INDUSTRIAL REPORT

LAB NUMBER: D95618 **UNIT ID:** 342
REPORT DATE: 7/25/2015 **CLIENT ID:** 28751
CODE: 22/16 **PAYMENT:** PO: 07-212

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 anything special about the equipment or anything that will help you identify this unit.

UNIT

EQUIP. MAKE/MODEL:	Makino A66	OIL TYPE & GRADE:	Makino spindle oil
FUEL TYPE:	N/A	OIL USE INTERVAL:	Hours
ADDITIONAL INFO:	Serial number 23456. RO 6754632.		

CLIENT

OSCAR HUFF		PHONE:	(828) 123-5897
WHITLEY COUNTY		FAX:	(828) 123-1547
132 PERIWINKLE RD		ALT PHONE:	(828) 123-1564
STE. 102		EMAIL:	oscar@whitley.co.us.com
SWANNANOA, NC 18752			

COMMENTS

OSCAR: Note iron and copper, both of which are reading higher than they were and higher than universal averages. Silicon is also above ve dirt it may be presenting this hydraulic system with an abrasion probl ss parts. We suggest removing this oil from service and resampling in 50 hours to monitor.

Sample report

ELEMENTS IN PARTS PER MILLION

		UNIT / LOCATION AVERAGES					UNIVERSAL AVERAGES
MI/HR on Oil	100		100	50	50	75	
MI/HR on Unit	556		456	356	306	256	
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	2	2	2	2	2	**6**	2
CHROMIUM	**4**	3	2	1	1	2	1
IRON	**89**	38	**44**	**24**	9	7	23
COPPER	**81**	40	**33**	1	1	1	3
LEAD	2	3	3	1	1	1	3
TIN	0	1	0	1	0	0	1
MOLYBDENUM	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0
BORON	0	2	0	2	0	1	4
SILICON	**34**	14	**2**	8	9	5	4
SODIUM	1	0	0	0	1	1	3
CALCIUM	185	175	211	130	154	209	165
MAGNESIUM	1	1	1	1	1	1	18
PHOSPHORUS	319	325	333	324	245	379	338
ZINC	427	417	432	408	312	449	587
BARIUM	0	0	0	0	0	1	0

The amount of oil added between oil changes.

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

This column shows averages wear for all the samples we've seen from this type machine.

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

Values Should Be*

From left to right, these are your past samples.

PROPERTIES

SUS Viscosity @ 210°F	29.5	28-33	30.2	29.5	28.1	31.3
cSt Viscosity @ 100°C	1.04	0.6-2.3	0.8	0.6	1.01	1.09
Flashpoint in °F	205	>195	200	205	210	215
Fuel %	-	-	-	-	-	-
Antifreeze %	-	-	-	-	-	-
Water %	0.0	0.0	0.0	0.0	0.0	0.0
Insolubles %	0.0	<0.1	0.1	0.0	0.1	TR
TBN						
TAN	0.5		0.4	0.6	0.3	2.0
ISO Code	16/12		19/14	14/11	21/18	18/12

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

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

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Industrial Report Explanation

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

Elements: Elements are quantified in the oil at part per million levels (ppm). This list shows the most common sources of the elements in an industrial oil sample. The elements are grouped by category.

Wear Metals
Aluminum: Pump vanes, pistons, valves
Chromium: Ball and roller bearings, hydraulic rams, trace element in steel
Iron: Any steel parts including rotating shafts and valves
Copper: Brass parts (with zinc), bronze parts, bushings, valves, oil cooler
Lead: Friction bearings, solder, component in bronze wear (with copper)
Tin: Bearings, bronze component, anti-wear coatings

Trace Elements
Nickel: Trace element in steel alloy
Silver: Trace element, rarely found
Titanium: Trace element, rarely found

Contaminants
Boron: May show coolant contamination
Silicon: Abrasive dirt, sealers, gaskets, anti-foam additive
Sodium: Contamination from coolant and other sources

Oil Additives
Molybdenum: Oil additive, grease additive
Manganese: Grease additive
Potassium: Common oil additive, also shows coolant contamination
Boron: Occasionally used as an additive
Calcium, Magnesium: Oil additives
Phosphorus, Zinc: Oil additives
Barium: Additive common to synthetic oils

Physical Properties
Viscosity/Flashpoint: If the oil is contaminated with solvent or another contaminant, the viscosity and flashpoint will often be lower than the range in the “Values Should Be” line. A high viscosity may show oil stress or contamination.
Water %: Indicates the amount of moisture found in the oil.
Insolubles %: Solid materials present in the oil. They are typically free carbon from the oxidation of the oil itself, or they may be present from dirt or manufacturing contamination.