



Review Reports MOB 3 Sample Report

Test kit used

WEAR CONTAMINATION OIL CONDITION

SEVERE
SEVERE
SEVERE

Quick Sample Status

Unit Identification
Sample Information
Sample, Recieved Date
Sample Number

Maintenance Info
Time on oil,filter,component
Maintenance actions

Abnormal Limits

Unit Information
Including make, model, s/n

Recommendation
Summary and any necessary corrective actions required.

Wear
Determination of normal wear generated metals in parts per million (ppm) and detailed discussion of equipment condition.

Analytical Ferrogram
Photomicrograph of Ferrogram as viewed by optical microscopy.

Unit Make : S-70
Unit Model : CHEV
Comp Make : (n/a)
Comp Model : (n/a)

Serial No : (n/a)
Cust. Ref No : (n/a)
Stub No : PP-

Date Rec'd : Jan 23, 2001
Sample Date : Jan 19, 2001
Diagnostician : Barry Goslin

70 - Gasoline Engine

RECOMMENDATION

We advise that you check for the source of water entry. We recommend that you change the oil. NOTE: Test values may be askew due high concentration of free water present in sample. No abnormal wear particles are observed in this sample. Suspect the sample was taken cold further effecting accuracy of some physical test results.

Sample Date	Current	UOM
Time on Unit	48000	kms
Time on Oil	4000	kms
Time on Filtr	0	kms
Oil Maint.	N/A	---
Filter Maint.	N/A	---

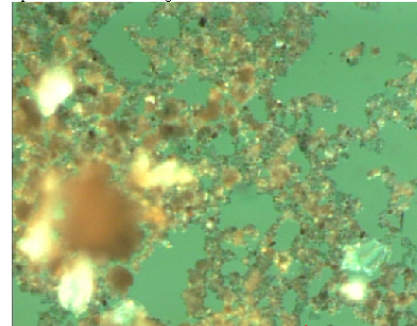
WEAR

The lead level is marginal. The copper level is marginal. Analytical ferrogaphy shows trace amount of ferrous rubbing wear with moderate amounts of black oxides and red oxides. Black oxides are formed by high localized heat due to insufficient lubrication. Red oxides or rust is due to water being present in the lubrication system. The black oxides can be formed due to low oil level, low oil pressure, or insufficient flow of oil to a localized areas/surface. The corrosive wear and the presence of the glycol will account for the abnormal lead level as glycol aggressively attacks plain bearings composed of lead/tin/abbitt.

Sample Date	Current	Abn
Iron	10	---
Nickel	0.0	---
Chromium	0.3	---
Titanium	0.2	---
Copper	173	---
Aluminum	2.9	---
Tin	0.0	---
Lead	111	---
Silver	0.3	---

Direct-Reading Ferrography		Abn
DR-Ferr Large	85.6	---
DR-Ferr Small	84.5	---
WPC	170.1	---
% Large	0.6	---
Seventy Index	94.2	---
Dilution	1:10	---

Opt. M. 500X Bichromatic Light



Ferrous		size μ
0	1	10
1	2	10
2	3	10
3	4	10
4	5	10
5	6	10
6	7	10
7	8	10
8	9	10
9	10	10
Rubbing		15
Sliding		
Cutting		
Rolling		
Break-in		
Spheres		
Black Oxides		
Red Oxides		
Corrosion		
Other		
Nonferrous		size μ
0	1	10
1	2	10
2	3	10
3	4	10
4	5	10
5	6	10
6	7	10
7	8	10
8	9	10
9	10	10
Rubbing		
Sliding		
Cutting		
Rolling		
Other		

Direct-Reading Ferrography
Density of small and large wear particles and ratios showing minute changes in wear condition.

Analytical Ferrography
Detailed analysis of wear regimes evident in component.

Report Identification



Review Reports

MOB 3 Sample Report

Contamination

Dirt, Water, Particle Count (ISO Code) as well as a detailed account of any Contaminants present in the ferrography Identifies any abnormal contaminants present in the oil.

Contaminants	0	1	2	3	4	5	6	7	8	9	10	size μ
Sand/Dirt	[Bar chart showing high level]											
Fibres	[Bar chart showing low level]											
Spheres	[Bar chart showing low level]											
Other	[Bar chart showing low level]											
Sample Date												

CONTAMINATION

There is a high concentration of water present in the oil. Test for glycol is positive 0.20. The ferrogram solution was diluted 100 to 1 in order to perform visual observations. Massive amounts of lubricant degradation and corrosive wear are seen in this sample and can be viewed in the attached image. Corrosive wear is a sign of the lubricant becoming acidic and attacking contact surfaces. Lubricant degradation is an indication the lubricant is breaking down. A fluid analysis is available at www.wearcheck.com

Sample Date	Current	Abn	Sample Date	Current	Abn
13	15				

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Sample Date	Current	Abn
13	15	

Sample Date	Current	Abn
13	15	

OIL CONDITION

Oil Type: QUAKERSTATE
The oil is no longer serviceable due to the presence of contaminants in the oil.

Sample Date	Current	Abn
13	15	

Oil Condition	0	1	2	3	4	5	6	7	8	9	10	size μ
Oil Degradat'n	[Bar chart showing high level]											
Sample Date												
Boron												25
Barium												0.8
Calcium												740
Magnesium												108
Molybdenum												36
Sodium												14
Phosphorus												586
Sulfur												2419
Zinc												662
Visc@40°C												---
Visc@100°C												30.6
Oxidation												0
TBN												8.40

DR-Ferrography

Oil Condition [Bar chart showing high level]

Oil Degradat'n [Bar chart showing high level]

Sample Date [Bar chart showing low level]

Boron [Bar chart showing low level]

Barium [Bar chart showing low level]

Calcium [Bar chart showing low level]

Magnesium [Bar chart showing low level]

Molybdenum [Bar chart showing low level]

Sodium [Bar chart showing low level]

Phosphorus [Bar chart showing low level]

Sulfur [Bar chart showing low level]

Zinc [Bar chart showing low level]

Visc@40°C [Bar chart showing low level]

Visc@100°C [Bar chart showing low level]

Oxidation [Bar chart showing low level]

TBN [Bar chart showing low level]

Wear Metals

IRVY CHROMIUM NICKEL TITANIUM ALUMINUM COPPER LEAD TN

DR-Ferrography

DL Ds WPC

Oil Condition

Oil additive levels in ppm
Viscosity @ 40°C
Total Acid Number (AN)
Determines if oil is suitable for continued use.

Wear Metal Graph

All ppm wear metals charted on a log graph showing up to 25 samples chronologically. Allows for the visual identification of wear of alloyed components.

DR-Ferr Graph

Trends the total small and large particles and shows a bar graph of the percentage large particles. Demonstrates subtle changes in wear pattern for the component.

If you have any questions concerning this sample report (work order no 00845128) please call 1-800-268-2131.

The leader in oil analysis
WearCheck International
Africa, Asia, Australia, Europe, North America

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New oil baseline

Customer contact info