



# Microscopic Analysis Report

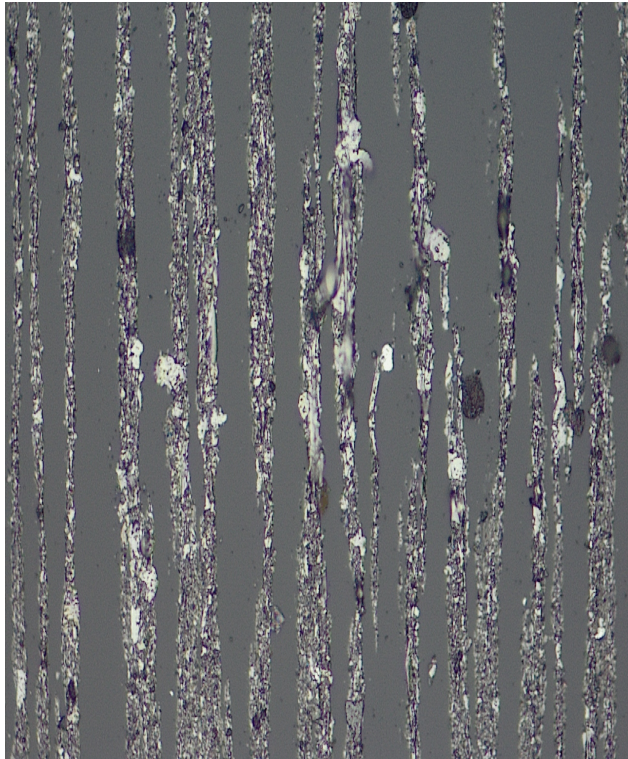
Customer Name: ROBERT WILSON  
 Reservoir Description: P610 TRANSAXLE OIL

Sample Date: 02/21/17  
 Lab Number: 655004

## Discussion of Results

**Ferrogram Interpretation:** There were moderate amounts of abrasive/dust/dirt particles present on the slide. Also, there were a few ferrous/nonferrous white metal rolling wear platelet particles, ferrous/nonferrous white metal cutting wear particles, and spherical metallic wear particles observed on the slide. There were a few black oxide particles, ferrous/nonferrous white metal rubbing wear particles, and copper alloy rubbing wear particles found on the slide. The presence of rolling wear platelet particles suggests possible surface fatigue and/or rolling contact failure due to metal-to-metal sliding and/or abrasive contamination. The presence of cutting wear particles suggests possible misalignment and/or abrasive contamination. The presence of spherical metallic wear particles suggests possible rolling bearing fatigue and/or welding or grinding processes (contamination). The presence of black oxide particles suggests possible overheating and/or lubricant starvation. The morphology of abrasive/dust/dirt particles suggests possible contamination of the sample and/or reservoir from an external source.

## Microscopic Analysis



**Figure 1:** Ferrous Rolling Wear Platelet Particles, Ferrous Cutting Wear Particles, and Ferrous Rubbing Wear Particles at the Head of the Slide (Magnification 500X).



**Figure 2:** Large Ferrous Cutting Wear Particle and Abrasive/Dust/Dirt Particles at the Middle of the Slide (Magnification 500X).

Particle Rating													
Max Size (µm)	12	73		25		22	11	9		16	53		
Severity													
4													
3													
2													
1													
	R	C	S	L	X	B	R	C	S	L	A	O	M
	Ferrous Based					Nonferrous Based				Contaminants			

**Key**

- R: Normal Rubbing Wear
- C: Cutting Wear
- S: Sliding Wear
- L: Rolling Wear
- X: Red Oxides
- B: Black Oxides
- A: Abrasives
- O: Corrosive Wear
- M: Molybdenum Disulfide

1: Least Severe  
 4: Most Severe