

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id **Tk 44** Component **Diesel Engine** Fluid

PETRO CANADA DURON HP 15W40 (8 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

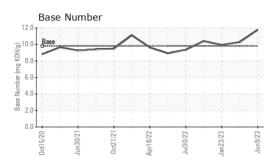
Fluid Condition

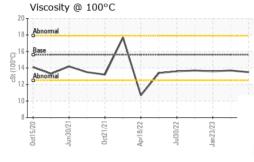
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0090560	PCA0090573	PCA0071942
Sample Date		Client Info		09 Jun 2023	28 Feb 2023	23 Jan 2023
Machine Age	mls	Client Info		425400	414000	410000
Oil Age	mls	Client Info		6300	5200	8085
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	s	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>100	4	5	8
Chromium	ppm ppm	ASTM D5185m	>20	+ <1	<1	<1
Nickel		ASTM D5185m	>20	<1	0	0
Titanium	ppm	ASTM D5185m	~4	0	<1	<1
Silver	ppm		2	ں <1	<1	<1
Aluminum	ppm	ASTM D5185m ASTM D5185m	>3 >20	2	<1	0 <1
	ppm		>20	2	2	2
Lead	ppm	ASTM D5185m ASTM D5185m		2	2	2 10
Copper	ppm		>330			
Tin	ppm	ASTM D5185m	>15	1	<1 0	1
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	limit/base	4	5	history2 6
	ppm ppm		limit/base		5 0	
Boron		ASTM D5185m	limit/base	4 0 64	5	6
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	4 0	5 0 59 1	6 1
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		4 0 64	5 0 59	6 1 59 <1 902
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		4 0 64 0	5 0 59 1	6 1 59 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		4 0 64 0 985	5 0 59 1 1001	6 1 59 <1 902
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		4 0 64 0 985 1160	5 0 59 1 1001 1101	6 1 59 <1 902 1034
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		4 0 64 0 985 1160 1075	5 0 59 1 1001 1101 1022	6 1 59 <1 902 1034 942
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	4 0 64 0 985 1160 1075 1286	5 0 59 1 1001 1101 1022 1305	6 1 59 <1 902 1034 942 1203
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	4 0 64 0 985 1160 1075 1286 3187	5 0 59 1 1001 1101 1022 1305 3578	6 1 59 <1 902 1034 942 1203 3349
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	4 0 64 0 985 1160 1075 1286 3187 current	5 0 59 1 1001 1101 1022 1305 3578 history1	6 1 59 <1 902 1034 942 1203 3349 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25	4 0 64 0 985 1160 1075 1286 3187 current 4	5 0 59 1 1001 1101 1022 1305 3578 history1 5	6 1 59 <1 902 1034 942 1203 3349 history2 7
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base >25	4 0 64 0 985 1160 1075 1286 3187 current 4 2	5 0 59 1 1001 1101 1022 1305 3578 history1 5 3	6 1 59 <1 902 1034 942 1203 3349 history2 7 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm TS	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base	4 0 64 0 985 1160 1075 1286 3187 current 4 2 2 <1	5 0 59 1 1001 1101 1022 1305 3578 history1 5 3 2	6 1 59 <1 902 1034 942 1203 3349 history2 7 2 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	4 0 64 0 985 1160 1075 1286 3187 current 4 2 <1 <1	5 0 59 1 1001 1101 1022 1305 3578 history1 5 3 2 2 history1	6 1 59 <1 902 1034 942 1203 3349 history2 7 2 0 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3	4 0 64 0 985 1160 1075 1286 3187 <i>current</i> 4 2 <1 <i>current</i> 0.1	5 0 59 1 1001 101 1022 1305 3578 history1 5 3 2 history1 0.1	6 1 59 <1 902 1034 942 1203 3349 history2 7 2 0 history2 0.1
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 limit/base >3 >20	4 0 64 0 985 1160 1075 1286 3187 <i>current</i> 4 2 <1 2 <1 <i>current</i> 0.1 7.0	5 0 59 1 1001 1101 1022 1305 3578 history1 5 3 2 history1 0.1 5.9	6 1 59 <1 902 1034 942 1203 3349 history2 7 2 0 history2 0 history2 0.1 6.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	limit/base >25 >20 limit/base >3 >20 >30 >30	4 0 64 0 985 1160 1075 1286 3187 <i>current</i> 4 2 <1 <i>current</i> 0.1 7.0 18.7 <i>current</i>	5 0 59 1 1001 1022 1305 3578 history1 5 3 2 history1 0.1 5.9 18.1 history1	6 1 59 <1 902 1034 942 1203 3349 history2 7 2 0 history2 0.1 6.5 18.4 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm	ASTM D5185m ASTM D5185m	Imit/base >25 >20 Imit/base >3 >20 >30	4 0 64 0 985 1160 1075 1286 3187 <i>current</i> 4 2 <1 <i>current</i> 0.1 7.0 18.7	5 0 59 1 1001 101 1022 1305 3578 history1 5 3 2 history1 0.1 5.9 18.1	6 1 59 <1 902 1034 942 1203 3349 history2 7 2 0 history2 0.1 6.5 18.4



OIL ANALYSIS REPORT





	VISUAL		method				history2	
\sim	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	
Apr1 8/22 - Jul30/22 - Jan23/23 - Jun3/23 -	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML	
Apr18/22 Jul30/22 Jan23/23 Jun9/23	Odor	scalar	*Visual	NORML	NORML	NORML	NORML	
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG	
	Free Water	scalar	*Visual		NEG	NEG	NEG	
	FLUID PROPE	RTIES	method	limit/base	current	history1	history2	
	Visc @ 100°C	cSt	ASTM D445	15.6	13.5	13.7	13.6	
	GRAPHS							
	Iron (ppm)			12	Lead (ppm)			
	200 - Severe			10				
53 30 18	200			8	0 Severe	A		
N P M	150 - Abnormal			Ed 6	0- Abnormal	/ \		
	50			4		/		
	30 0			2	0			
	0ct15/20	Apr18/22 -	Jul30/22 - Jan23/23 -	Jun9/23 -		Jul30/22 -	Jan 23/23 -	
	0ct15/20 Jun30/2 0ct21/2	Apr1	Jul30/22 Jan23/23	ղոր	Jun3	Apr1 Jul3	Jan 23/23	
	Aluminum (ppm)				Chromium (pp	om)		
	50							
	40 - Severe			- 4				
Ę	20 Abnormal			³ ط	0			
-	20 - Abnormal			² 2	0 - Abnormal			
	10				0			
	21	- 22	23		721-0	22	23	
	0ct15/20 Jun30/21 0ct21/21	Apr18/22	Jul30/22 Jan23/23	Jun9/23	0ct15/20 Jun30/21	Uct21/21 Apr18/22 Jul30/22	Jan 23/23	
	Copper (ppm)	-			Silicon (ppm)	-	*	
	200 T			8	0 Severe			
	000			6	0	\wedge		
-	600			E 4	0	$\langle \rangle$		
	400 - Stiftina l	1			Abnormal			
	200			2			-	
	21 20 0	- 127	722 -	/23	21 20 0	22+	- 23	
	0ct15/20 - Jun30/21	Apr18/22	Jul30/22 Jan23/23	Jun9/23	0ct15/20 Jun30/21	Jul30/22	Jan 23/23	
	Viscosity @ 100°C		· 7		Base Number	4	-7	
	20 T			=12.	12.0 -			
	18 - Abnormal			(b)H01 H03 Bu) January 4. 2.		\sim		
0-	Abnormal			(B 8.				
UL de	Abnormal	11						
	10-	V		N se 2.				
	8	2	3		0	2	en	
	0ct15/20 Jun30/21 0ct21/21	Apr18/22	Jul30/22 Jan23/23	Jun9/23	0ct15/20 Jun30/21	Uct21/21 Apr18/22 Jul30/22	Jan 23/23	
Laboratory Sample No. Lab Number Unique Number Test Package	: WearCheck USA - 5 : PCA0090560 F : 05918802 E		son Ave., Ca I : 08 / ed : 09 /			611 E WE	J F PRIC PLEASANT S YMOUTH, M US 0218 t: JOHN LAN	

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

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