

## **OIL ANALYSIS REPORT**

Sample Rating Trend

## NORMAL

Machine Id

# TYSROGCNQ LINE 6 (S/N XA 0686)

Component Hydraulic System

HOUGHTON HOUGHTON SAFE 419 (--- GAL)

#### DIAGNOSIS

#### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

#### Contamination

There is no indication of any contamination in the oil. The amount and size of particulates present in the system are acceptable.

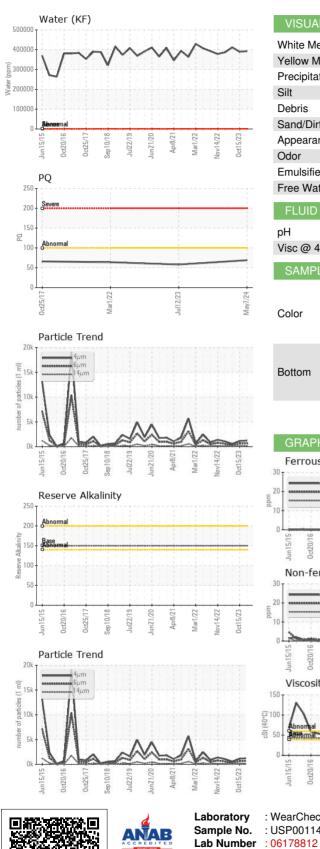
### Fluid Condition

The pH level of this fluid is within the acceptable limits at 7.0. The condition of the oil is acceptable for service.

