

OIL ANALYSIS REPORT

Sample Rating Trend

ISO

KOMATSU Wa600 (S/N 60135) Component

Hydraulic System

DIAGNOSIS

Fluid Condition

to monitor.

Wear

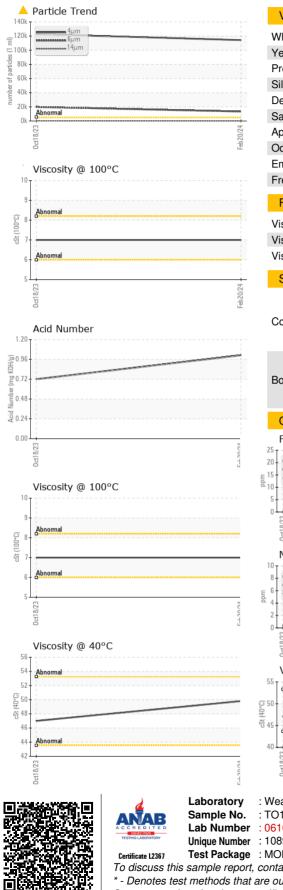
TULCO LUBSOIL SUPER HYDRAULIC HZ 46 (--- GAL)

SAMPLE INFORMATION method limit/base current history1 history2 TO10003148 Sample Number **Client Info** TO10002723 Recommendation Oil and filter change at the time of sampling has 20 Feb 2024 Sample Date Client Info 18 Oct 2023 been noted. Resample at the next service interval 22323 Machine Age hrs Client Info 21834 Oil Age hrs Client Info 1568 1079 Oil Changed Changed **Client Info** Not Changd All component wear rates are normal. ABNORMAL Sample Status ABNORMAL Contamination WEAR METALS method limit/base current history1 history2 There is a high amount of silt (particulates < 14 microns in size) present in the oil. >20 22 17 Iron ppm ASTM D5185m Chromium ASTM D5185m >20 ppm <1 <1 The AN level is acceptable for this fluid. The Nickel ppm ASTM D5185m >20 0 <1 condition of the oil is suitable for further service. Titanium ASTM D5185m 0 ppm <1 0 Silver ppm ASTM D5185m 0 Aluminum ASTM D5185m >20 2 2 ppm Lead ASTM D5185m >20 0 ppm <1 ASTM D5185m 9 6 >20 Copper ppm Tin ppm ASTM D5185m >20 0 <1 Vanadium ASTM D5185m 0 0 ppm Cadmium ppm ASTM D5185m 0 <1 **ADDITIVES** limit/base current history1 history2 method 0 0 Boron ppm ASTM D5185m Barium ppm ASTM D5185m 8 9 0 Molybdenum <1 ppm ASTM D5185m 0 0 Manganese ppm ASTM D5185m ASTM D5185m 155 Magnesium ppm 145 201 Calcium ASTM D5185m 184 ppm Phosphorus ppm ASTM D5185m 719 702 Zinc ASTM D5185m 870 963 ppm Sulfur 3107 ppm ASTM D5185m 2883 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >15 5 4 0 Sodium ppm ASTM D5185m 0 Potassium ASTM D5185m >20 2 2 ppm NEG Water % ASTM D6304 >0.05 NEG **FLUID CLEANLINESS** method limit/base current history1 history2 Particles >4µm ASTM D7647 >5000 114275 122762 Particles >6µm ASTM D7647 >1300 13382 19849 >160 Particles >14µm ASTM D7647 152 283 Particles >21µm ASTM D7647 >40 37 49 Particles >38µm ASTM D7647 >10 1 1 Particles >71µm ASTM D7647 >3 0 0 **Oil Cleanliness** ISO 4406 (c) >19/17/14 24/21/14 24/21/15 **FLUID DEGRADATION** current method limit/base history1 history2 Acid Number (AN) ASTM D8045 0.72 ma KOH/a 1.01

