



OIL ANALYSIS REPORT

WEAR	ATTENTION
CONTAMINATION	NORMAL
FLUID CONDITION	ABNORMAL

Area
Kingsbridge SP-13584
Machine Id
T22
Component
Wind Turbine Gearbox
Fluid
CHEVRON PINNACLE WM 320 (--- LTR)

RECOMMENDATION

We recommend that you drain the oil from the component if this has not already been done. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		WC0546238	WC0783169	WC0783082
Sample Date		Client Info		02 Feb 2024	21 Aug 2023	15 Mar 2023
Machine Age	yrs	Client Info		0	0	0
Oil Age	yrs	Client Info		0	0	0
Filter Age	yrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Filter Changed		Client Info		N/A	N/A	N/A
Sample Status				ABNORMAL	ABNORMAL	ABNORMAL

WEAR

The iron level is marginal. All other component wear rates are normal.

PQ		ASTM D8184*	>50	0	0	0
Iron	ppm	ASTM D5185(m)	>75	81	75	72
Chromium	ppm	ASTM D5185(m)	>5	<1	<1	<1
Nickel	ppm	ASTM D5185(m)	>10	<1	<1	<1
Titanium	ppm	ASTM D5185(m)	>10	0	0	0
Silver	ppm	ASTM D5185(m)		0	<1	0
Aluminum	ppm	ASTM D5185(m)	>10	<1	<1	<1
Lead	ppm	ASTM D5185(m)	>15	0	<1	<1
Copper	ppm	ASTM D5185(m)	>10	2	<1	<1
Tin	ppm	ASTM D5185(m)	>10	0	0	0
Vanadium	ppm	ASTM D5185(m)		0	0	0
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE

CONTAMINATION

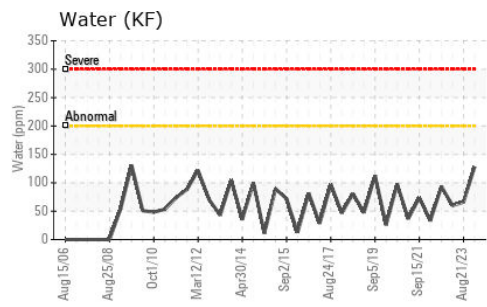
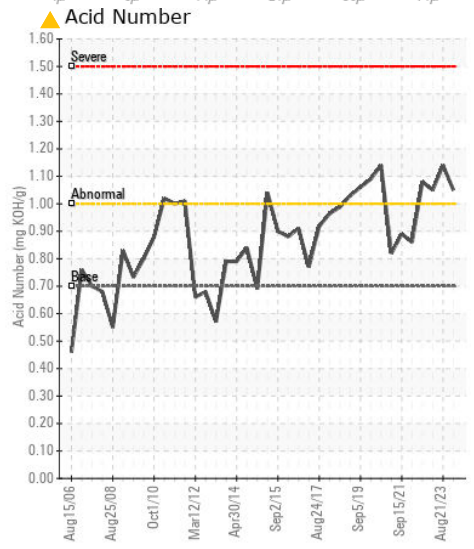
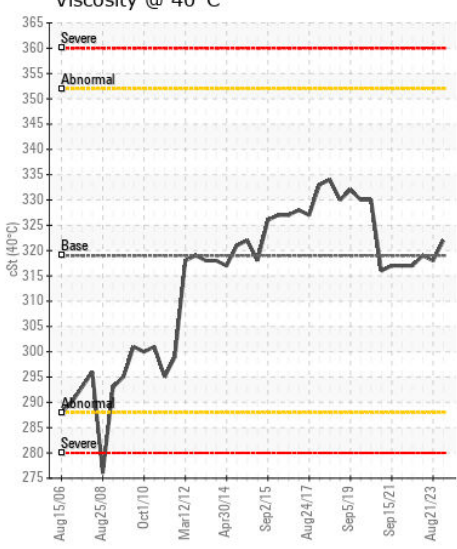
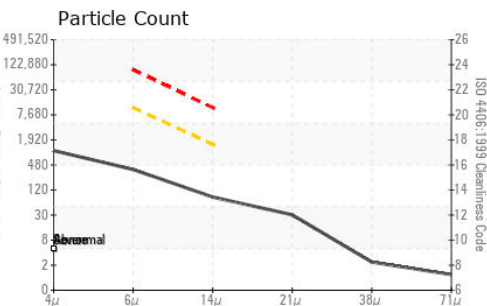
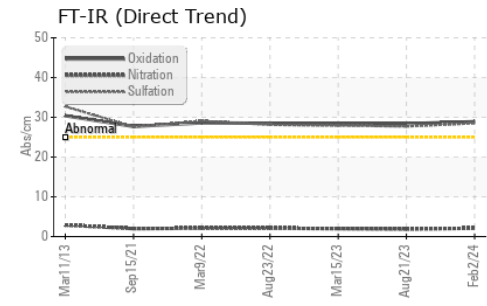
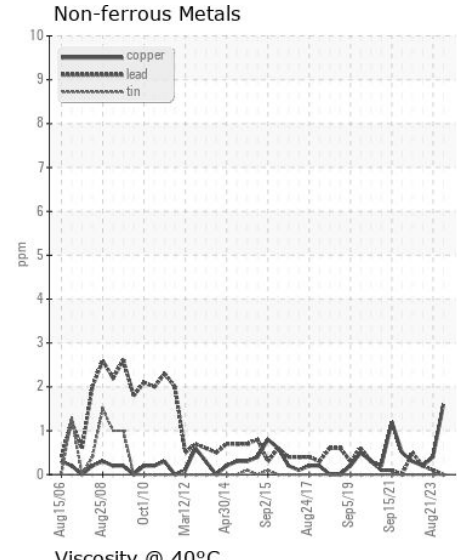
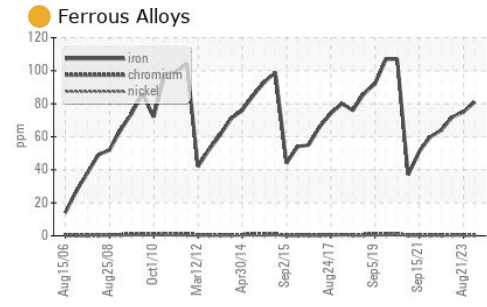
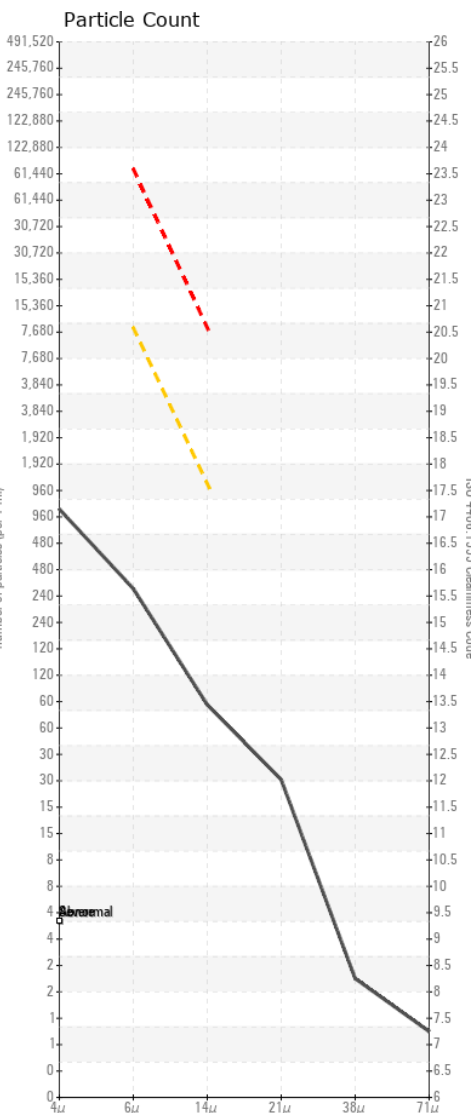
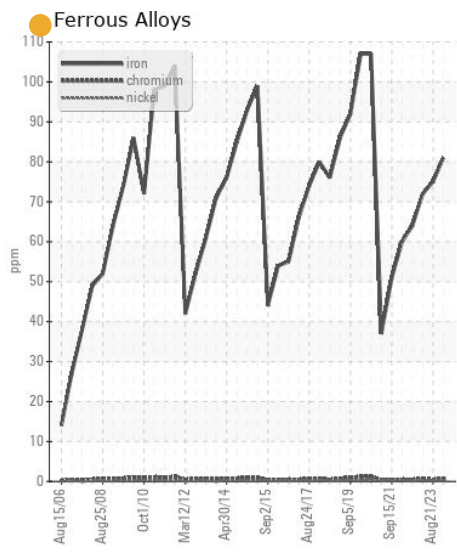
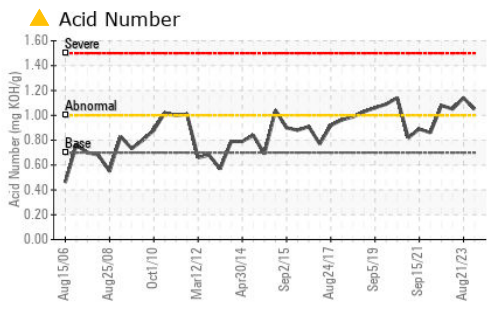
The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable.

Silicon	ppm	ASTM D5185(m)	>10	0	<1	<1
Potassium	ppm	ASTM D5185(m)	>20	<1	0	2
Water	%	ASTM D6304*	>0.02	0.012	0.006	0.006
ppm Water	ppm	ASTM D6304*	>200	128	66	60.0
Soot %	%	ASTM D7844*		0	0	0
Nitration	Abs/cm	ASTM D7624*		2.1	1.9	2.0
Sulfation	Abs/.1mm	ASTM D7415*		28.5	27.7	27.9
Particles >4µm		ASTM D7647		931	336	1397
Particles >6µm		ASTM D7647	>10000	329	83	414
Particles >14µm		ASTM D7647	>1300	72	9	36
Particles >21µm		ASTM D7647	>320	27	3	12
Particles >38µm		ASTM D7647	>80	2	1	1
Particles >71µm		ASTM D7647	>20	1	1	0
Oil Cleanliness		ISO 4406 (c)	>-/20/17	17/16/13	16/14/10	18/16/12
Silt	scalar	Visual*	NONE	NONE	NONE	NONE
Debris	scalar	Visual*	NONE	VLITE	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*	>0.02	NEG	NEG	NEG

FLUID CONDITION

The AN level is above the recommended limit. The oil is no longer serviceable.

Sodium	ppm	ASTM D5185(m)	>10	6	5	4
Boron	ppm	ASTM D5185(m)	0	<1	<1	<1
Barium	ppm	ASTM D5185(m)	0	0	0	0
Molybdenum	ppm	ASTM D5185(m)	0	0	0	0
Manganese	ppm	ASTM D5185(m)		<1	<1	<1
Magnesium	ppm	ASTM D5185(m)	0	<1	0	<1
Calcium	ppm	ASTM D5185(m)	0	1	<1	0
Phosphorus	ppm	ASTM D5185(m)	300	242	248	294
Zinc	ppm	ASTM D5185(m)	0	8	6	6
Sulfur	ppm	ASTM D5185(m)	8000	6802	6837	7383
Oxidation	Abs/.1mm	ASTM D7414*		28.9	28.4	28.3
Acid Number (AN)	mg KOH/g	ASTM D974*	0.7	1.05	1.14	1.05
Visc @ 40°C	cSt	ASTM D7279(m)	319	322	318	319
Visc @ 100°C	cSt	ASTM D7279(m)	35.4	35.6	35.5	35.5
Viscosity Index (VI)	Scale	ASTM D2270*	156	156	157	157



Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC0546238
Lab Number : 02639237
Unique Number : 5788399
Test Package : IND 2 (Additional Tests: FT-IR, KF, KV100, PQ, PrtCount, TAN Man, VI)

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*To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.*