Sample Date         Client Info         07 May 2024         15 Oct 2023         12 Jul 2023           Machine Age         hrs         Client Info         0         0         0         0           Oil Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Client Info         N/A         N/A         N/A         N/A           WEAR METALS         method         Imit/base         current         history1         history2           PQ         ASTM D5185m         >20         <1	SAMPLE INFORM	<b>/IATION</b>	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         0         0         0           Oil Age         hrs         Client Info         0         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Imit/Distance         Current         NoRMAL         NORMAL         NORMAL           WEAR METALS         method         Imit/Distance         Current         Nistory1         History2           PQ         ASTM D5185n         >20         <1	Sample Number		Client Info		USP0011442	USP0003204	USP250344
Oil Age         hrs         Client Info         0         0         0           Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Client Info         N/A         N/A         N/A         N/A           WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D5185m         >20         <1         0         0           Chromium         ppm         ASTM D5185m         >20         <1	Sample Date		Client Info		07 May 2024	15 Oct 2023	12 Jul 2023
Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Image: Client Info         NORMAL         NORMAL         NORMAL         NORMAL           WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D5186         >20         <1         0         0           Chromium         ppm         ASTM D5185         >20         <1         0         <1           Nickel         ppm         ASTM D5185         >20         <1         0         <1           ASTM D5185         >20         1         <1         <1         <1           ASTM D5185         >20         1         <1         <1         <1           ASTM D5185         >20         1         <1         <1         <1           Lead         ppm         ASTM D5185         >20         <1         0         <1           Vanadium         ppm         ASTM D5185         >20         <1         0         <1           Qadmium         ppm         ASTM D5185         20         <1         0         <1           Qandium         ppm         ASTM D51	Machine Age	hrs	Client Info		0	0	0
Oil Changed         Client Info         N/A         N/A         N/A         N/A           Sample Status         Image: Client Info         NORMAL         NORMAL         NORMAL         NORMAL           WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D5186         >20         <1         0         0           Chromium         ppm         ASTM D5185         >20         <1         0         <1           Nickel         ppm         ASTM D5185         >20         <1         0         <1           ASTM D5185         >20         1         <1         <1         <1           ASTM D5185         >20         1         <1         <1         <1           ASTM D5185         >20         1         <1         <1         <1           Lead         ppm         ASTM D5185         >20         <1         0         <1           Vanadium         ppm         ASTM D5185         >20         <1         0         <1           Qadmium         ppm         ASTM D5185         20         <1         0         <1           Qandium         ppm         ASTM D51	Oil Age	hrs	Client Info		0	0	0
Sample Status         method         imit/base         current         history1         NoRMAL           VEAR METALS         method         imit/base         current         history2         PQ         ASTM D6184         69          58           Iron         ppm         ASTM D5185m         >20         <1	-		Client Info		N/A	N/A	N/A
PQ         ASTM D8184         69          58           Iron         ppm         ASTM D8185m         >20         <1	Sample Status				NORMAL	NORMAL	NORMAL
Iron         ppm         ASTM D5185m         >20         <1         0         0           Chromium         ppm         ASTM D5185m         >20         <1	WEAR METALS		method	limit/base	current	history1	history2
Chromium         ppm         ASTM D5185m         >20         <1         0         <1           Nickel         ppm         ASTM D5185m         >20         <1	PQ		ASTM D8184		69		58
Nickel         ppm         ASTM D5185m         >20         <1         0         <1           Titanium         ppm         ASTM D5185m         <1	Iron	ppm	ASTM D5185m	>20	<1	0	0
Titanium       ppm       ASTM D5185m       <1       <1       <1       <1         Silver       ppm       ASTM D5185m       >20       1       <1       <1         Lead       ppm       ASTM D5185m       >20       0       0       <1       <1         Lead       ppm       ASTM D5185m       >20       20       0       0       <1         Copper       ppm       ASTM D5185m       >20       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       <1       0       0	Chromium	ppm	ASTM D5185m	>20	<1	0	<1
Silver         ppm         ASTM D5185m         0         0         0         0           Aluminum         ppm         ASTM D5185m<>20         1         <1	Nickel	ppm	ASTM D5185m	>20	<1	0	<1
Aluminum         ppm         ASTM D5185m         >20         1         <1         <1           Lead         ppm         ASTM D5185m         >20         0         0         <1           Copper         ppm         ASTM D5185m         >20         <1         <1         0         <1           Vanadium         ppm         ASTM D5185m         >20         <1         0         <1         0         <1           Cadmium         ppm         ASTM D5185m         >20         <1         0         <1         0         <1           Cadmium         ppm         ASTM D5185m         1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0 <td>Titanium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <th>&lt;1</th> <td>&lt;1</td> <td>&lt;1</td>	Titanium	ppm	ASTM D5185m		<1	<1	<1
Aluminum         ppm         ASTM D5185m         >20         1         <1         <1           Lead         ppm         ASTM D5185m         >20         0         0         <1	Silver		ASTM D5185m		0	0	0
Lead         ppm         ASTM D5185m         >20         0         0         <1           Copper         ppm         ASTM D5185m         >20         <1	Aluminum		ASTM D5185m	>20	1	<1	<1
Copper         ppm         ASTM D5185m         >20         <1         <1         0           Tin         ppm         ASTM D5185m         >20         <1	Lead			>20	0	0	<1
Image         Image         ASTM D5185m         >20         <1         0         <1           Vanadium         ppm         ASTM D5185m         1         0         <1					-		
Vanadium         ppm         ASTM D5185m         1         0         <1           Cadmium         ppm         ASTM D5185m         <1	Tin						
Cadmium         ppm         ASTM D5185m         <1         0         <1           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         0           Barium         ppm         ASTM D5185m         0         0         0         0           Magnesium         ppm         ASTM D5185m         0         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         0         0         0         <1         0         <1           Magnesium         ppm         ASTM D5185m         0         0         0         <1         0         <1           Calcium         ppm         ASTM D5185m         2         0         3	Vanadium						
ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         2         0           Barium         ppm         ASTM D5185m         0         0         0           Manganese         ppm         ASTM D5185m         0         0         <1	Cadmium						
Boron         ppm         ASTM D5185m         0         2         0           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         <1           Manganese         ppm         ASTM D5185m         0         0         <1           Magnesium         ppm         ASTM D5185m         0         0         <1           Magnesium         ppm         ASTM D5185m         2         0         0           Calcium         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         2         0         0           Sulfur         ppm         ASTM D5185m         <1         0         0           Sulfur         ppm         ASTM D5185m         <1         0         <1           Sodium         ppm         ASTM D5185m         >15         1         0         <1           Potassium         ppm         ASTM D5185m         >20         6         5         4           Water         %         ASTM D6304         >444         39.3         38.9         41.2<	ADDITIVES		method	limit/base	current	history1	history2