Report Id: ANCTUL [WUSCAR] 06100895 (Generated: 02/28/2024 16:38:50) Rev: 1



OIL ANALYSIS REPORT



White Metal scal Yellow Metal scal Precipitate scal Silt scal Debris scal Sand/Dirt scal Spearance scal Dodor scal Spearance scal Dodor scal Silt scal Spearance scal Precewater scal FLUID PROPERTIES scal Visco @ 40°C cSt Viscosity Index (VI) Scal SAMPLE IMAGES Scal Color Scal GRAPHS Ferrous Alloys Ferrous Metals Scal Soutom Scal	ar *Visual ar *Visual ASTM D445 ASTM D445	i limit/base		NONE NONE NONE NONE NONE NORML NORML NEG NEG NEG History1 47.0 7 105 history1	 history2 history2 no image
Precipitate scal sit scal sit scal pebris scal and/Dirt scal ppearance scal Door scal imulsified Water scal irree Water scal FLUID PROPERTIES fisc @ 40°C cSt fisc @ 100°C cSt fiscosity Index (VI) Sca SAMPLE IMAGES Color	ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual method ASTM D445 ASTM D445	NONE NONE NONE NORML NORML >0.05 limit/base limit/base	NONE NONE LIGHT NOR NORML NORML NEG Current 49.8 7 95 Current	NONE NONE NONE NORML NORML NEG NEG history1 47.0 7 105 history1	 history2 history2 no image
Precipitate scal Silt scal Silt scal Silt scal Sebris scal Sand/Dirt scal Spearance scal Odor scal Scal scal Odor scal Precedent scal Full D PROPERTIES fisc @ 40°C fisc @ 100°C cSt fiscosity Index (VI) Scal SAMPLE IMAGES Scal Color Scal GRAPHS Ferrous Alloys Settom scal Settom scal Signa scal Viscosity @ 40°C scal	ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual method ASTM D445 ASTM D445	NONE NONE NONE NORML NORML >0.05 limit/base limit/base	NONE LIGHT NONE NORML NORML NEG Current 49.8 7 95 Current	NONE NONE NORML NORML NEG NEG history1 47.0 7 105 history1	 history2 history2 no image
illt scal pebris scal aand/Dirt scal ppearance scal ppearance scal imulsified Water scal ree Water scal FLUID PROPERTIES scal risc @ 40°C cSt risc @ 100°C cSt riscosity Index (VI) Scal SAMPLE IMAGES scal color scal GRAPHS Ferrous Alloys ion ion scalor scal Non-ferrous Metals scal Signa tin Viscosity @ 40°C scal	ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ASTM D445 ASTM D445 ASTM D445	NONE NORML NORML >0.05 Iimit/base Iimit/base	LIGHT NONE NORML NEG Current 49.8 7 95 Current	NONE NORML NORML NEG NEG history1 47.0 7 105 history1	 history2 history2
Sand/Dirt scal sppearance scal podor scal cmulsified Water scal FLUID PROPERTIES risc @ 40°C cSt risc @ 100°C cSt risc @ 100°C cSt risc @ 100°C cSt SAMPLE IMAGES Scolor Sottom GRAPHS Ferrous Alloys scal Same chromium scal Source scal	ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ar *Visual ASTM D445 ASTM D445 ASTM D445	NONE NORML NORML >0.05 limit/base limit/base	NONE NORML NEG NEG Current 49.8 7 95 Current	NONE NORML NORML NEG NEG history1 47.0 7 105 history1	 history2 history2 no image
appearance scal bdor scal cmulsified Water scal free Water scal FLUID PROPERTIES fisc @ 40°C cSt fisc @ 100°C cSt fiscosity Index (VI) Scal SAMPLE IMAGES Color Bottom GRAPHS Ferrous Alloys Solor Non-ferrous Metals Settime Signame Viscosity @ 40°C	ar *Visual ar *Visual ar *Visual ar *Visual <u>method</u> ASTM D445 ASTM D445 de ASTM D2270	NORML NORML >0.05 limit/base limit/base	NORML NORML NEG NEG current 49.8 7 95 current	NORML NORML NEG NEG 47.0 7 105 history1	 history2 history2 no image
