASTM D5185(m)	1500	1130		
	Sulfur	ppm	ASTM D5185(m)	3800	7287		
Visc@100°C cSt ASTM D7279(m) 15.4 🔺 12.4 /	Oxidation	Abs/.1mm	ASTM D7414*	>25	12.1		
	Visc @ 100°C	cSt	ASTM D7279(m)	15.4	🔺 12.4 🌙		