Barium         ppm         ASTM D5185m         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         <1	Boron	maa	ASTM D5185m		0	2	
Molybdenum         ppm         ASTM D5185m         0         0         <1           Manganese         ppm         ASTM D5185m         1         0         5           Calcium         ppm         ASTM D5185m         1         0         5           Calcium         ppm         ASTM D5185m         2         0         0           Phosphorus         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         2         0         0           Sulfur         ppm         ASTM D5185m         2         0         0           Sulfur         ppm         ASTM D5185m         2         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0         0         1           Sodium         ppm         ASTM D5185m         >15         1         0         <1	Barium		ASTM D5185m				
Maganese         ppm         ASTM D5185m         0         0         <1           Magnesium         ppm         ASTM D5185m         1         0         5           Calcium         ppm         ASTM D5185m         2         0         0           Phosphorus         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         2         0         3           Sulfur         ppm         ASTM D5185m         2         0         0           Sulfur         ppm         ASTM D5185m         2         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         1         0         <1							
Magnesium         ppm         ASTM D5185m         1         0         5           Calcium         ppm         ASTM D5185m         2         0         0           Phosphorus         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         2         0         0           Sulfur         ppm         ASTM D5185m         2         0         0           Sulfur         ppm         ASTM D5185m         2         0         0         0           Sulfur         ppm         ASTM D5185m         0         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         1         0         <1							
Calcium         ppm         ASTM D5185m         2         0         0           Phosphorus         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         <1	0				-		
Phosphorus         ppm         ASTM D5185m         2         0         3           Zinc         ppm         ASTM D5185m         <1	•						
Zinc         ppm         ASTM D5185m         <1         0         0           Sulfur         ppm         ASTM D5185m         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         1         0         <1							
Sulfur         ppm         ASTM D5185m         0         0         0         0           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         1         0         <1							
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >15         1         0         <1	-						
Silicon         ppm         ASTM D5185m         >15         1         0         <1           Sodium         ppm         ASTM D5185m         >17         0         <1				limit/base		-	-
Sodium         ppm         ASTM D5185m         17         0         <1           Potassium         ppm         ASTM D5185m         >20         6         5         4           Water         %         ASTM D6304         >44         39.3         38.9         41.2           ppm Water         ppm         ASTM D6304         >44         39.3         389000         412000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1227         1122         574           Particles >6µm         ASTM D7647         >2500         668         611         313           Particles >6µm         ASTM D7647         >320         114         104         53           Particles >21µm         ASTM D7647         >20         6         5         3           Particles >38µm         ASTM D7647         >20         6         5         3           Particles >71µm         ASTM D7647         >4         1         1         0							
Potassium         ppm         ASTM D5185m         >20         6         5         4           Water         %         ASTM D6304         >44         39.3         38.9         41.2           ppm Water         ppm         ASTM D6304         >44         39.3         38.900         412000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1227         1122         574           Particles >6µm         ASTM D7647         >2500         668         611         313           Particles >14µm         ASTM D7647         >320         114         104         53           Particles >21µm         ASTM D7647         >20         6         5         3           Particles >38µm         ASTM D7647         >20         6         5         3           Particles >71µm         ASTM D7647         >4         1         1         0				210			
Water         %         ASTM D6304         >44         39.3         38.9         41.2           ppm Water         ppm         ASTM D6304         393000         389000         412000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1227         1122         574           Particles >6µm         ASTM D7647         >2500         668         611         313           Particles >14µm         ASTM D7647         >320         114         104         53           Particles >21µm         ASTM D7647         >20         6         5         3           Particles >38µm         ASTM D7647         >20         6         5         3           Particles >71µm         ASTM D7647         >4         1         0				> 20			
ppm Water         ppm         ASTM D6304         393000         389000         412000           FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1227         1122         574           Particles >6µm         ASTM D7647         >2500         668         611         313           Particles >14µm         ASTM D7647         >320         114         104         53           Particles >21µm         ASTM D7647         >80         38         35         18           Particles >38µm         ASTM D7647         >20         6         5         3           Particles >71µm         ASTM D7647         >4         1         1         0							
FLUID CLEANLINESS         method         limit/base         current         history1         history2           Particles >4µm         ASTM D7647         1227         1122         574           Particles >6µm         ASTM D7647         >2500         668         611         313           Particles >14µm         ASTM D7647         >320         114         104         53           Particles >21µm         ASTM D7647         >80         38         35         18           Particles >38µm         ASTM D7647         >20         6         5         3           Particles >71µm         ASTM D7647         >4         1         0				>44			
Particles >4μm         ASTM D7647         1227         1122         574           Particles >6μm         ASTM D7647         >2500         668         611         313           Particles >14μm         ASTM D7647         >320         114         104         53           Particles >14μm         ASTM D7647         >80         38         35         18           Particles >38μm         ASTM D7647         >20         6         5         3           Particles >71μm         ASTM D7647         >4         1         1         0							
Particles >6μm         ASTM D7647         >2500         668         611         313           Particles >14μm         ASTM D7647         >320         114         104         53           Particles >21μm         ASTM D7647         >80         38         35         18           Particles >38μm         ASTM D7647         >20         6         5         3           Particles >71μm         ASTM D7647         >4         1         0		IESS		limit/base			
Particles >14μm         ASTM D7647         >320         114         104         53           Particles >21μm         ASTM D7647         >80         38         35         18           Particles >38μm         ASTM D7647         >20         6         5         3           Particles >71μm         ASTM D7647         >4         1         0							
Particles >21μm         ASTM D7647         >80         38         35         18           Particles >38μm         ASTM D7647         >20         6         5         3           Particles >71μm         ASTM D7647         >4         1         0	•						
Particles >38μm         ASTM D7647         >20         6         5         3           Particles >71μm         ASTM D7647         >4         1         0	1						
Particles >71μm         ASTM D7647         >4         1         0	Particles >21µm			>80			
	Particles >38µm						
Oil Cleanliness ISO 4406 (c) >/18/15 17/17/14 17/16/14 16/15/13				>4	1		
	Oil Cleanliness		ISO 4406 (c)	>/18/15	17/17/14	17/16/14	16/15/13

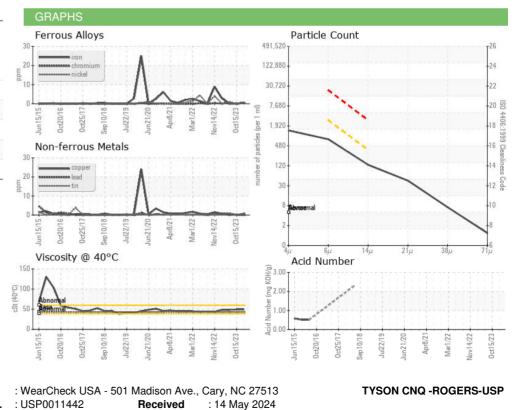


# **OIL ANALYSIS REPORT**



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>44	0.2%	0.2%	0.2%
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
рН	Scale 0-14	ASTM D1287		7.00	7.00	7.00
Visc @ 40°C	cSt	ASTM D445	43.0	49.0	49.0	47.9
SAMPLE IMAGES	3	method	limit/base	current	history1	history2

Bottom



: 21 May 2024

: 21 May 2024 - Doug Bogart



To discuss this sample report, contact Customer Service at 1-800-237-1369.

Unique Number : 11030138

\* - 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)

Test Package : IND 2 (Additional Tests: pH, PQ, ReserveAlk)

Tested

Diagnosed

Report Id: TYSROGCNQ [WUSCAR] 06178812 (Generated: 05/21/2024 17:08:56) Rev: 1

Certificate 12367

Contact/Location: SERVICE MANAGER - TYSROGCNQ

T:

F: