GAS/DIESEL REPORT

LAB NUMBER: D95618 **UNIT ID:** 05 F250
REPORT DATE: 7/25/2018 **CLIENT ID:** 28751
CODE: 22/16 **PAYMENT:** CC: Visa

You'll need your client ID if you want to log on to www.blackstone-labs.net and view your reports.

This is a good place to identify things like bypass filtration, mods, etc.

UNIT

EQUIP. MAKE/MODEL:	Navistar 6.0L Power Stroke	OIL TYPE & GRADE:	Shell Rotella T 15W/40
FUEL TYPE:	Diesel	OIL USE INTERVAL:	4,907 Miles
ADDITIONAL INFO:	This vehicle is the love of my life. I will never sell it.		

CLIENT

OSCAR HUFF		PHONE:	(828) 123-5897
OSCAR'S WORKSHOP		FAX:	(828) 123-1547
132 PERIWINKLE RD		ALT PHONE:	(828) 123-1564
STE. 102		EMAIL:	oscar@bellsouth.com
SWANNANOA, NC 18752			

COMMENTS

OSCAR: The fuel we spoke of last time improved to 0.5% in this sample. Iron took a big step in the right direction, too. All wear now re d in the proper balance to indicate your engine is free of any obvi ity is common to the 6.0L but the fuel may have lowered it as well. No coolant or moisture was found. Both silicon and insolubles read normally showing good air and oil filtration. At 47,356 total miles your PSD is wearing well. We think you could run the oil a little longer, if you're interested.

Sample report

The amount of oil you added between oil changes.

This is the average wear for this particular type of engine for you or your business.

This column shows average wear for all the samples we've seen from this type of engine.

ELEMENTS IN PARTS PER MILLION

			UNIT / LOCATION AVERAGES					UNIVERSAL AVERAGES
MI/HR on Oil		4,907		5,134	5,012	4,832	3,715	
MI/HR on Unit		47,356		42,449	37,315	32,303	27,471	
Sample Date		12/02/15		10/08/15	07/12/15	05/21/15	04/16/15	
Make Up Oil		0 qts		0 qts	0 qts	2 qts	5 qts	
ALUMINUM		4	4	4	3	4	**6**	3
CHROMIUM		2	2	1	1	1	2	1
IRON		30	31	**44**	24	23	33	23
COPPER		2	4	3	2	2	3	3
LEAD		2	3	3	4	5	5	3
TIN		0	1	0	1	2	2	1
MOLYBDENUM		4	4	5	5	4	4	29
NICKEL		1	1	1	1	0	1	0
MANGANESE		0	0	0	0	0	1	0
SILVER		0	0	0	0	0	0	0
TITANIUM		0	0	0	0	0	0	0
POTASSIUM		3	3	2	1	2	2	4
BORON		0	2		2	0	1	32
SILICON		9	14	1	8	9	13	11
SODIUM		4	3	3	3	3	4	3
CALCIUM		3430	3437	3970	3632	3525	3015	3142
MAGNESIUM		10	11	11	9	10	11	79
PHOSPHORUS		1204	1190	1289	1274	1212	1246	1116
ZINC		1345	1325	1508	1381	1392	1387	1279
BARIUM		0	0	0	0	0	1	2

The additives in this column are a mix of all different types of oil, so you can't compare them to your sample.

From left to right, these are your past samples.

PROPERTIES

		Values Should Be*				
SUS Viscosity @ 210°F	**65.5**	69-80	**65.9**	**65.7**	**63.4**	**60.3**
cSt Viscosity @ 100°C	**11.74**	12.7-15.5	**11.85**	**11.79**	**11.16**	**10.29**
Flashpoint in °F	**405**	>410	**390**	430	**390**	**400**
Fuel %	0.5	<2.0	**2.0**	<0.5	<0.5	1.0
Antifreeze %	0.0	0.0	0.0	0.0	0.0	0.0
Water %	0.0	0.0	0.0	0.0	0.0	0.0
Insolubles %	0.3	<0.6	**0.3**	0.2	0.3	0.3
TBN	6.3		8.4	9.5	6.6	12.5
TAN						
ISO Code						

The tests in the Properties box look at the physical condition of the oil.

*** THIS COLUMN APPLIES ONLY TO THE CURRENT SAMPLE**

416 E. PETTIT AVE. FORT WAYNE, IN 46806 (260) 744-2380 www.blackstone-labs.com

Gas/Diesel Engine Report Explanation

Averages: Both the universal and unit averages are running averages and change with the number of samples we analyze.

Elements: Elements are quantified in the oil at parts per million levels (PPM). This list shows the most common sources of the elements in gasoline or diesel engine oil. Following each element is a description of where it comes from. They are grouped by category.

Wear Metals
Aluminum: Pistons, bearings, cases (heads & blocks). Clutch assembly and transmission components in motorcycles
Chromium: Rings, a trace element in steel
Iron: Cylinders, rotating shafts, the valve train, and any steel part sharing the oil. Transmission shafts/gears and bearings in motorcycles
Copper: Brass or bronze parts, copper bushings, bearings, oil coolers
Lead: Bearings, leaded gas, fuel additives
Tin: Bearings, bronze parts, piston coating (rare)
Nickel: Trace element in steel, platings on some cylinder types
Silver: Bearings
Titanium: Some intake valves and connecting rods, aftermarket parts, oil additive

Contaminants
Potassium: Antifreeze, additive in some oil types
Sodium: Antifreeze (ethylene glycol), additive in some gasoline engine oils. Sea water in marine engines
Silicon: Airborne dirt escaping air filtration, sealers, gaskets, sand-casted parts, and spray lubricants, antifreeze inhibitor, oil additive

Additives
Molybdenum: Anti-wear additive, some types of rings
Manganese: Trace element, additive in some gasoline
Boron: Detergent/dispersant additive, antifreeze inhibitors
Calcium: Detergent/dispersant additive
Magnesium: Detergent/dispersant additive
Phosphorus: Anti-wear additive
Zinc: Anti-wear additive
Barium: Detergent/dispersant additive used in some synthetics

Physical properties
Viscosity/Flashpoint: If fuel is present in the oil, the Viscosity and Flashpoint will often be lower than stated in the “Values Should Be” line. A high viscosity may show oil oxidation or high levels of soot. It can also show an oil additive in use.
Fuel %: Indicates the amount of volatile fuel dilution found in the oil.
Antifreeze %: Indicates the amount of antifreeze found in the oil. A question mark means we found possible traces of coolant, but not enough to definitively say it’s there.
Water %: Indicates the amount of water found in the oil.
Insolubles %: Insolubles are solid materials present in the oil. They are typically free carbon

from the oxidation of the oil itself, along with blow-by past the rings.