Odor scal imulsified Water scal iree Water scal FLUID PROPERTIES fisc @ 40°C cSt fisc @ 100°C cSt fisc @ 100°C cSt fiscosity Index (VI) Scal SAMPLE IMAGES Scolor Color Scalor GRAPHS Ferrous Alloys Ferrous Metals Standard Stan	ar *Visual ar *Visual ar *Visual Method ASTM D445 ASTM D445 le ASTM D2270	NORML >0.05 limit/base limit/base	NORML NEG NEG 49.8 7 95 current	NORML NEG NEG history1 47.0 7 105 history1	 history2 history2 no image no image
Fullo PROPERTIES FLUID PROPERTIES //isc @ 40°C cSt //isc @ 100°C cSt //iscosity Index (VI) Sca SAMPLE IMAGES Color Bottom	ar *Visual ar *Visual method ASTM D445 ASTM D445 le ASTM D2270	>0.05	NEG NEG current 49.8 7 95 current	NEG NEG history1 47.0 7 105 history1	 history2 history2 no image no image
Free Water scal FLUID PROPERTIES /isc @ 40°C cSt /isc @ 100°C cSt /iscosity Index (VI) Scal SAMPLE IMAGES Color Bottom GRAPHS Ferrous Alloys Image: Strength of the strengen of the strength of the strengt of the strength of	ar *Visual method ASTM D445 ASTM D445 le ASTM D2270	limit/base limit/base 491.52 122.88	NEG current 49.8 7 95 current	NEG history1 47.0 7 105 history1	history2 history2 history2 no image no image
FLUID PROPERTIES /isc @ 40°C cSt /isc @ 100°C cSt /iscosity Index (VI) Sca SAMPLE IMAGES Color Bottom GRAPHS Ferrous Alloys Image: Solution of the second secon	Method ASTM D445 ASTM D445 ASTM D445 le ASTM D2270	491,52 122,88	current 49.8 7 95 current	history1 47.0 7 105 history1	history2 history2 no image no image
/isc @ 40°C cSt /isc @ 100°C cSt /iscosity Index (VI) Sca SAMPLE IMAGES Color Bottom GRAPHS Ferrous Alloys Image: Strength of the strengen of the strength of the strength of the	ASTM D445 ASTM D445 le ASTM D2270	491,52 122,88	49.8 7 95 current	47.0 7 105 history1	 history2 no image no image
/isc @ 40°C cSt /isc @ 100°C cSt /iscosity Index (VI) Sca SAMPLE IMAGES Color Bottom GRAPHS Ferrous Alloys Image: Strength of the strengen of the strength of the strength of the	ASTM D445 ASTM D445 le ASTM D2270	491,52 122,88	49.8 7 95 current	47.0 7 105 history1	 history2 no image no image
risc @ 100°C cSt riscosity Index (VI) Sca SAMPLE IMAGES Color	ASTM D445 le ASTM D2270	limit/base 491,52 122,88	7 95 current	7 105 history1	no image
And the second s	le ASTM D2270	limit/base 491,52 122,88	95 current	105 history1	no image
SAMPLE IMAGES		limit/base 491,52 122,88	current	history1	history2 no image no image
Color Bottom GRAPHS Ferrous Alloys	method	491,52	Particle Co		no image no image
Bottom GRAPHS Ferrous Alloys Compension Non-ferrous Metals Coppersion Settom Se		491,52	20		no image
GRAPHS Ferrous Alloys		491,52	20	unt	
Ferrous Alloys		491,52	20	unt	
Non-ferrous Metals		491,52	20	unt	
Non-ferrous Metals		122,88			
Non-ferrous Metals			30 Severe		-24
Non-ferrous Metals		30,72	Severe		
Viscosity @ 40°C			20		-22
Viscosity @ 40°C					
Viscosity @ 40°C		45/ (m) 7,68	80 Abnormal		-20
Viscosity @ 40°C		Feb20/24 1000 1000 1000 1000 1000 1000 1000 100	20-		+20 +18 +16 +14
Viscosity @ 40°C			80 -	\mathbf{i}	16
Viscosity @ 40°C		of par		1	
Viscosity @ 40°C		ag 12	20 -		14
Viscosity @ 40°C		2 3	30 -		-12
Viscosity @ 40°C			8-)	10
Viscosity @ 40°C					
Viscosity @ 40°C		Feb20/24	2-		
•		Feb2	0 4μ 6μ		
Abnormal			Acid Numb	14µ 21µ er	38µ 71µ
		(미) 1.2	²⁰ T ;		
		및 0.9	96		
		트 0.7	12		
Abnormal		2 0.4 2 0.2	24		
		(D) 1.2 (D) 1.	₀₀		
0ct18/23		Feb20/24	8/2		
Oct		Feb	0ct1		-
100895 Te		-			
	ceived : 2 sted : 2	6 Feb 2024 8 Feb 2024 8 Feb 2024 - Dr		A ROCK QUARRY, 66TH	TULSA, O
DB 2 (Additional Tests: k tact Customer Service at	ceived : 2 sted : 2 agnosed : 2				

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Submitted By: SKIP SAENGERHAUSEN

F: