Appendix K – Ferrograms Introduction

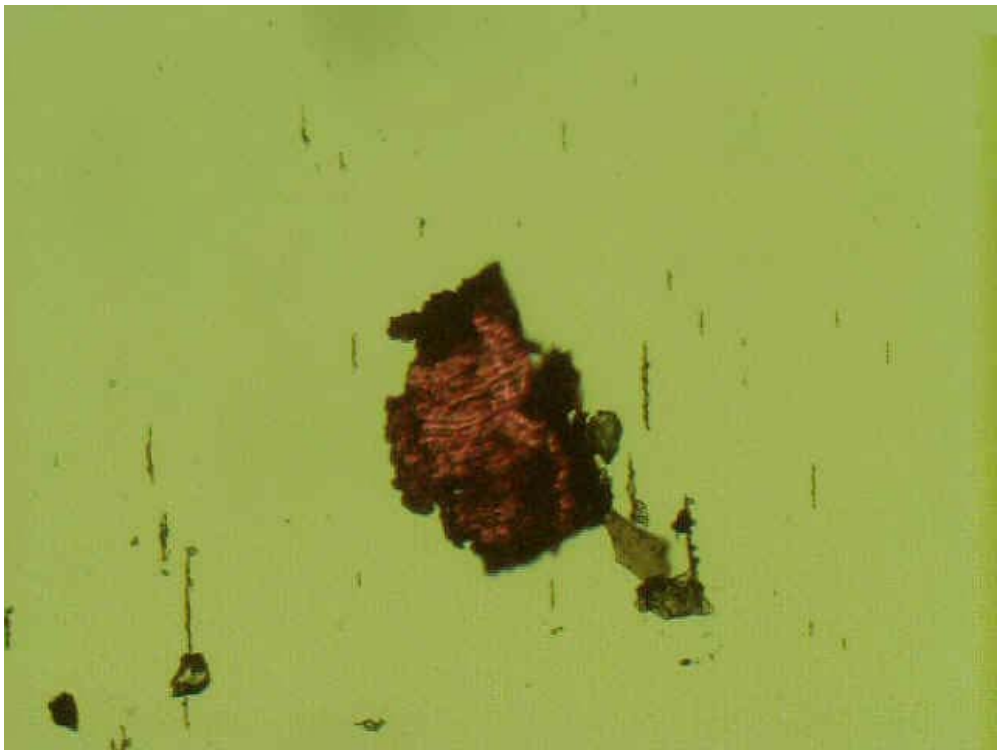
- The eight sets of Ferrograms presented in this appendix are grouped by test stage and bus:
  - K-1. Bus 73432 Ferrograms: 5,000 miles (29 pages)
  - K-2. Bus 73432 Ferrograms: 400 hours (18 pages)
  - K-3. Bus 73432 Ferrograms: 800 hours (22 pages)
  - K-4. Bus 73432 Ferrograms: 1,000 hours (17 pages)
  - K-5. Bus 73433 Ferrograms: 5,000 miles (24 pages)
  - K-6. Bus 73433 Ferrograms: 400 hours (10 pages)
  - K-7. Bus 73433 Ferrograms: 800 hours (21 pages)
  - K-8. Bus 73433 Ferrograms: 1,000 hours (19 pages)

Each Ferrogram (PowerPoint slide) includes the following information:

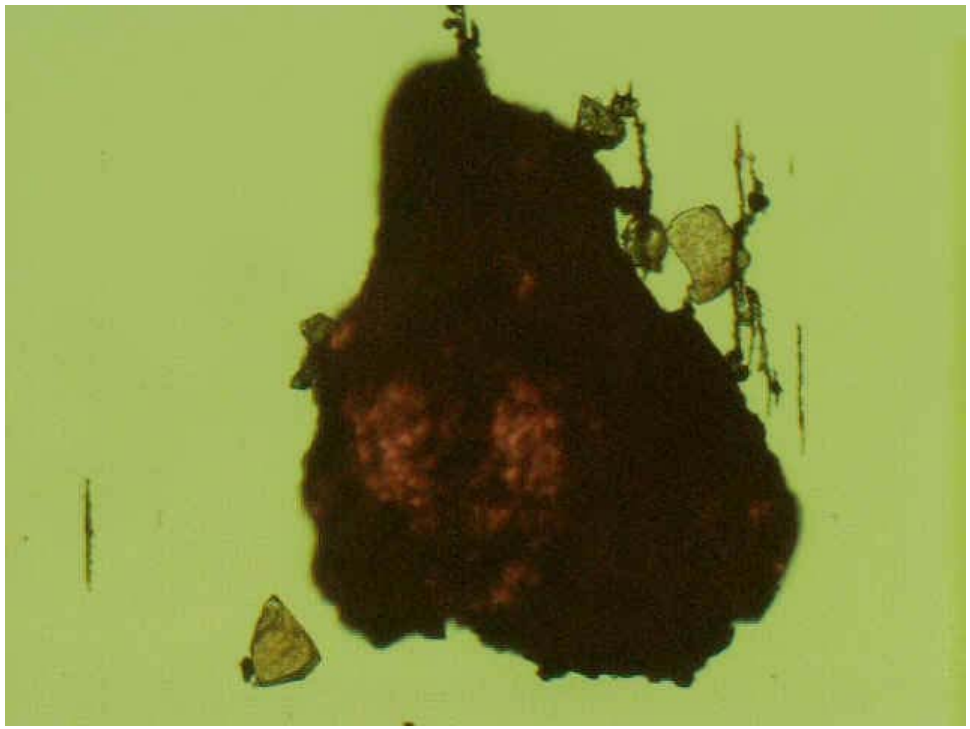
- Bus number
- Oil source, which includes:
  - Used engine oil
  - Bypass filter
  - Full-flow filter
  - Bypass residual oil
  - Full-flow residual oil
- Sample date
- NTS sample number
- Test stage, which includes
  - 5,000 miles
  - 400 hours
  - 800 hours
  - 1,000 hours
- Total miles and hours on the oil
- Magnification
- Photograph number
- Region of slide
- Comments
- Special features

Appendix K-1. Ferrograms - 5,000 miles Bus 73432

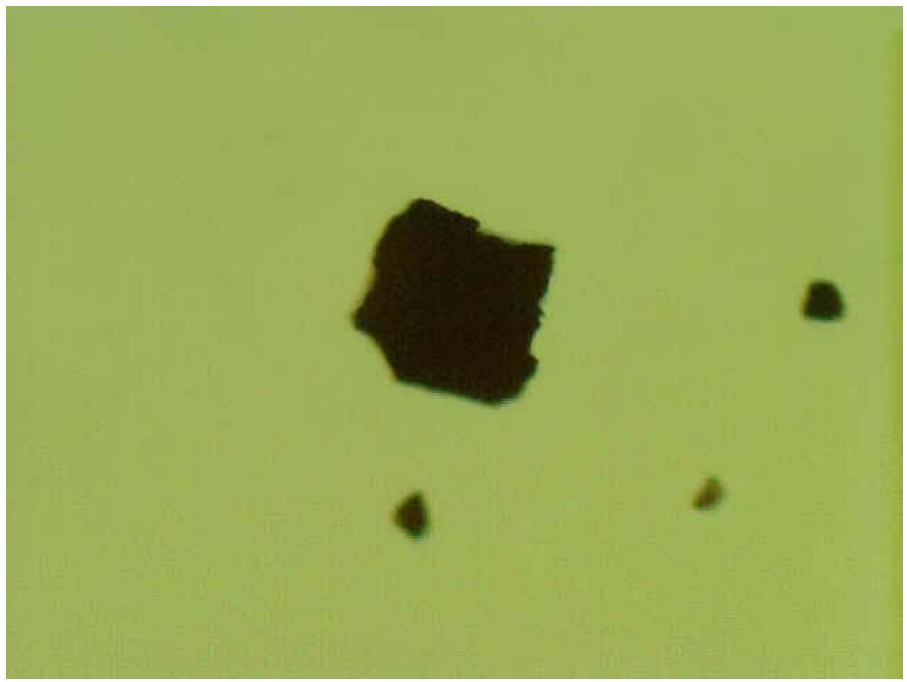
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	100x	73432 89517	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	95 micron ferrous severe sliding wear particle with soot particles.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	100x	73432 89517	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	300 micron ferrous fatigue particle with sand/dirt/filter particles.							

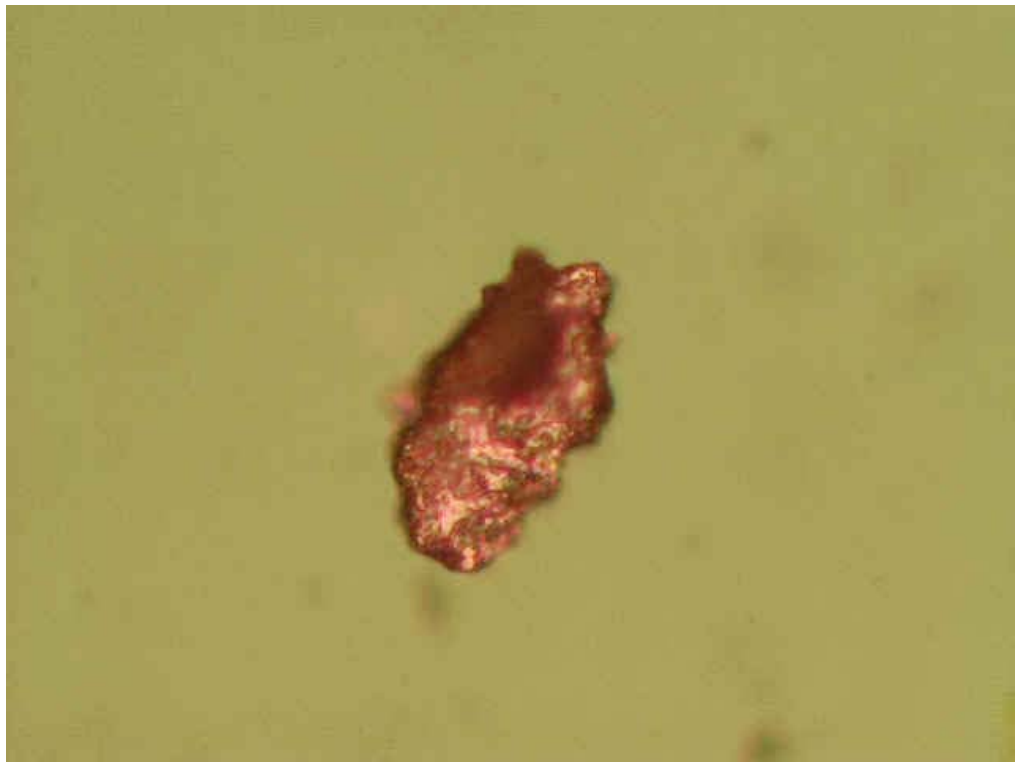


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	100x	73432 89571	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	90 micron sand particle and small debris							

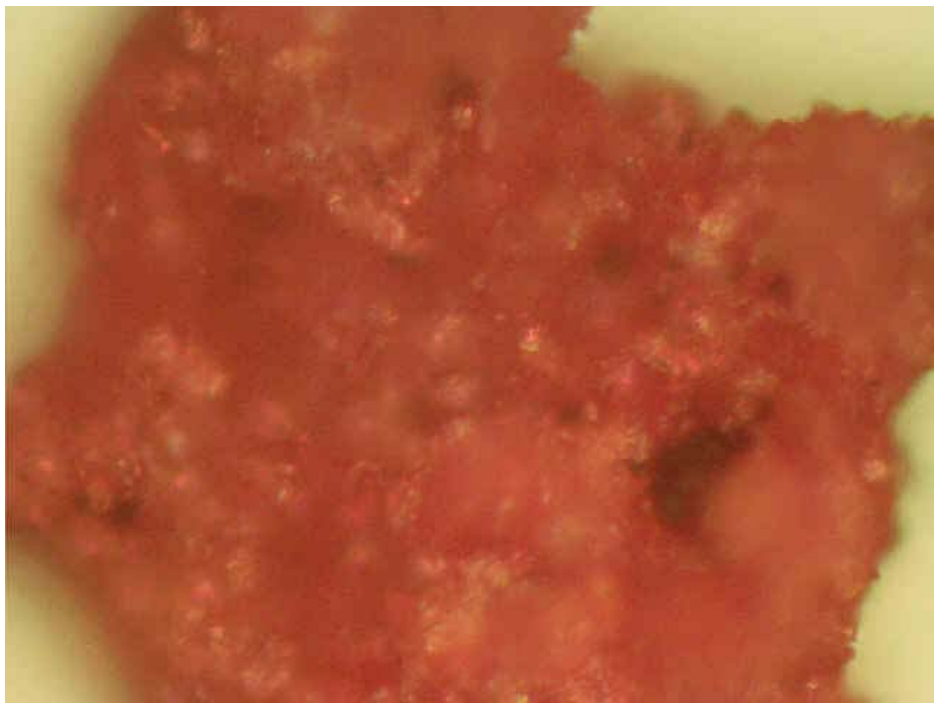


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	100x	73432 89517	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	Slight amount of fine ferrous particulate with larger debris particles							

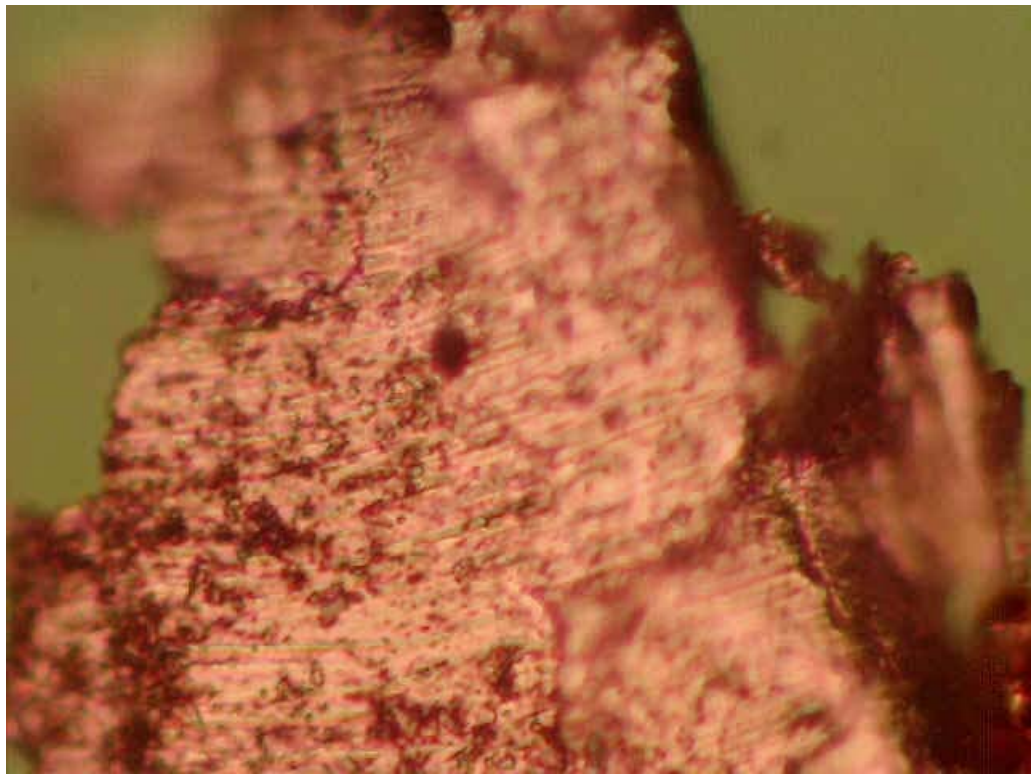
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	500x	73432	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	30 micron ferrous fatigue particle							



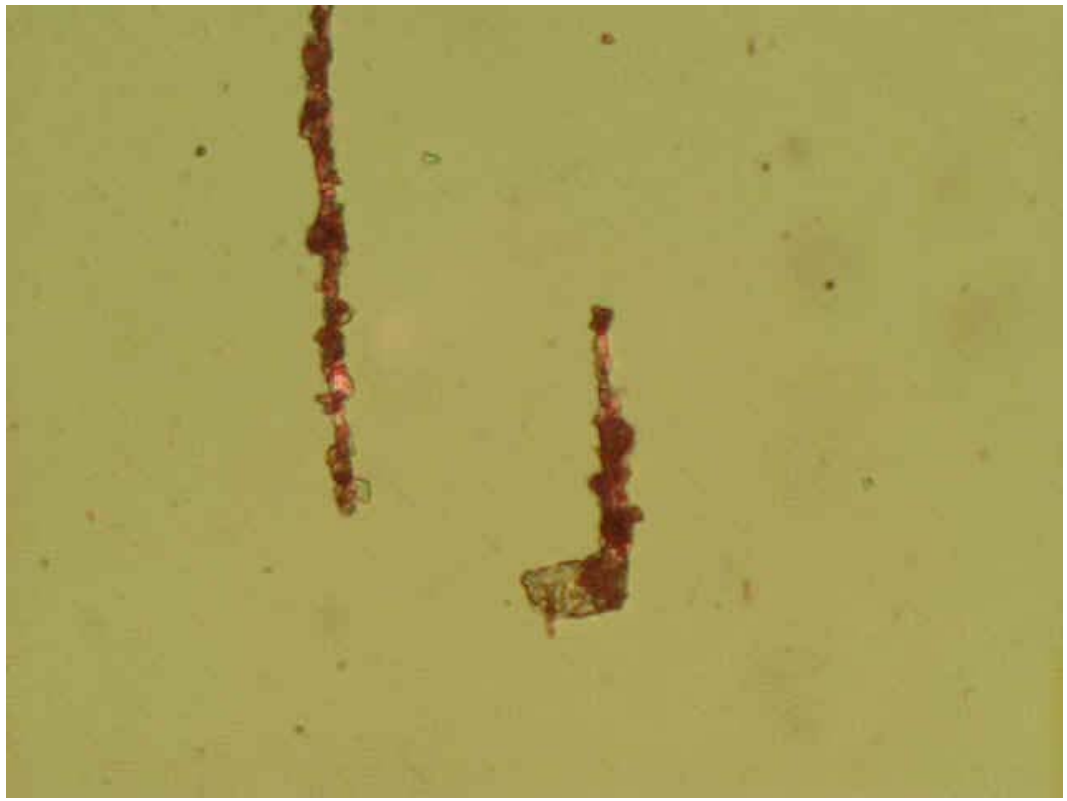
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	100x	73432 89517	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	Out of focus 90 micron sand particle							



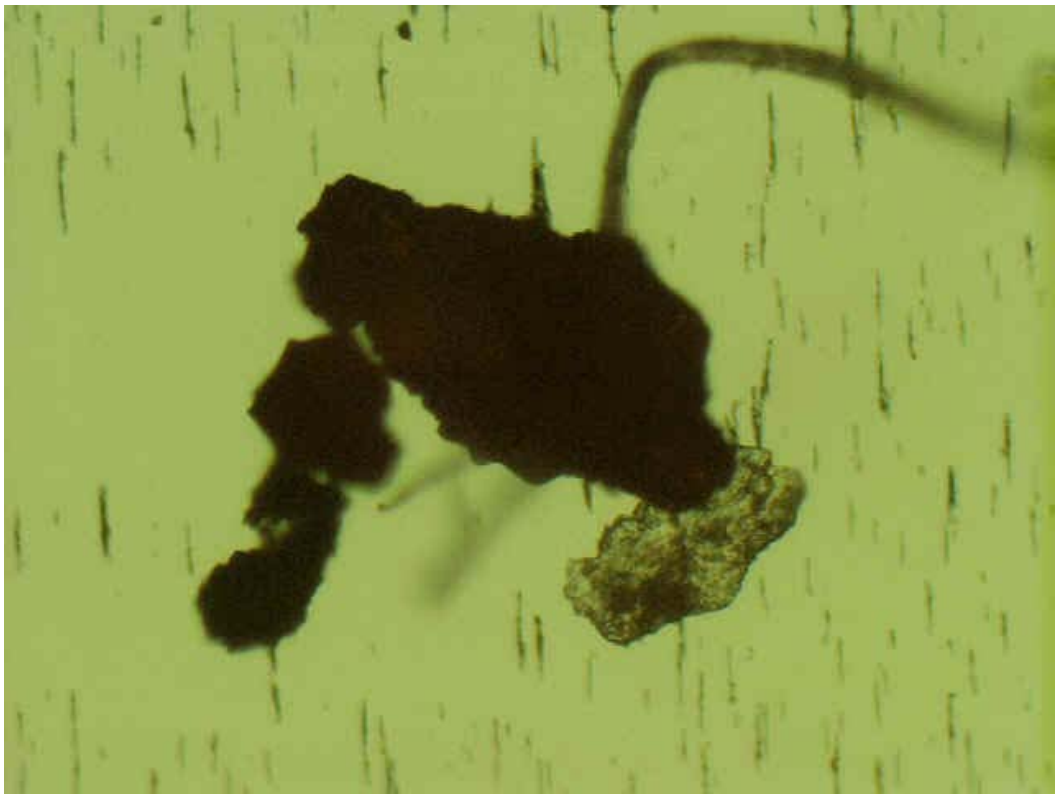
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	500x	73432 89517	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	95 micron severe sliding wear particle							



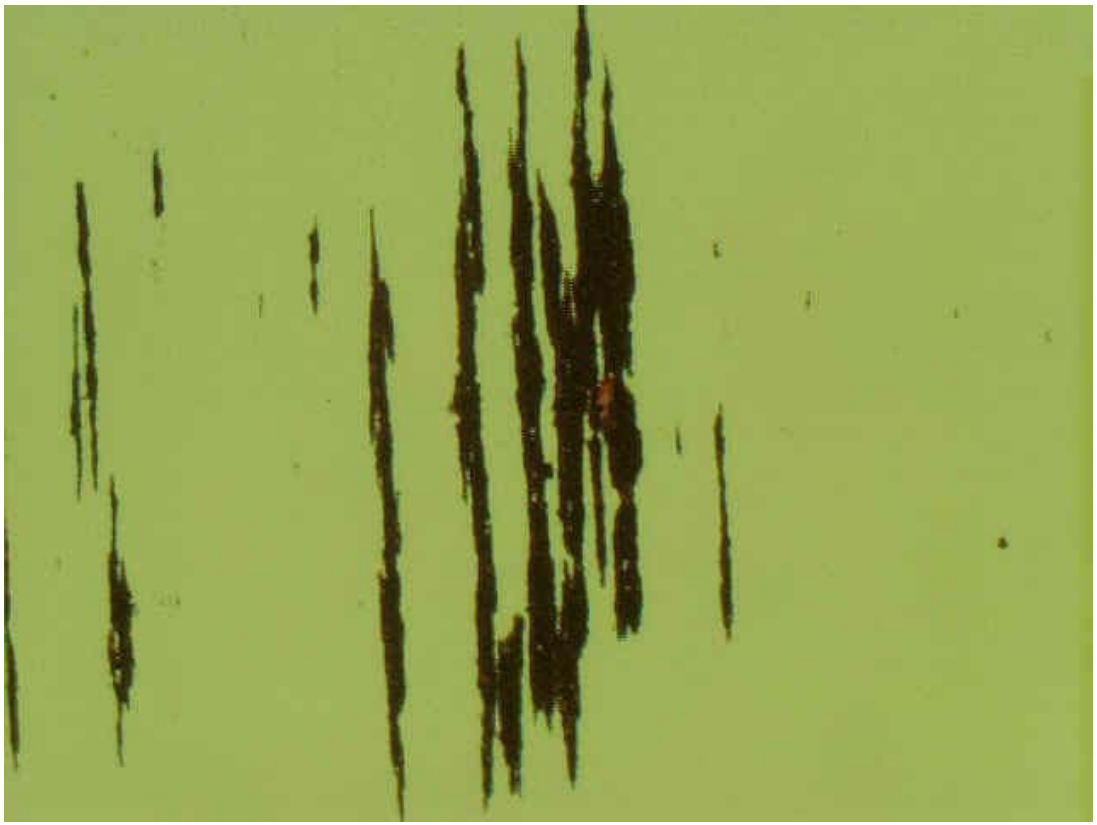
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	5/5/05	89517	@5000 miles	6597 miles	500x	73432 89517	Entry
Comments	Ferrogram indicates a sever wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 350 microns were noted. The severe wear appeared to be recently generated. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (30 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (90 microns) particles was noted. Please see attached images.							
Special Features	Rubbing wear with sand particle							



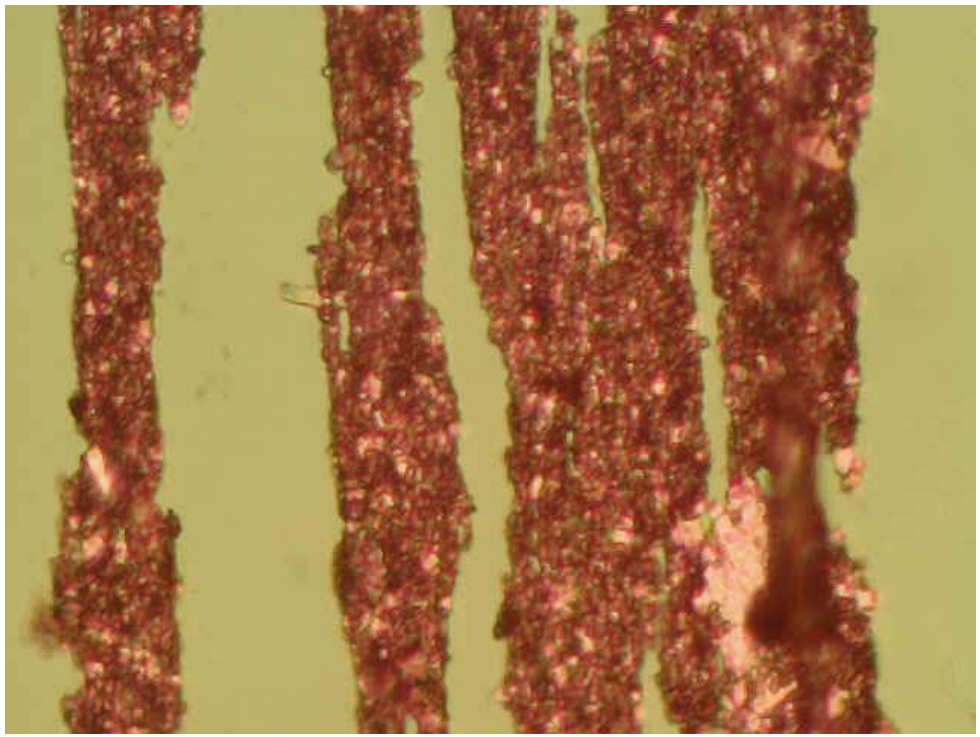
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/5/05	89518	@5000 miles	6597 miles	100x	73432 89518	Entry
Comments	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 200 microns, were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (35 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (60 microns) particles was noted. Please see attached images.							
Special Features	Fiber debris and ferrous fatigue particle							



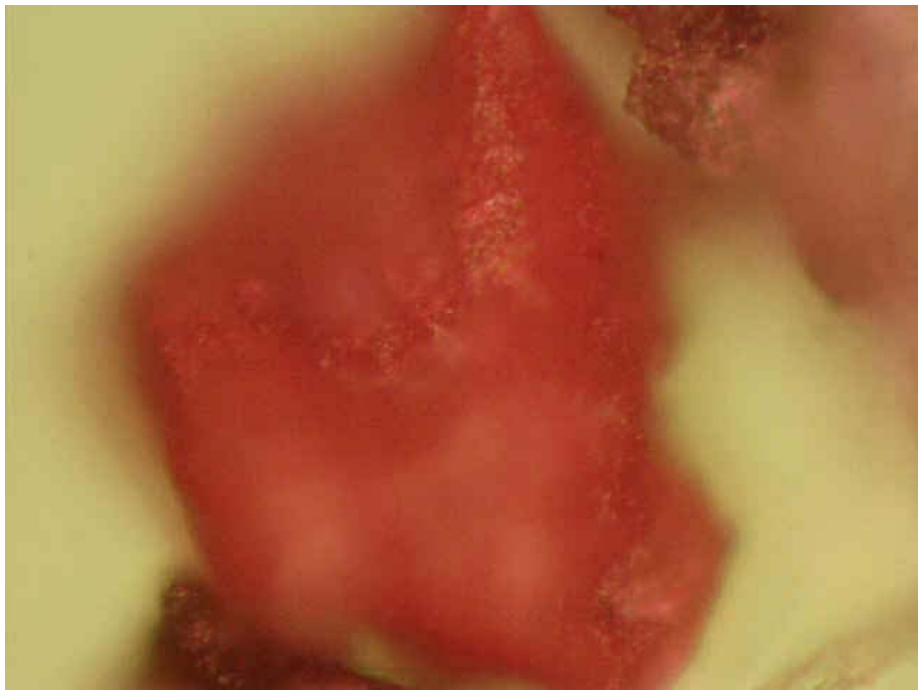
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/5/05	89518	@5000 miles	6597 miles	100x	73432 89518	Entry
Comments	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue articles, major diameters up to 200 microns, were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (35 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (60 microns) particles was noted. Please see attached images.							
Special Features	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear.							



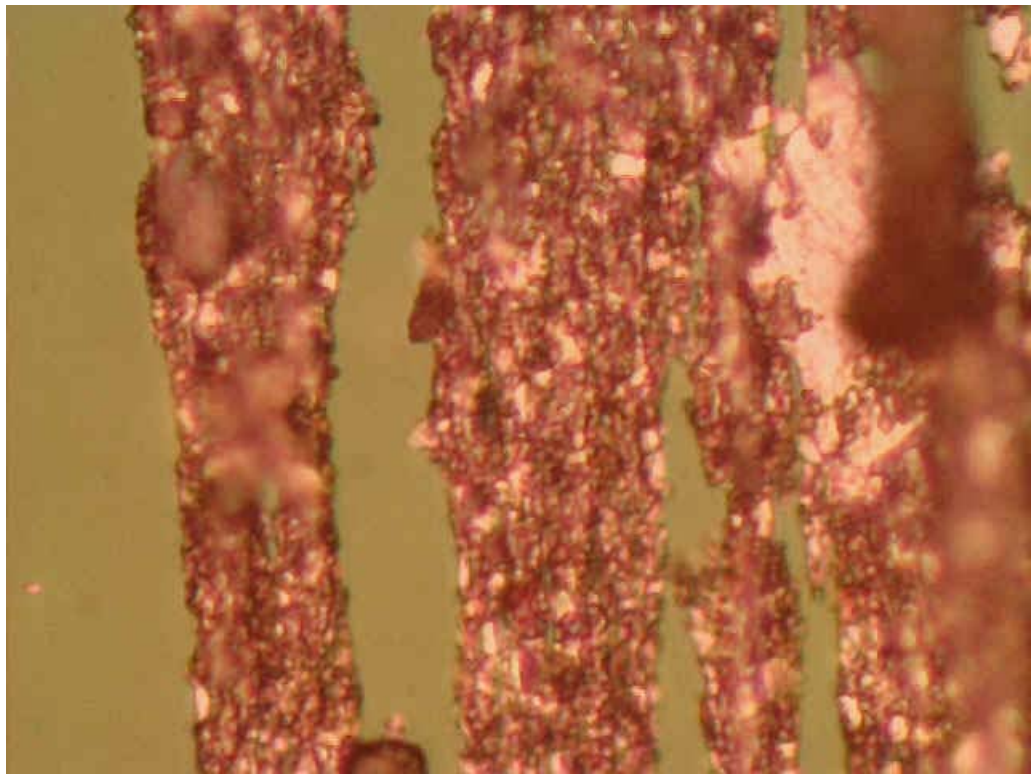
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/5/05	89518	@5000 miles	6597 miles	500x	73432 89518	Entry
Comments	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue articles, major diameters up to 200 microns, were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (35 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (60 microns) particles was noted. Please see attached images.							
Special Features	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear.							



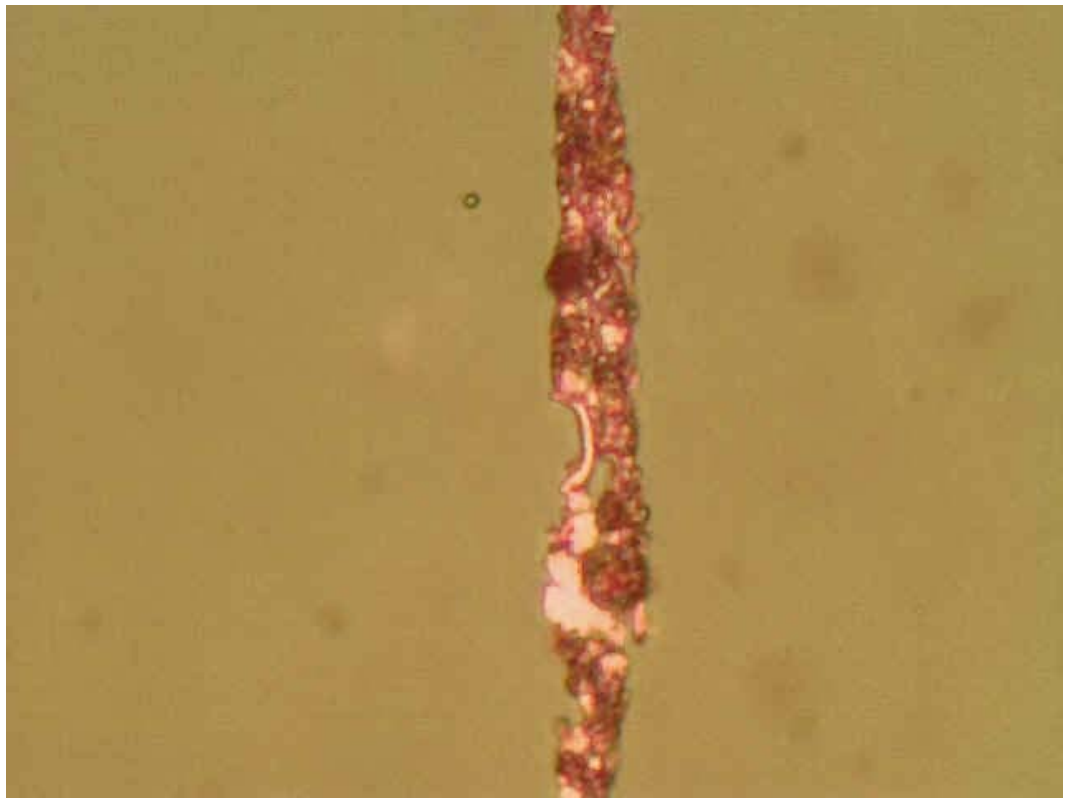
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/5/05	89518	@5000 miles	6597 miles	500x	73432 89518	Entry
Comments	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue articles, major diameters up to 200 microns, were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (35 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (60 microns) particles was noted. Please see attached images.							
Special Features	Out of focus sand particle							



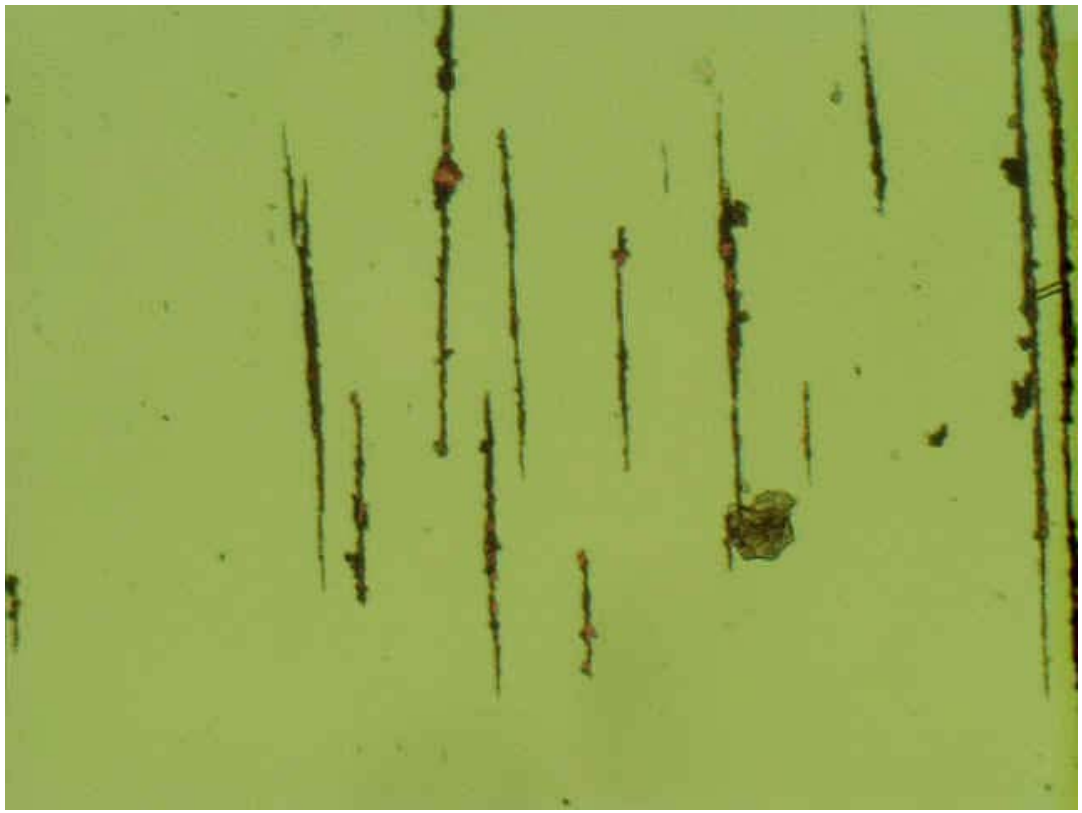
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/5/05	89518	@5000 miles	6597 miles	800x	73432 89518	Entry
Comments	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue articles, major diameters up to 200 microns, were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (35 microns), soot particles dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (60 microns) particles was noted. Please see attached images.							
Special Features	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear.							



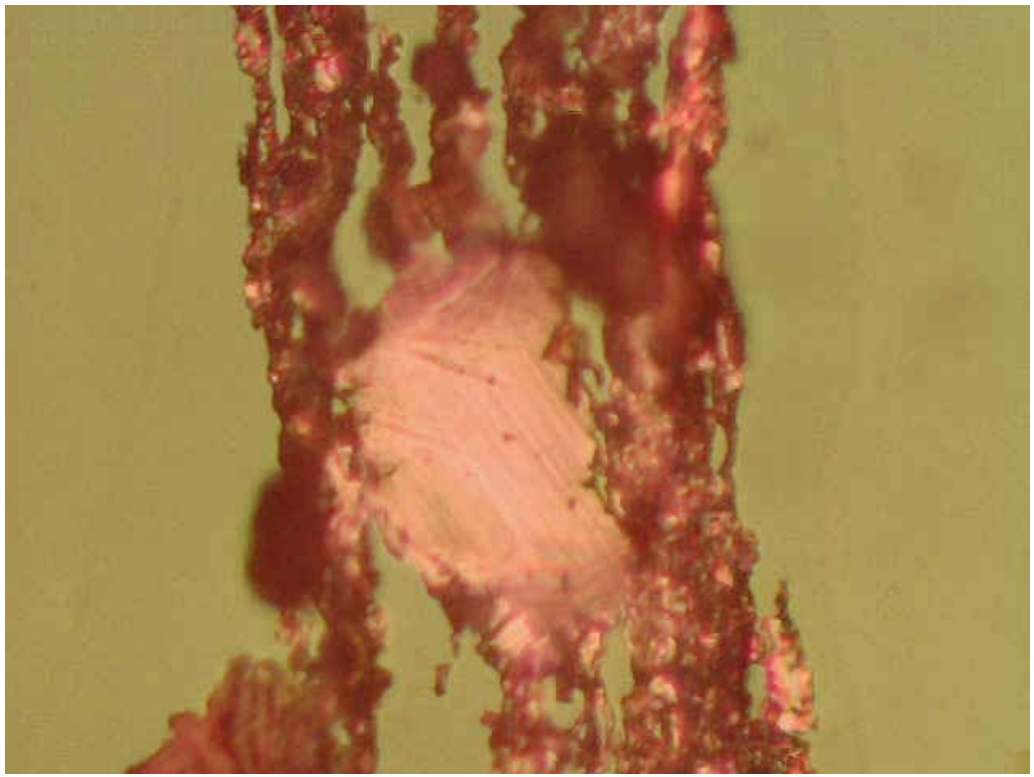
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/5/05	89518	@5000 miles	6597 miles	800x	73432 89518	Entry
Comments	Ferrogram shows a moderate amount of fine particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue articles, major diameters up to 200 microns, were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (35 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (60 microns) particles was noted. Please see attached images							
Special Features	A light amount of ferrous cutting wear.							



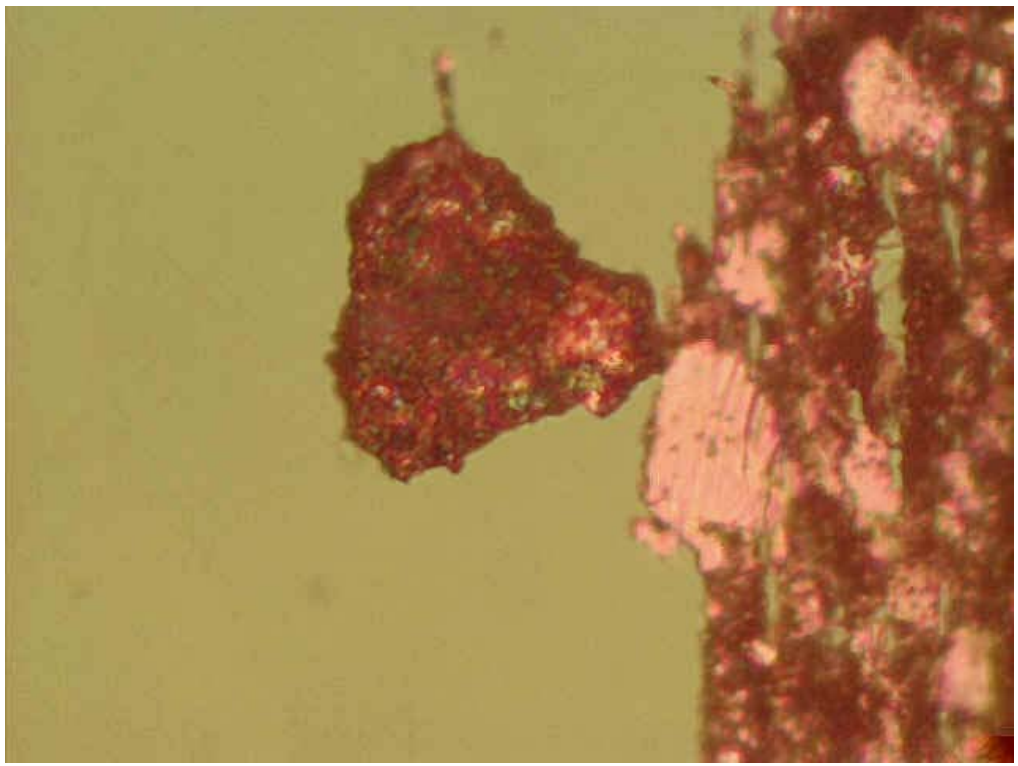
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/5/05	89520	@5000 miles	6597 miles	100x	73432 89520	Entry
Comments	Ferrogram shows a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris, major diameters up to 100 microns, were noted. A blue tint was noted on some of the ferrous particulate indicating the particles were formed under high frictional loads. A light amount of non-ferrous and ferrous laminar particulate (75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (40 microns) particles was noted. Please see attached images.							
Special Features	Rubbing wear with large debris particle.							



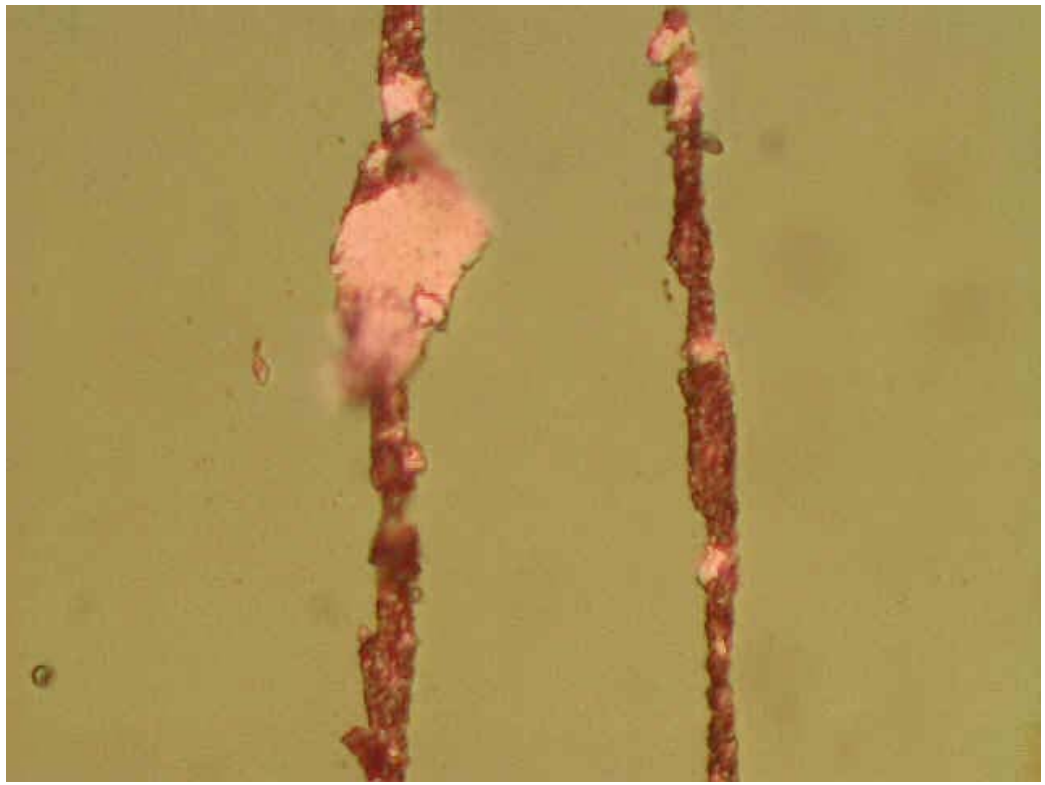
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/5/05	89520	@5000 miles	6597 miles	500x	73432 89520	Entry
Comments	Ferrogram shows a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris, major diameters up to 100 microns, were noted. A blue tint was noted on some of the ferrous particulate indicating the particles were formed under high frictional loads. A light amount of non-ferrous and ferrous laminar particulate (75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (40 microns) particles was noted. Please see attached images.							
Special Features	75 micron ferrous laminar particle							



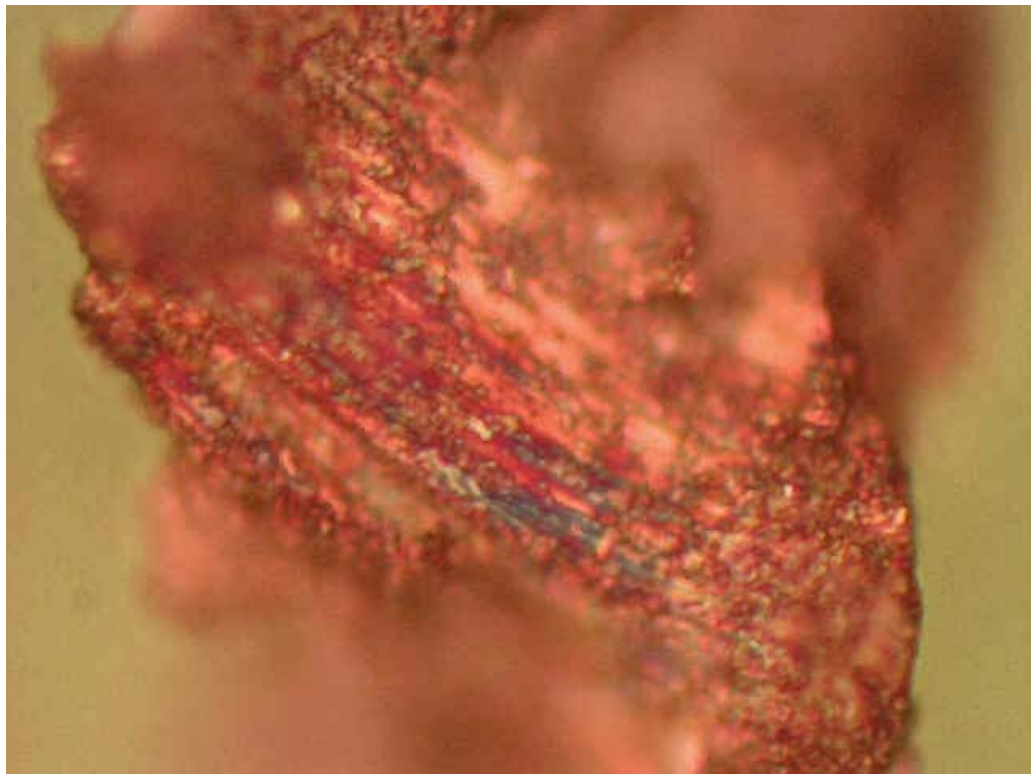
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/5/05	89520	@5000 miles	6597 miles	500x	73432 89520	Entry
Comments	Ferrogram shows a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris, major diameters up to 100 microns, were noted. A blue tint was noted on some of the ferrous particulate indicating the particles were formed under high frictional loads. A light amount of non-ferrous and ferrous laminar particulate (75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (40 microns) particles was noted. Please see attached images.							
Special Features	30 micron ferrous laminar particle with heat tint.							



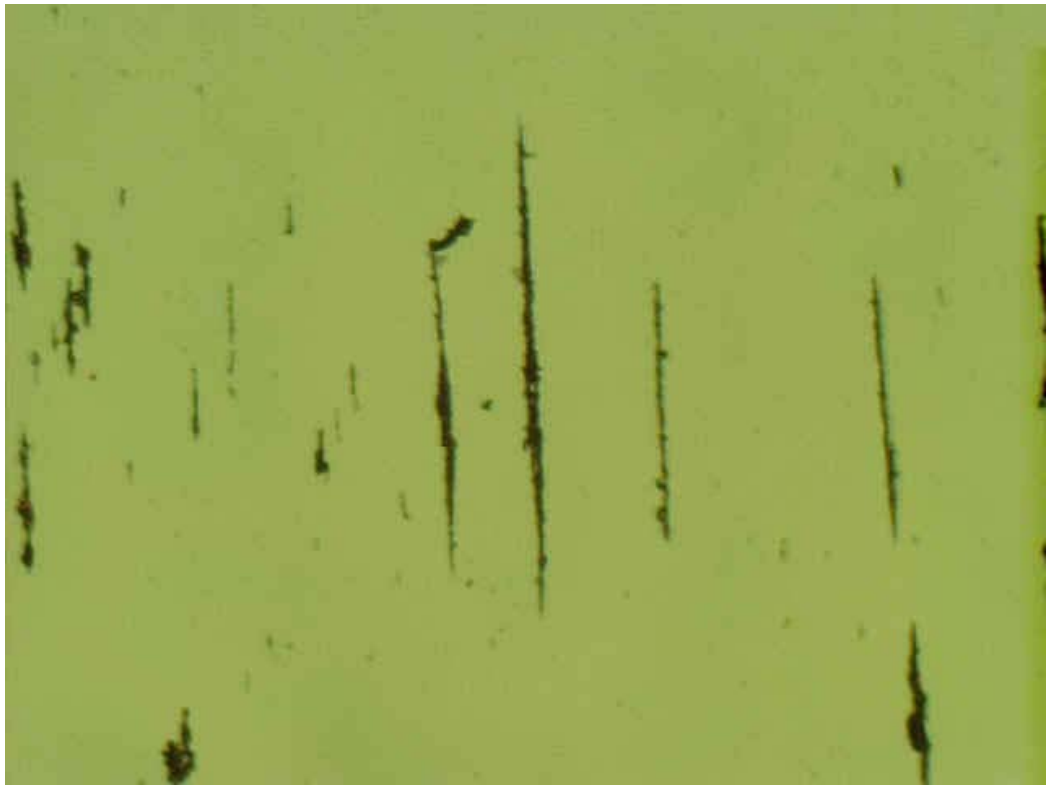
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/5/05	89520	@5000 miles	6597 miles	500x	73432 89520	Entry
Comments	Ferrogram shows a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris, major diameters up to 100 microns, were noted. A blue tint was noted on some of the ferrous particulate indicating the particles were formed under high frictional loads. A light amount of non-ferrous and ferrous laminar particulate (75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (40 microns) particles was noted. Please see attached images.							
Special Features	Rubbing wear with a laminar particle.							



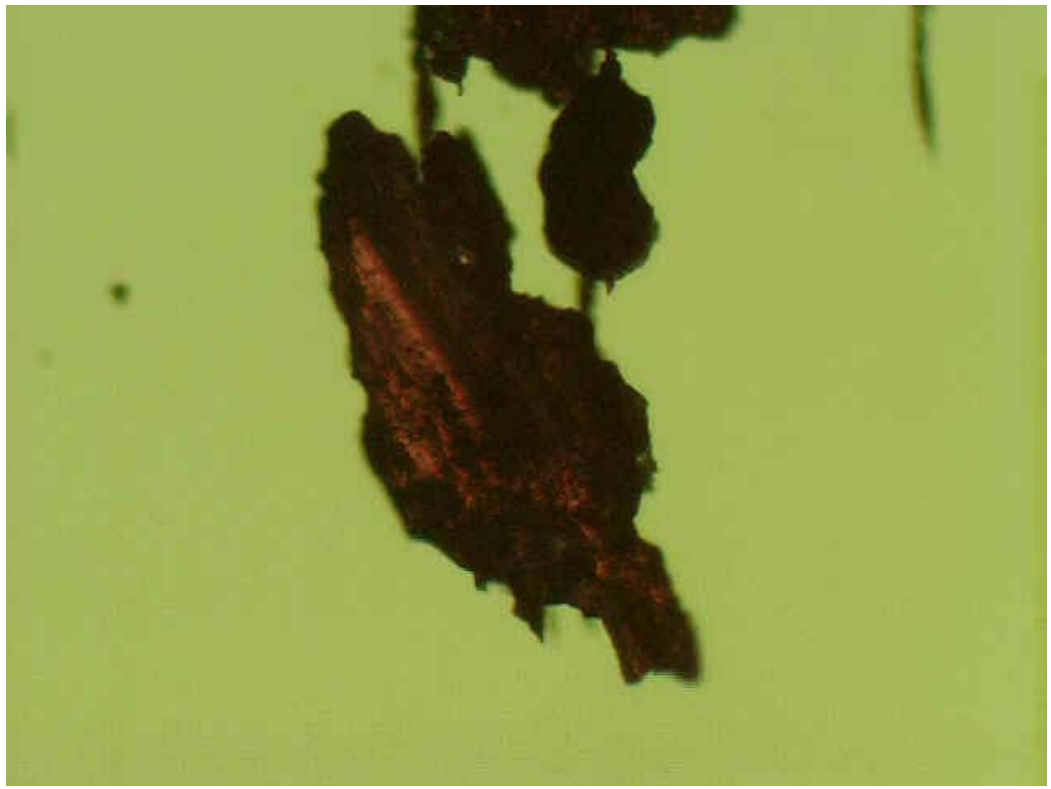
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/5/05	89520	@5000 miles	6597 miles	800x	73432 89520	Entry
Comments	Ferrogram shows a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris, major diameters up to 100 microns, were noted. A blue tint was noted on some of the ferrous particulate indicating the particles were formed under high frictional loads. A light amount of non-ferrous and ferrous laminar particulate (75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (40 microns) particles was noted. Please see attached images.							
Special Features	80 micron ferrous severe wear particle-heat tinted							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass filter residual	5/5/05	89519	@5000 miles	6597 miles	100x	73432 89519	Entry
Comments	Ferrogram indicates a severe wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 300 microns , were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (40 microns), soot particles, dark metallo oxide, and fibers was noted. Please see attached images.							
Special Features	A light amount of fine ferrous particulate, typical of normal rubbing wear.							

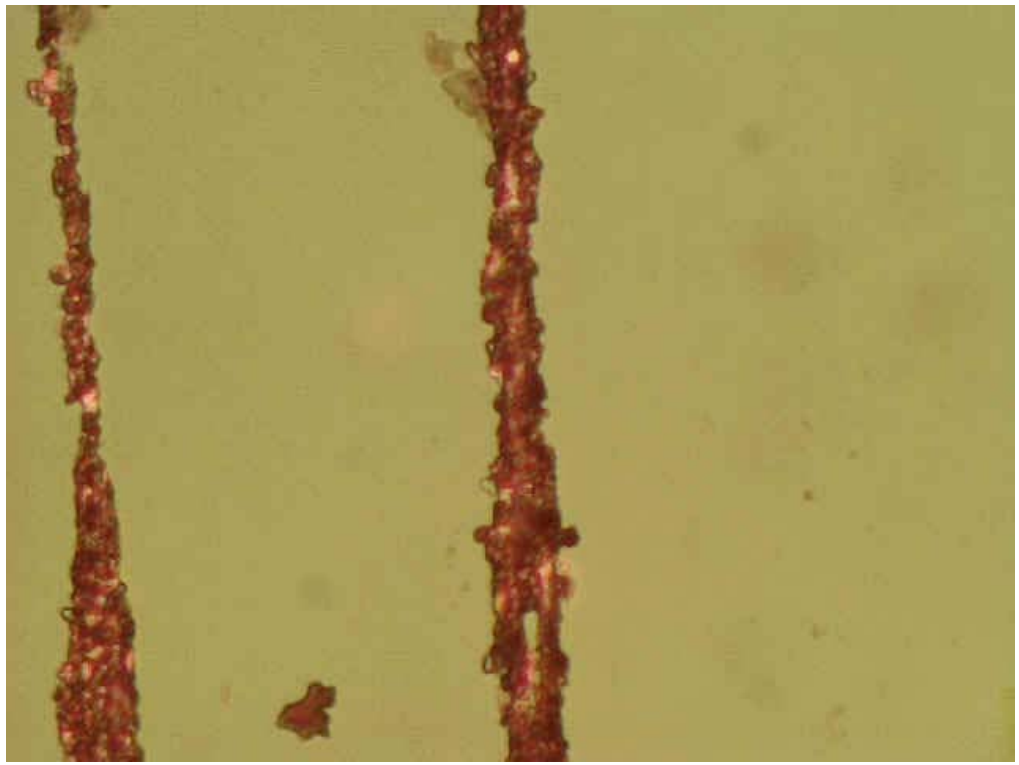


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass filter residual	5/5/05	89519	@5000 miles	6597 miles	100x	73432 89519	Entry
Comments	Ferrogram indicates a severe wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 300 microns , were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (40 microns), soot particles, dark metallo oxide, and fibers was noted. Please see attached images.							
Special Features	300 micron severe wear particle							



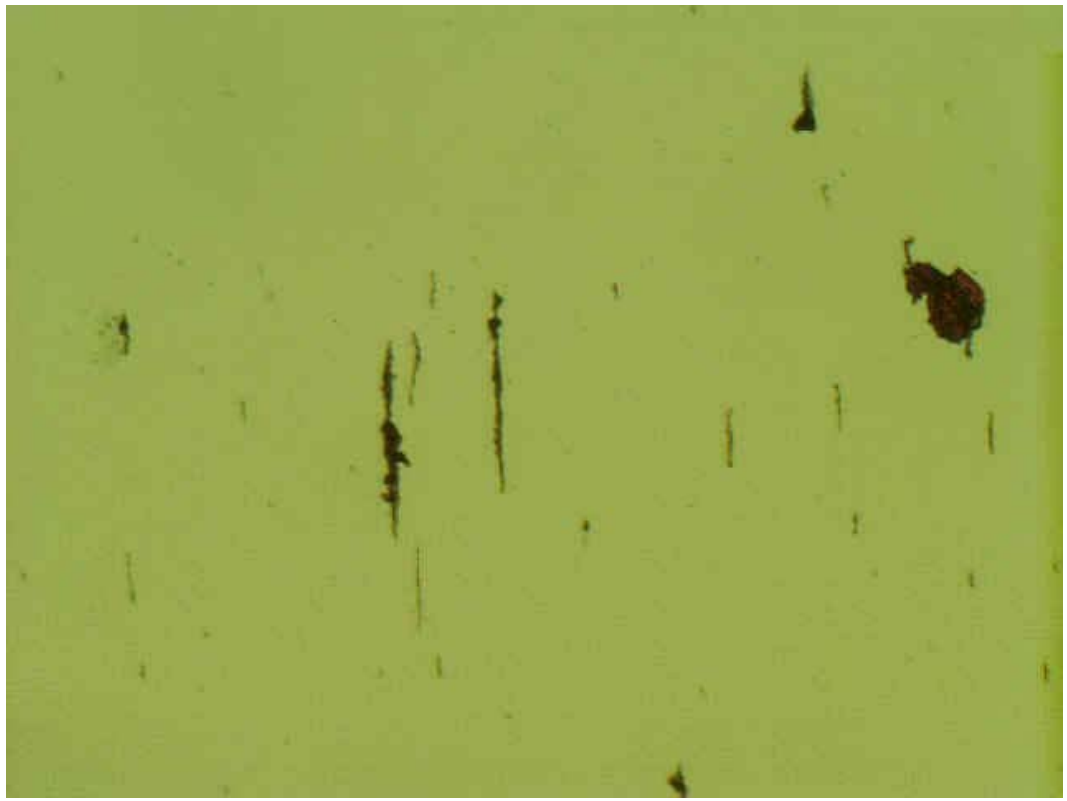
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass filter residual	5/5/05	89519	@5000 miles	6597 miles	500x	73432 89519	Entry
Comments	Ferrogram indicates a severe wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 300 microns , were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (40 microns), soot particles, dark metallo oxide, and fibers was noted. Please see attached images.							
Special Features	300 micron ferrous severe sliding wear particle							

Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass filter residual	5/5/05	89519	@5000 miles	6597 miles	500x	73432 89519	Entry
Comments	Ferrogram indicates a severe wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 300 microns , were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (40 microns), soot particles, dark metallo oxide, and fibers was noted. Please see attached images.							
Special Features	Rubbing wear with sand/dirt particles							

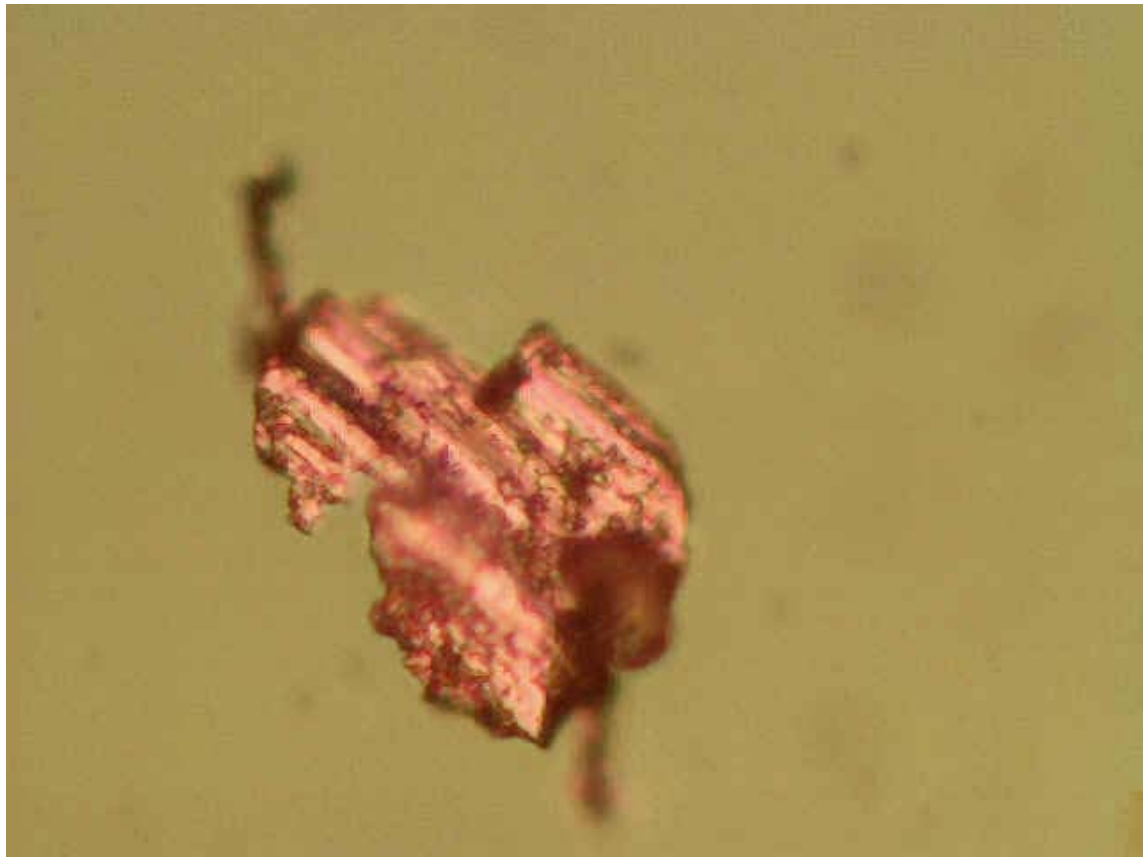


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass filter residual	5/5/05	89519	@5000 miles	6597 miles	600x	73432 89519	Entry
Comments	Ferrogram indicates a severe wear mode. It shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of severe ferrous wear debris and ferrous fatigue particles, major diameters up to 300 microns , were noted. A light amount of ferrous cutting wear, non-ferrous and ferrous laminar particulate (40 microns), soot particles, dark metallo oxide, and fibers was noted. Please see attached images.							
Special Features	Ferrous cutting wear							

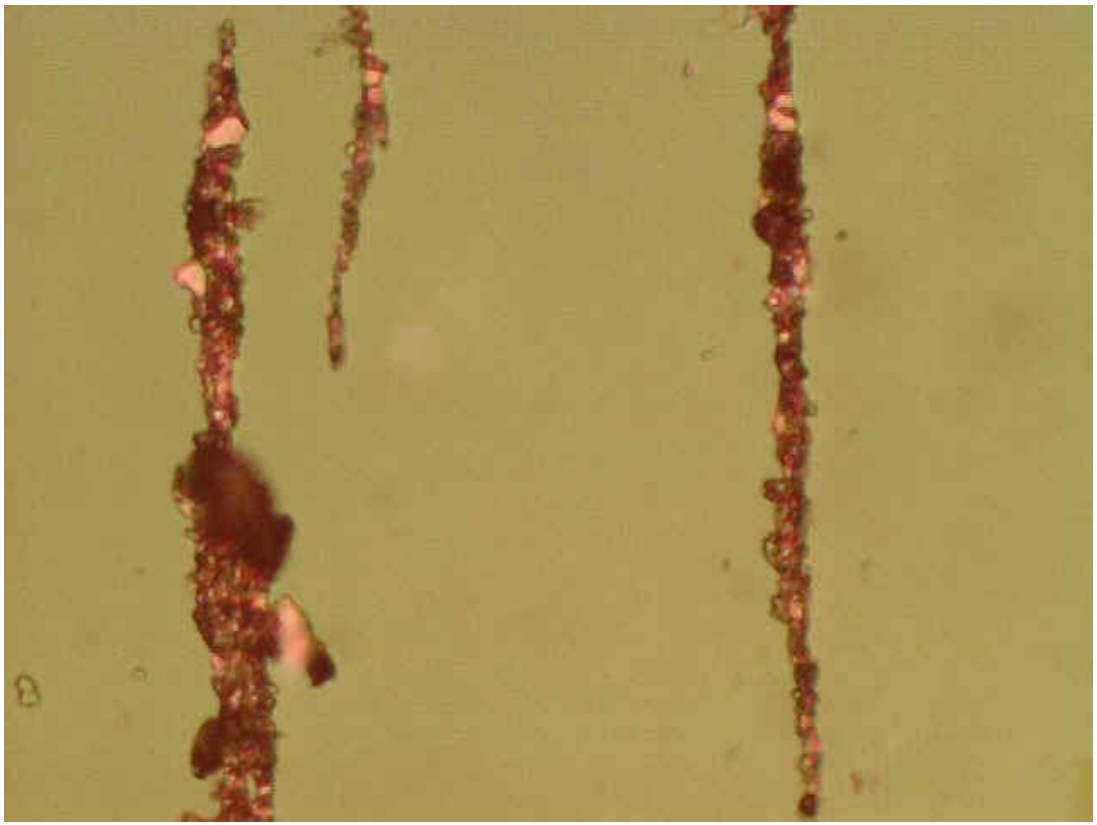
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/5/05	89521	@5000 miles	6597 miles	100x	73432 89521	Entry
Comments	Ferrogram shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of non-ferrous and ferrous laminar particulate (~75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (~40 microns) particles was noted. Please see attached images.							
Special Features	Rubbing wear and 75 micron laminar particulate							



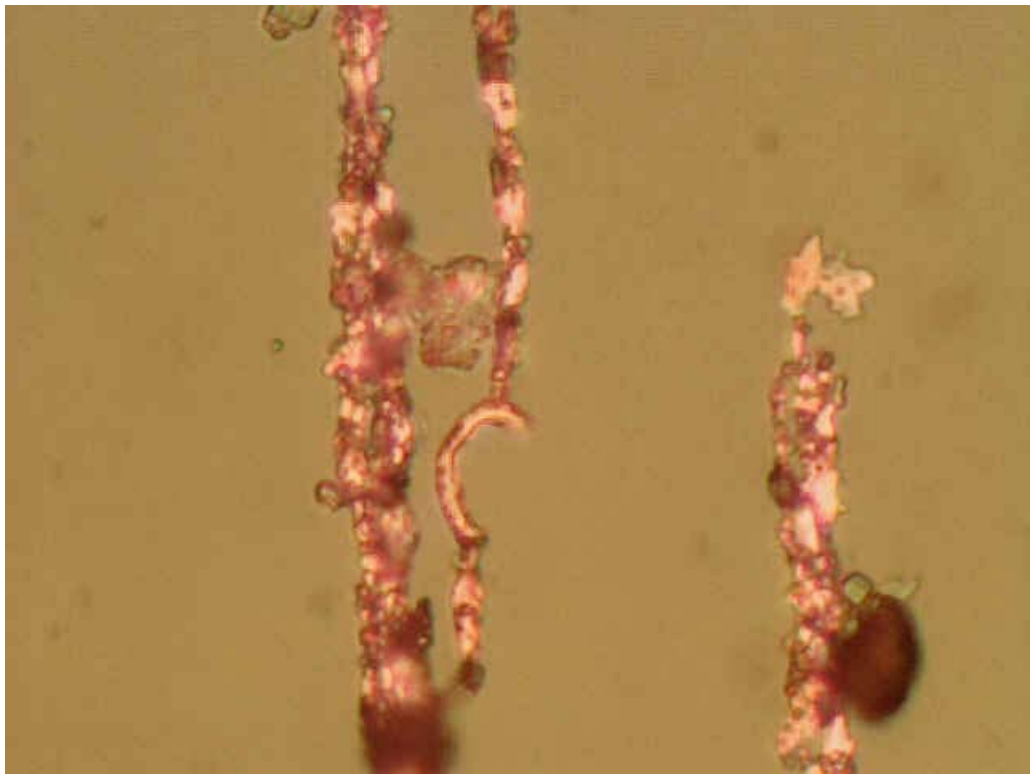
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/5/05	89521	@5000 miles	6597 miles	500x	73432 89521	Entry
Comments	Ferrogram shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of non-ferrous and ferrous laminar particulate (~75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (~40 microns) particles was noted. Please see attached images.							
Special Features	40 micron ferrous severe wear particle.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/5/05	89521	@5000 miles	6597 miles	500x	73432 89521	Entry
Comments	Ferrogram shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of non-ferrous and ferrous laminar particulate (~75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (~40 microns) particles was noted. Please see attached images.							
Special Features	Rubbing wear with sand/dirt and oxides.							

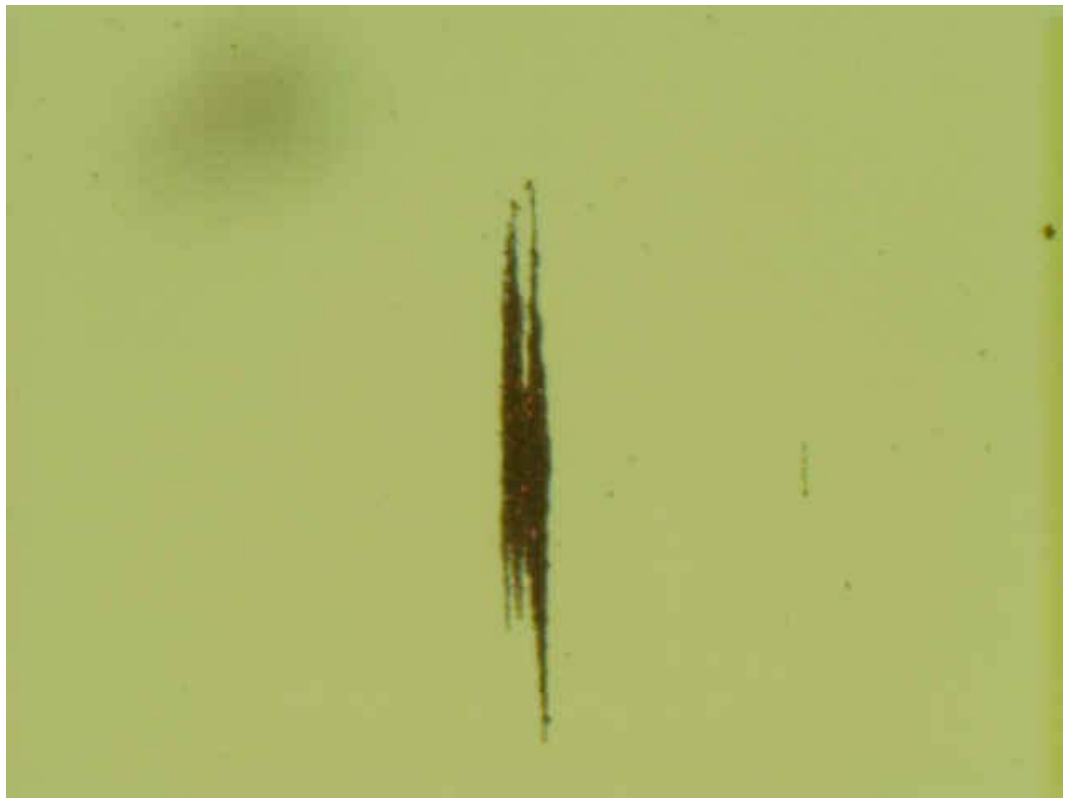


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/5/05	89521	@5000 miles	6597 miles	800x	73432 89521	Entry
Comments	Ferrogram shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of non-ferrous and ferrous laminar particulate (~75 microns), soot particles, dark metallo oxide, and fibers was noted. A moderate amount of abnormally large sand/dirt (~40 microns) particles was noted. Please see attached images.							
Special Features	Ferrous cutting wear with sand and dark metallo oxide particles							

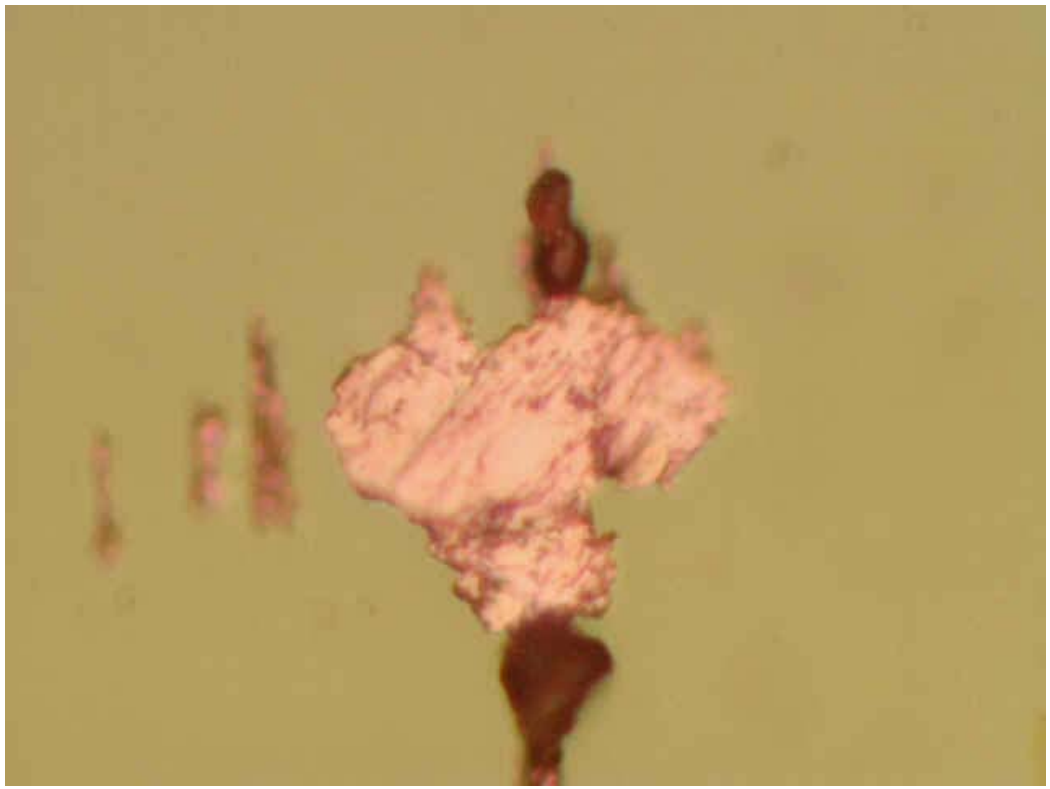


Appendix K-2. Ferrograms – 400 hours Bus 73432

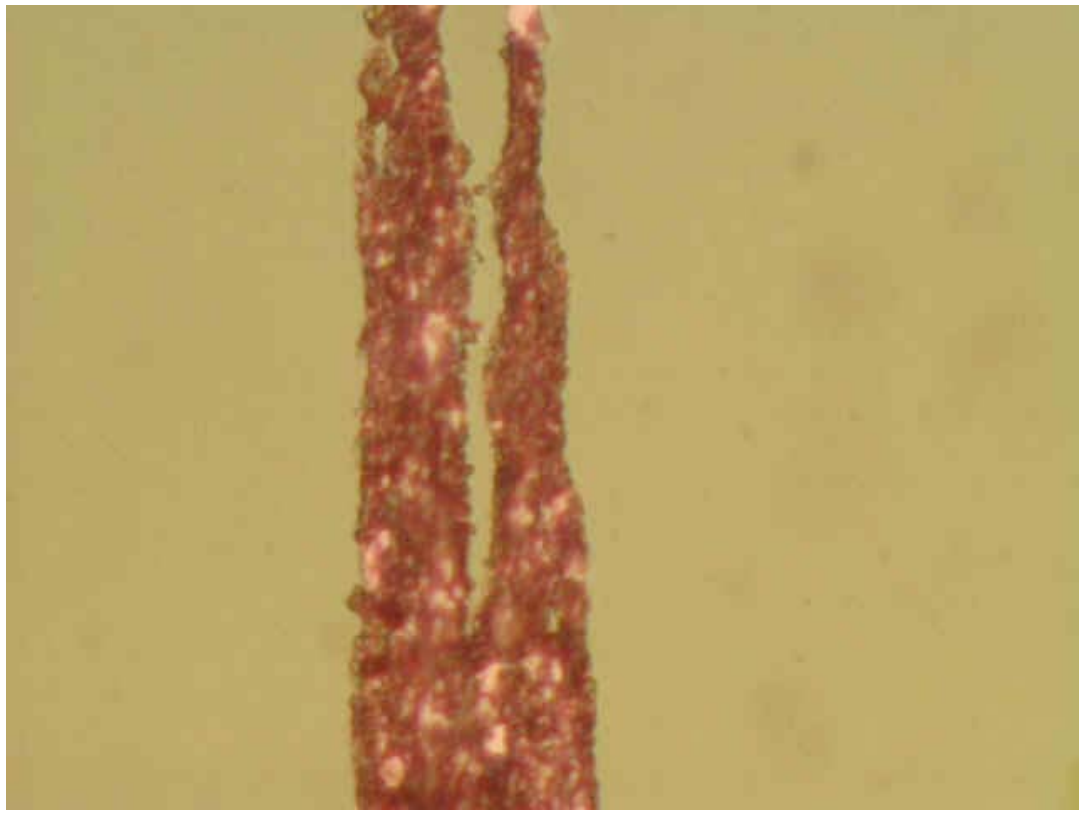
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used oil	5/31/05	90298	400 hours	6597 miles plus 400 hours	100x	73432 90298	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, fibers, filter media, soot, and an isolated ferrous laminar particle (~36 microns) was noted. An isolated non-ferrous particle (12 microns) was noted. Please see attached images.							
Special Features	Rubbing wear							



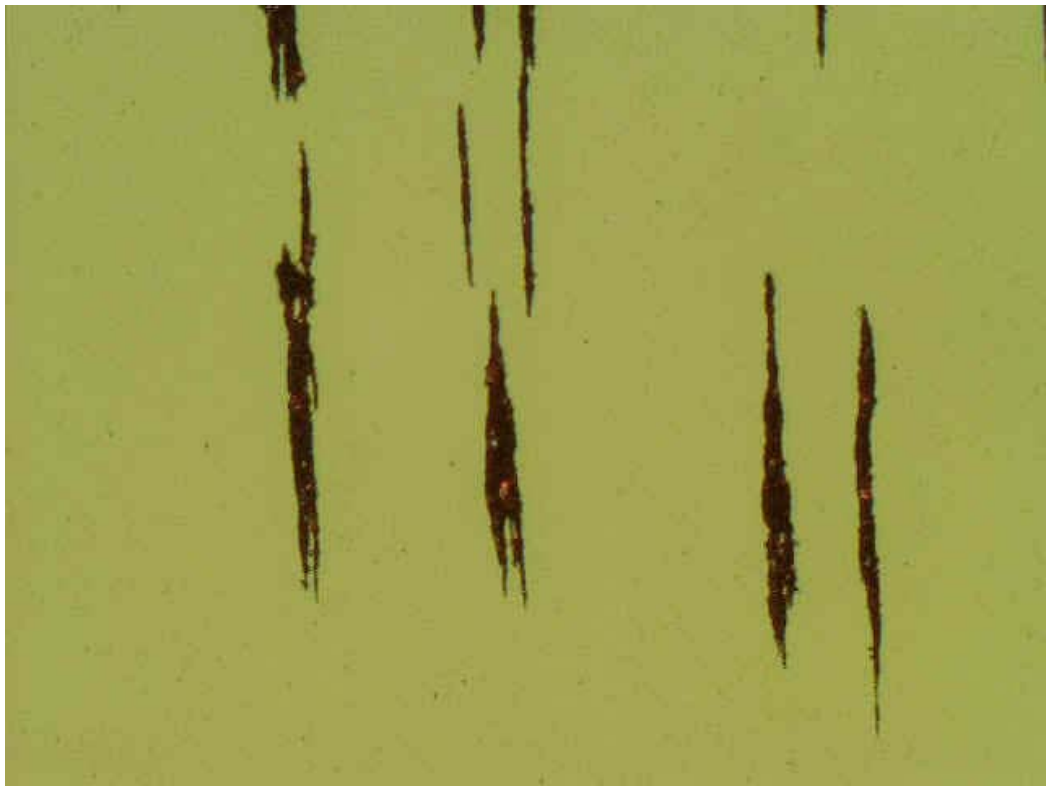
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used oil	5/31/05	90298	400 hours	6597 miles plus 400 hours	500x	73432 90298	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, fibers, filter media, soot, and an isolated ferrous laminar particle (~36 microns) was noted. An isolated non-ferrous particle (12 microns) was noted. Please see attached images.							
Special Features	Isolated ~36 microns ferrous laminar particle							



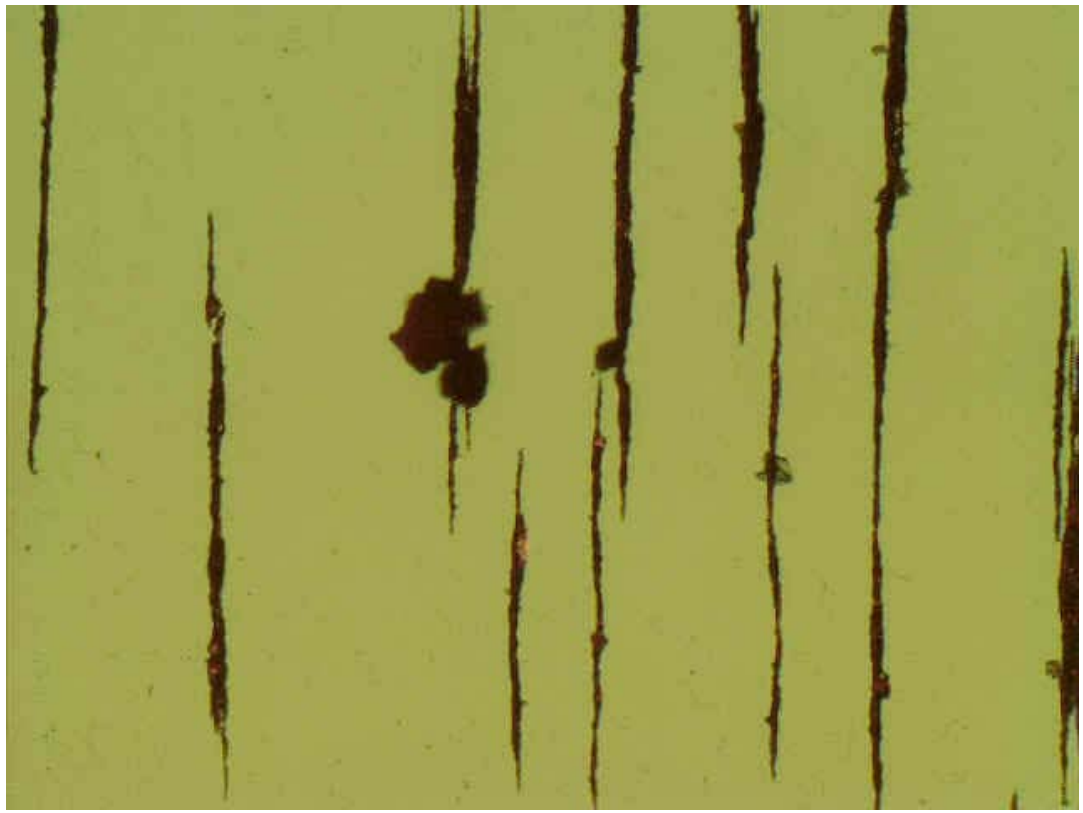
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used oil	5/31/05	90298	400 hours	6597 miles plus 400 hours	500x	73432 90298	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, fibers, filter media, soot, and an isolated ferrous laminar particle (~36 microns) was noted. An isolated non-ferrous particle (12 microns) was noted. Please see attached images.							
Special Features	Rubbing wear							



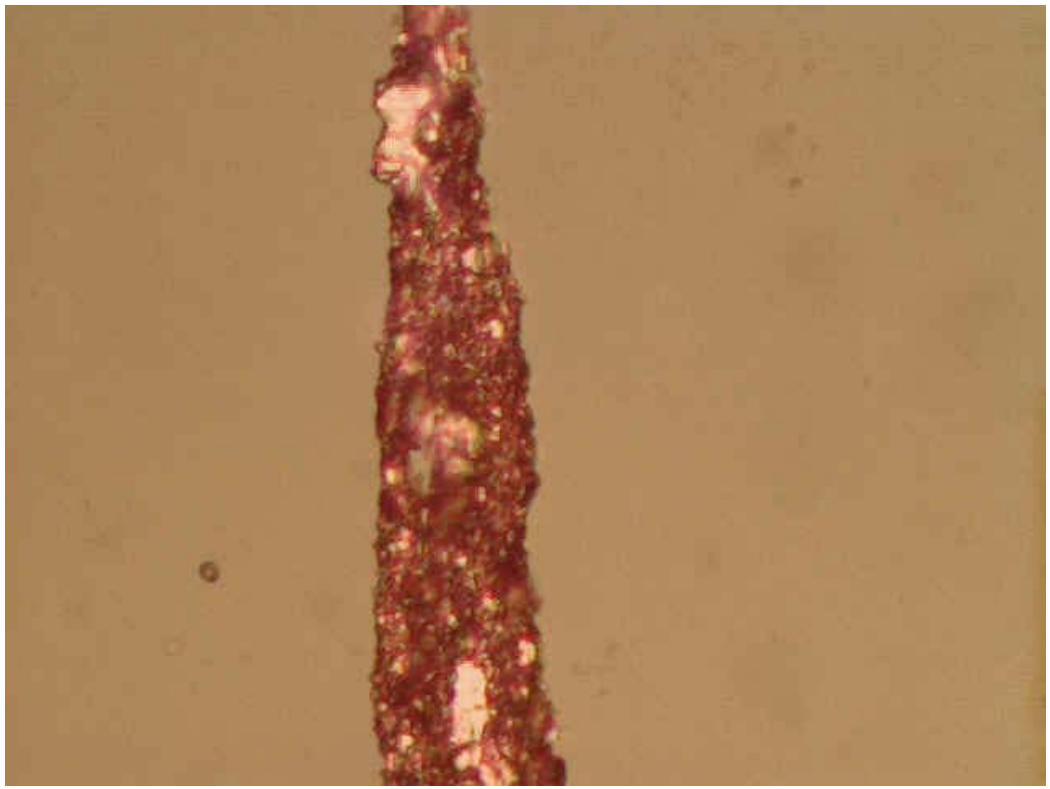
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/31/05	89810	400 hours	6597 miles plus 400 hours	100x	73432 89810	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of sand/dirt, soot particulate, and dark metallo oxide was noted. Please see attached images.							
Special Features	Rubbing wear							



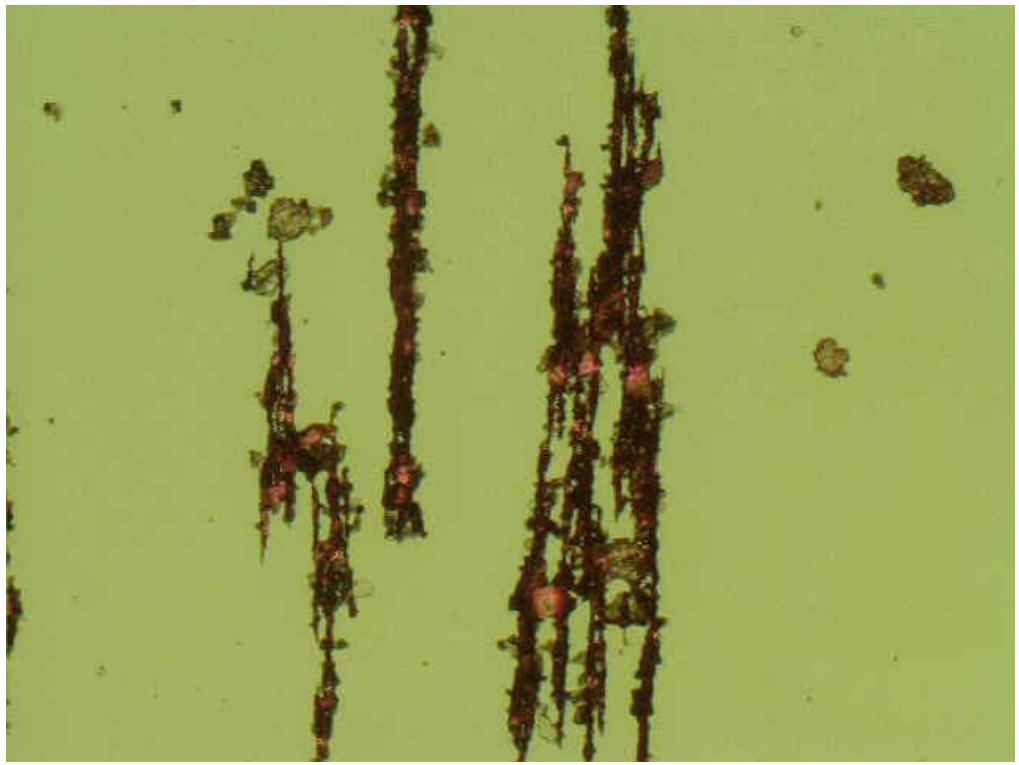
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/31/05	89810	400 hours	6597 miles plus 400 hours	100x	73432 89810	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of sand/dirt, soot particulate, and dark metallo oxide was noted. Please see attached images.							
Special Features	Soot particle							



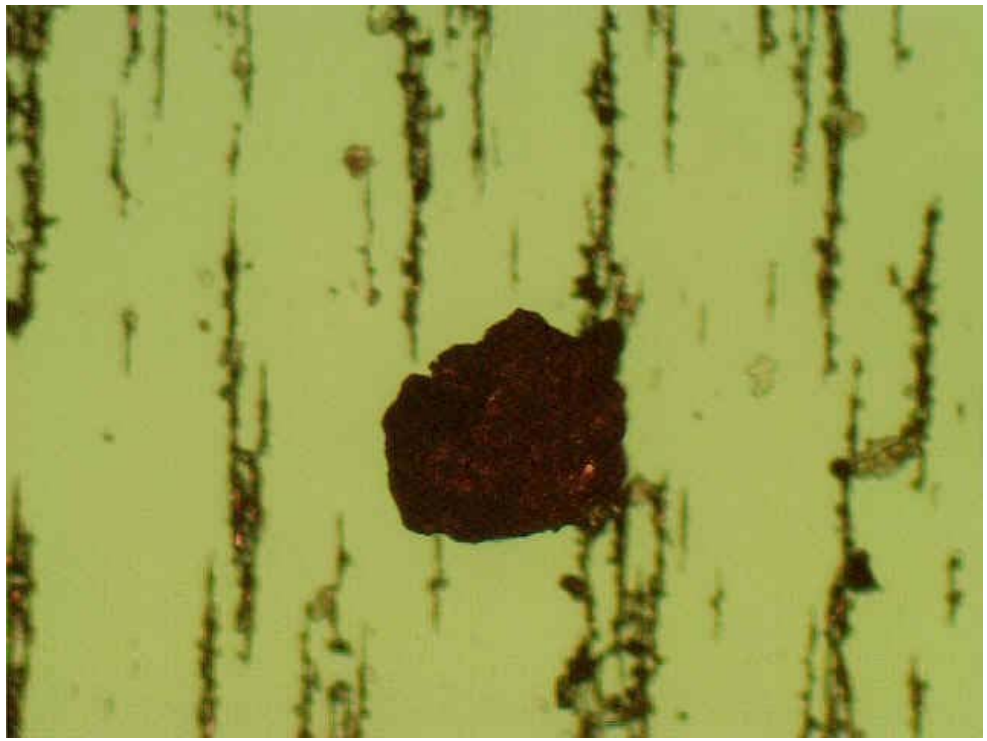
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	5/31/05	89810	400 hours	6597 miles plus 400 hours	500x	73432 89810	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of sand/dirt, soot particulate, and dark metallo oxide was noted. Please see attached images.							
Special Features	Rubbing wear							



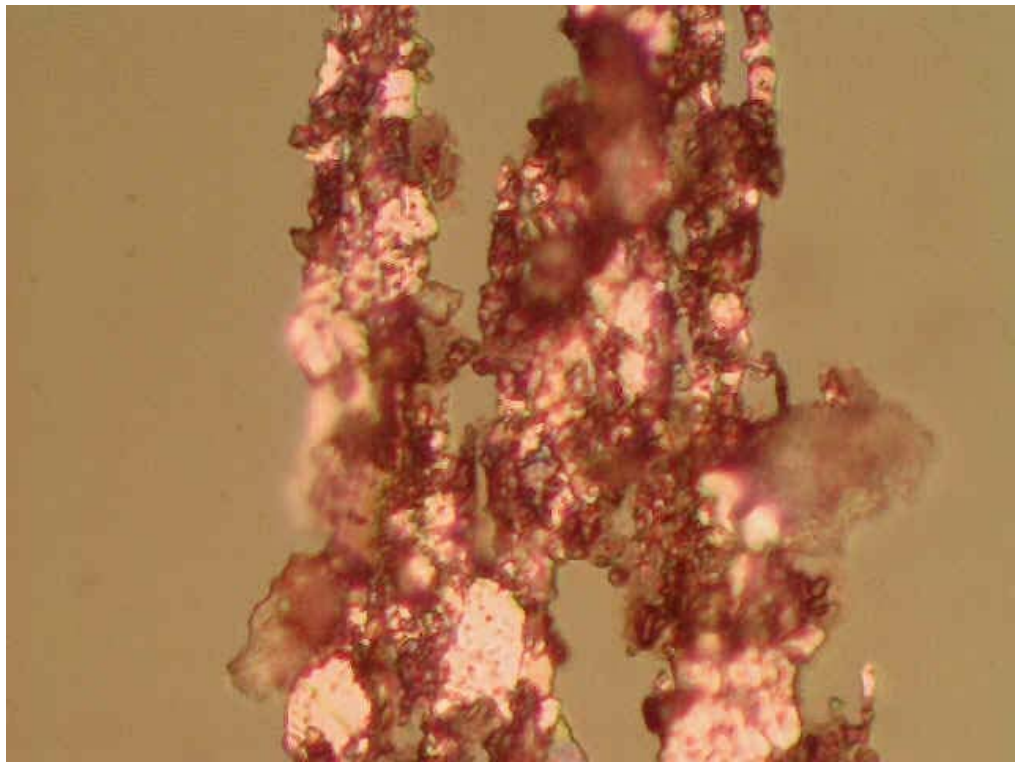
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/31/05	89812	400 hours	6597 miles plus 400 hours	100x	73432 89812	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~120 microns), cutting wear, red oxide (rust), and ferrous laminar particulate was noted. A moderate amount of soot and dark metallo oxide was noted. A trace amount of the ferrous debris had a blue tint, indicative that the particle was formed under elevated temperatures. Please see attached images.							
Special Features	Rubbing wear with rust spots and with dispersed filter debris							



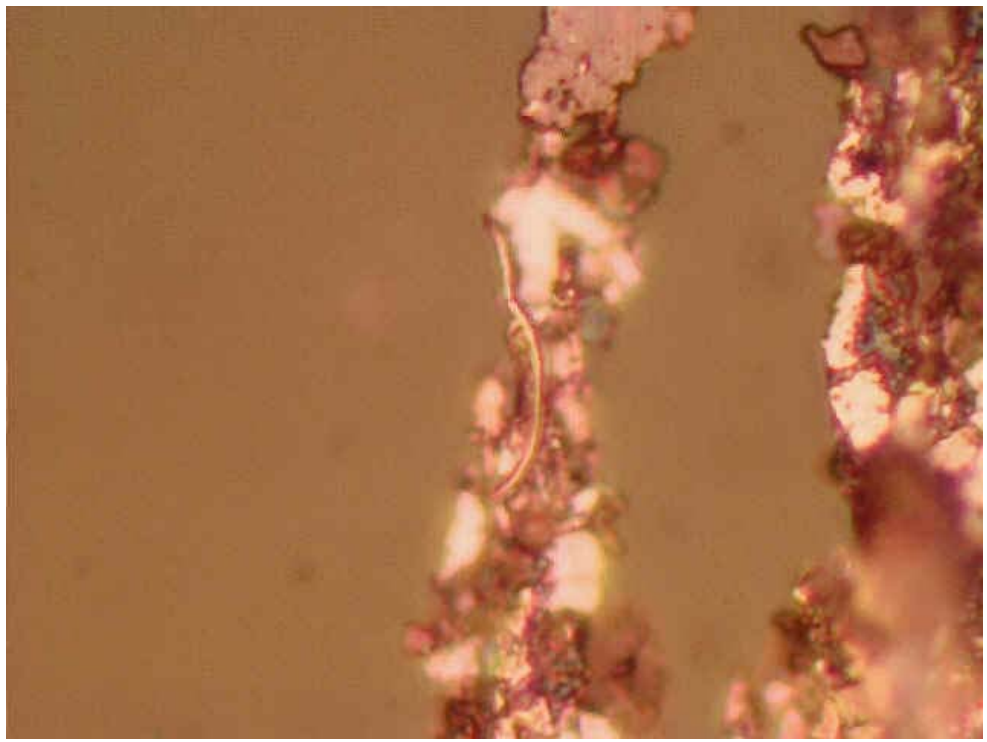
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/31/05	89812	400 hours	6597 miles plus 400 hours	100x	73432 89812	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~120 microns), cutting wear, red oxide (rust), and ferrous laminar particulate was noted. A moderate amount of soot and dark metallo oxide was noted. A trace amount of the ferrous debris had a blue tint, indicative that the particle was formed under elevated temperatures. Please see attached images.							
Special Features	A 120 micron sized ferrous fatigue particle.							



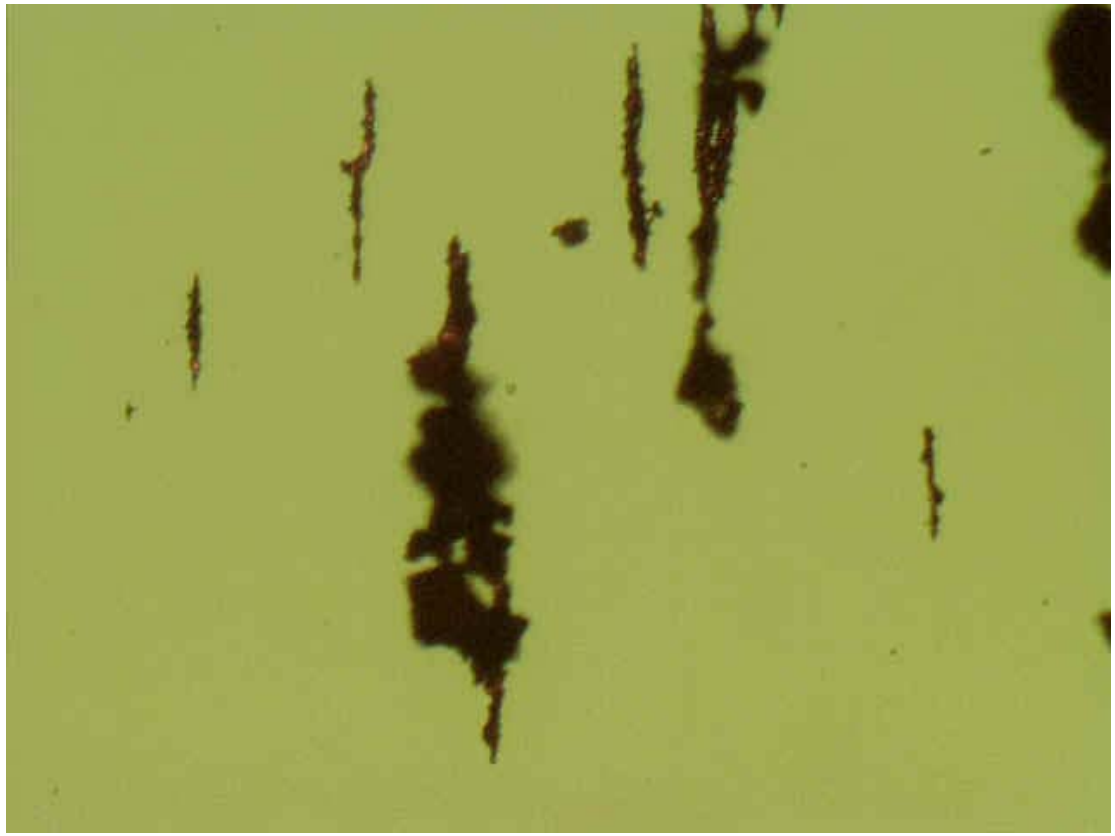
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/31/05	89812	400 hours	6597 miles plus 400 hours	500x	73432 89812	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~120 microns), cutting wear, red oxide (rust), and ferrous laminar particulate was noted. A moderate amount of soot and dark metallo oxide was noted. A trace amount of the ferrous debris had a blue tint, indicative that the particle was formed under elevated temperatures. Please see attached images.							
Special Features	Translucent sand particles							



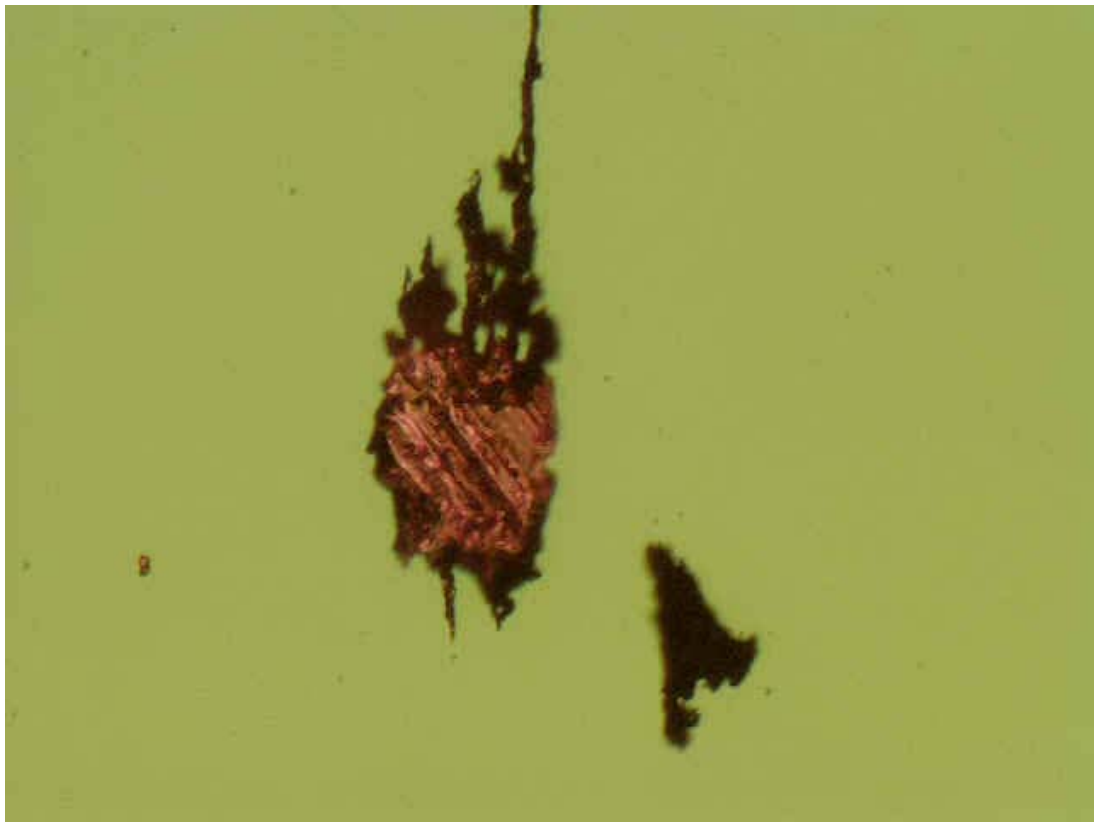
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	5/31/05	89812	400 hours	6597 miles plus 400 hours	800x	73432 89812	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~120 microns), cutting wear, red oxide (rust), and ferrous laminar particulate was noted. A moderate amount of soot and dark metallo oxide was noted. A trace amount of the ferrous debris had a blue tint, indicative that the particle was formed under elevated temperatures. Please see attached images.							
Special Features	Ferrous cutting wear, 13 microns.							



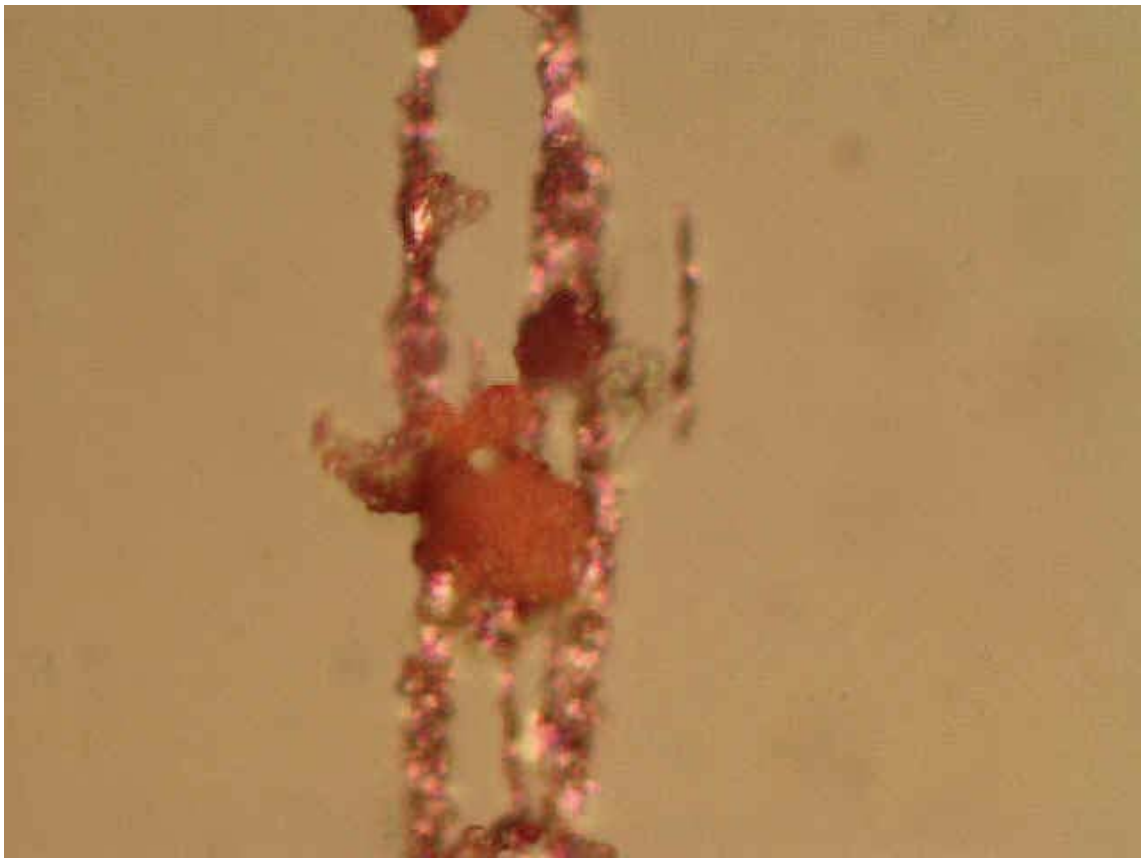
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	5/31/05	89811	400 hours	6597 miles plus 400 hours	100x	73432 89811	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, red oxide, dark metallo oxide, soot, sand/dirt, fibers and filter media. An isolated severe wear particle, 100 microns in major diameter was noted. Please see attached images.							
Special Features	Rubbing wear with filter media							



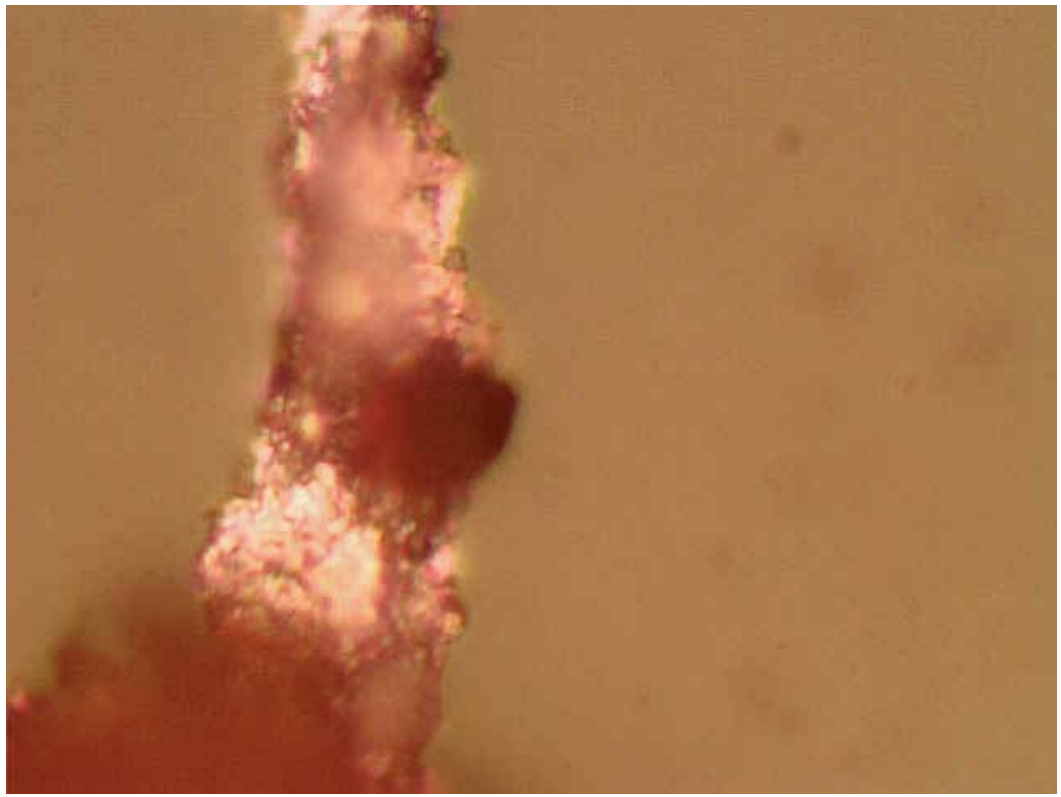
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	5/31/05	89811	400 hours	6597 miles plus 400 hours	100x	73432 89811	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, red oxide, dark metallo oxide, soot, sand/dirt, fibers and filter media.. Please see attached images.							
Special Features	An isolated severe wear particle, 100 microns in major diameter was noted							



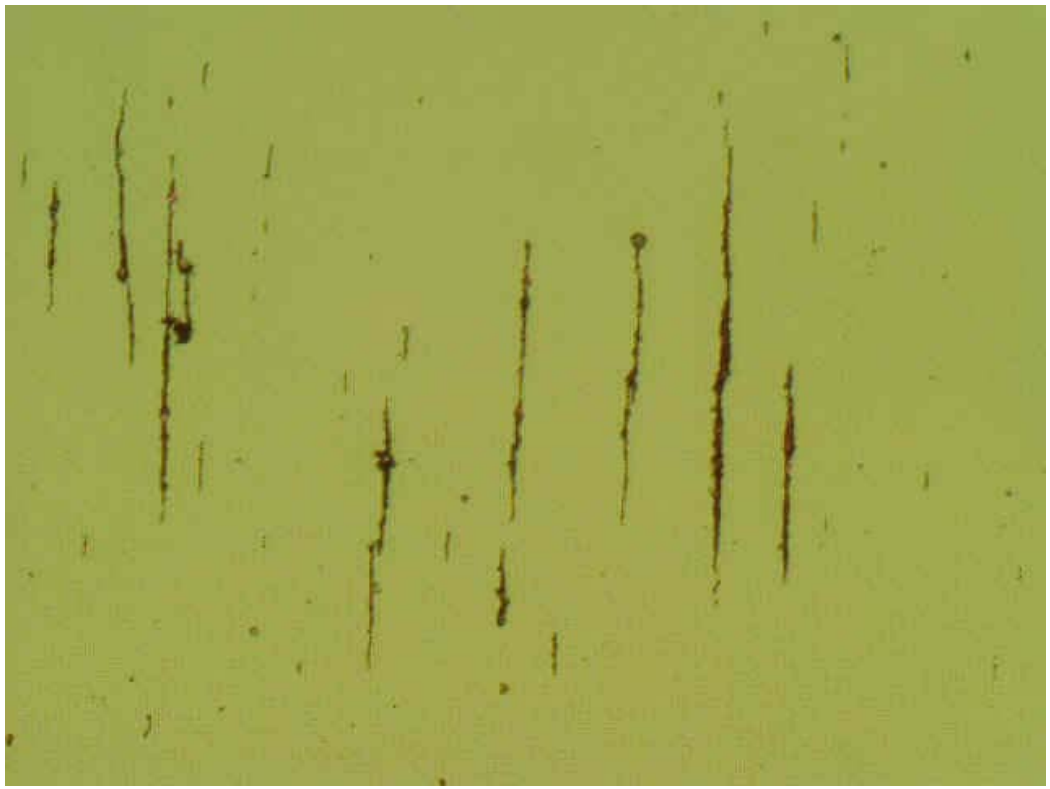
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	5/31/05	89811	400 hours	6597 miles plus 400 hours	500x	73432 89811	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, red oxide, dark metallo oxide, soot, sand/dirt, fibers and filter media. An isolated severe wear particle, 100 microns in major diameter was noted. Please see attached images.							
Special Features	Sand particle							



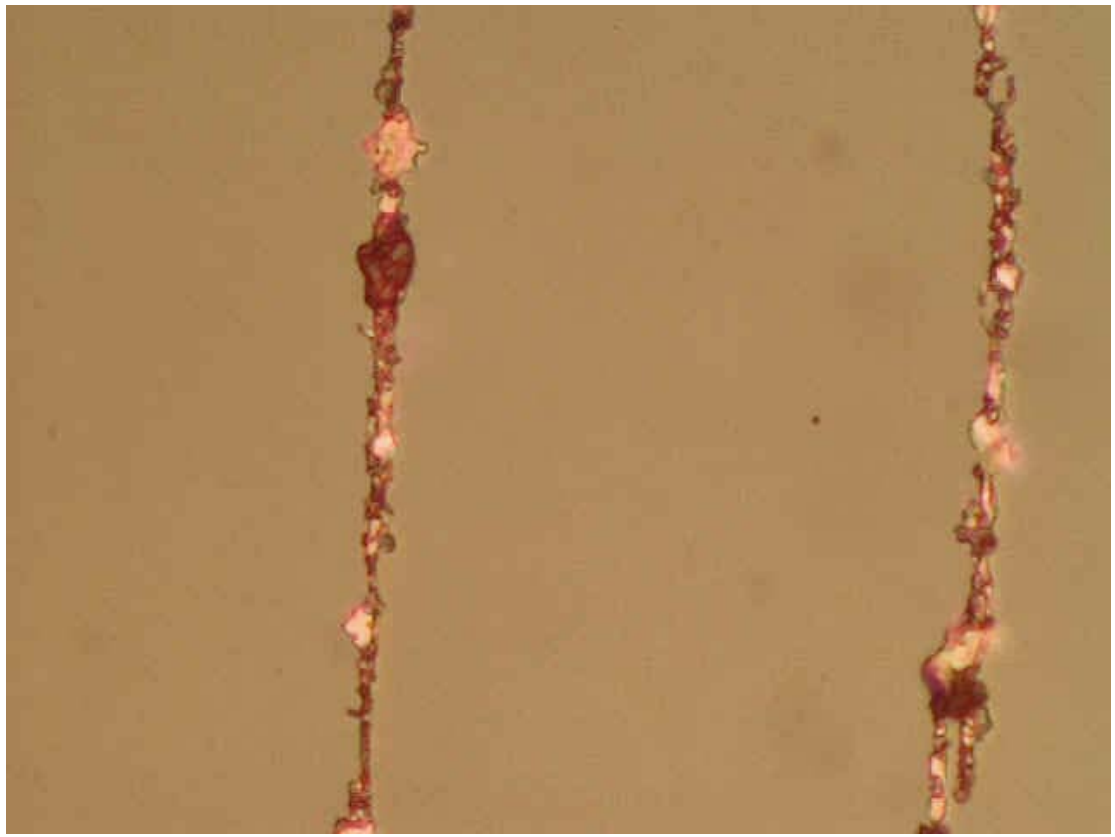
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	5/31/05	89811	400 hours	6597 miles plus 400 hours	800x	73432 89811	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, red oxide, dark metallo oxide, soot, sand/dirt, fibers and filter media. An isolated severe wear particle, 100 microns in major diameter was noted. Please see attached images.							
Special Features	Severe wear and sand/dirt particles.							



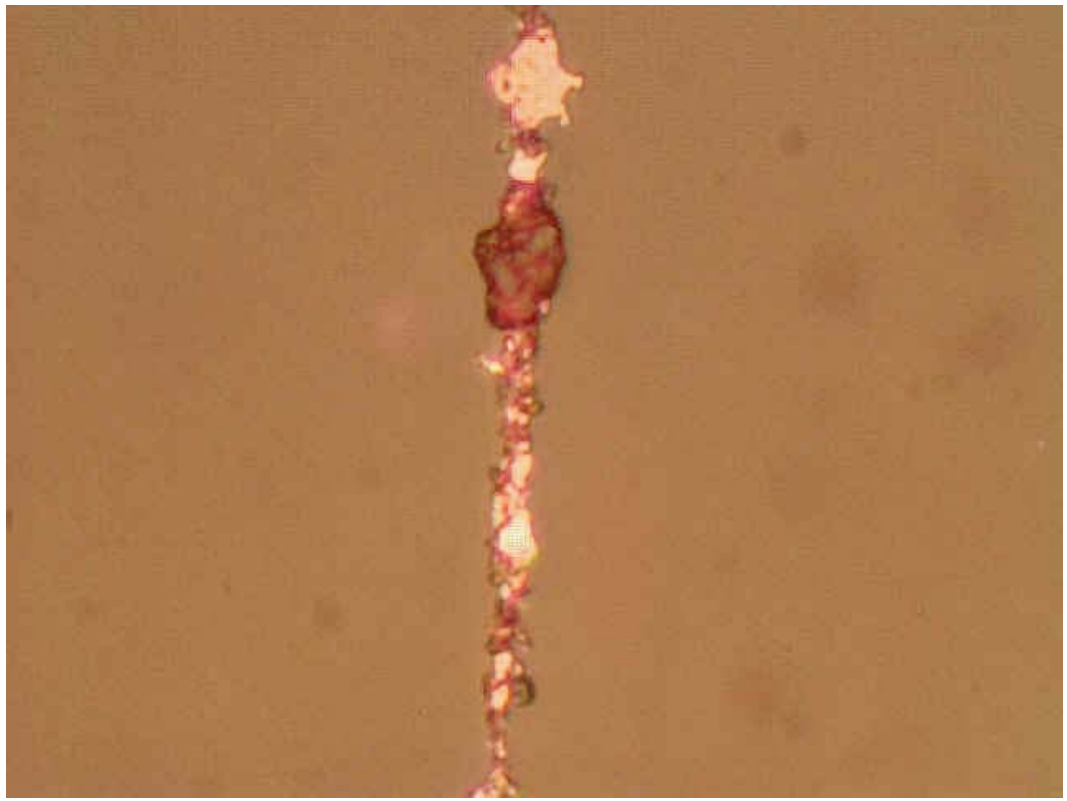
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/31/05	89813	400 hours	6597 miles plus 400 hours	100x	73432 89813	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~40 microns), cutting wear, soot, dark metallo oxide, and ferrous laminar particulate (<30 micron) was noted. Please see attached images.							
Special Features	Rubbing wear with fatigue particles							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/31/05	89813	400 hours	6597 miles plus 400 hours	500x	73432 89813	Entry
	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~40 microns), cutting wear, soot, dark metallo oxide, and ferrous laminar particulate (<30 micron) was noted. Please see attached images							
Special Features	Ferrous laminar particulate and dark metallo oxide with rubbing wear							

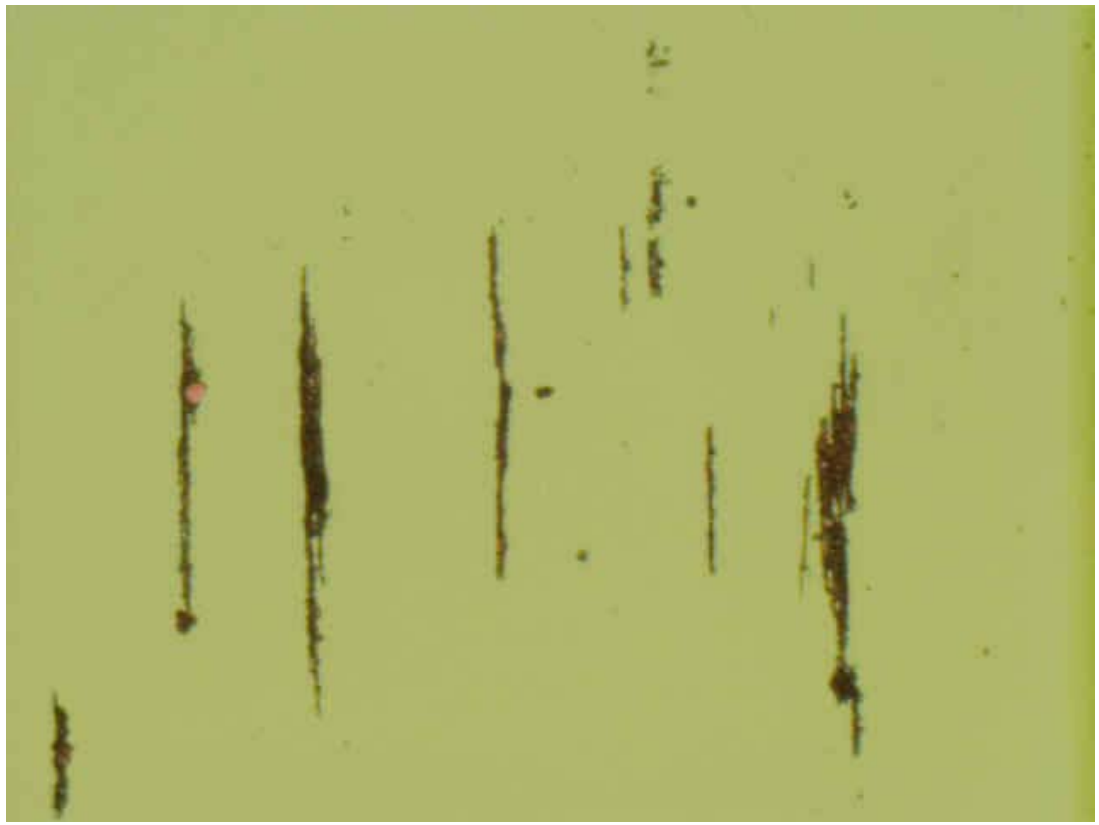


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	5/31/05	89813	400 hours	6597 miles plus 400 hours	800x	73432 89813	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles (~40 microns), cutting wear, soot, dark metallo oxide, and ferrous laminar particulate (<30 micron) was noted. Please see attached images.							
Special Features	Ferrous laminar and dart metallo oxide particles							

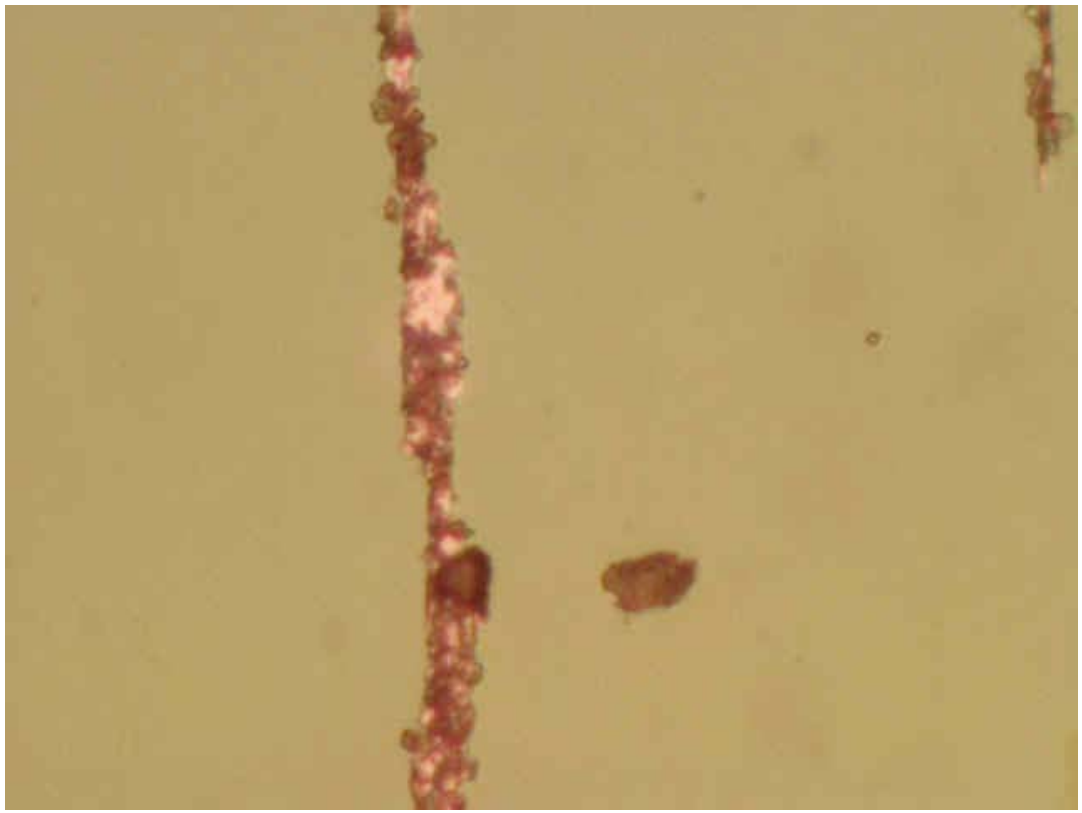


Appendix K-3. Ferrograms – 800 hours Bus 73432

Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	6/23/05	90114	800 hours	6858 miles plus 8000 hours	100x	73432 90114	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles, major diameters up to 90 microns, were noted. A light amount of ferrous laminar particulate (~20 microns), soot particles, abnormally large sand/dirt (~40 microns) particles, red oxide (rust), and dark metallo oxide was noted. A moderate amount of fibers and filter media with embedded wear debris was noted. Please see attached images.							
Special Features	Rubbing wear							

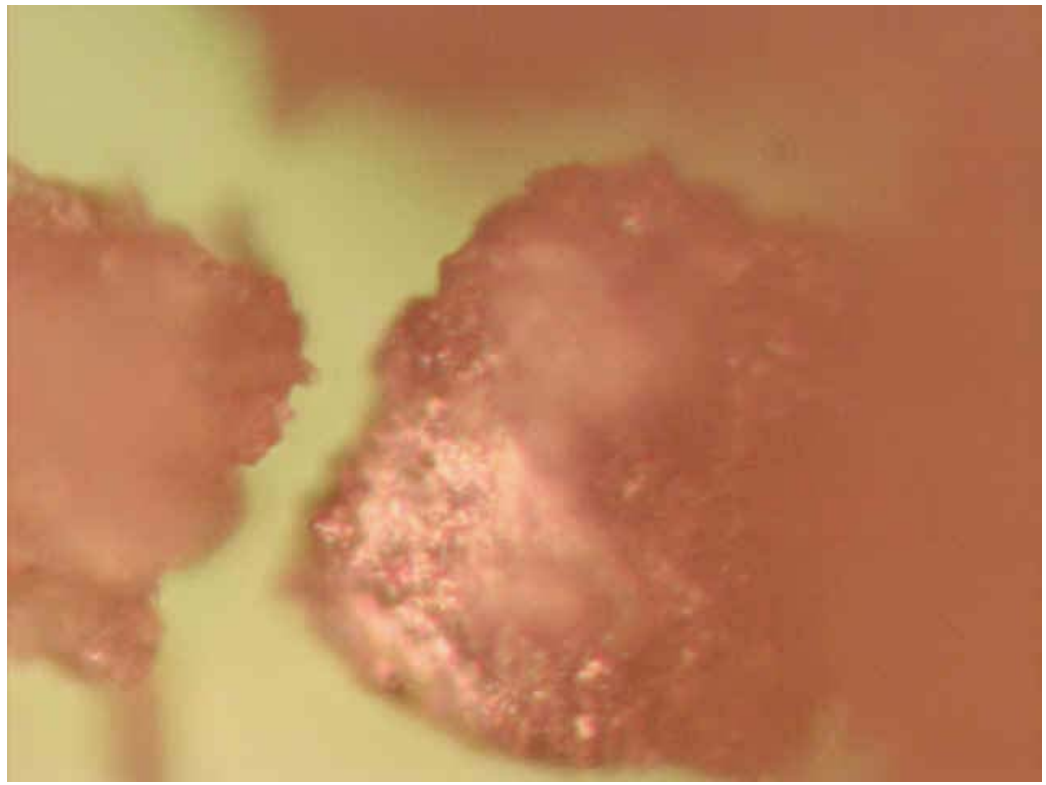


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	6/23/05	90114	800 hours	6858 miles plus 8000 hours	500x	73432 90114	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles, major diameters up to 90 microns, were noted. A light amount of ferrous laminar particulate (~20 microns), soot particles, abnormally large sand/dirt (~40 microns) particles, red oxide (rust), and dark metallo oxide was noted. A moderate amount of fibers and filter media with embedded wear debris was noted. Please see attached images.							
Special Features	Rubbing wear with dark metallo oxide and/or sand particles							



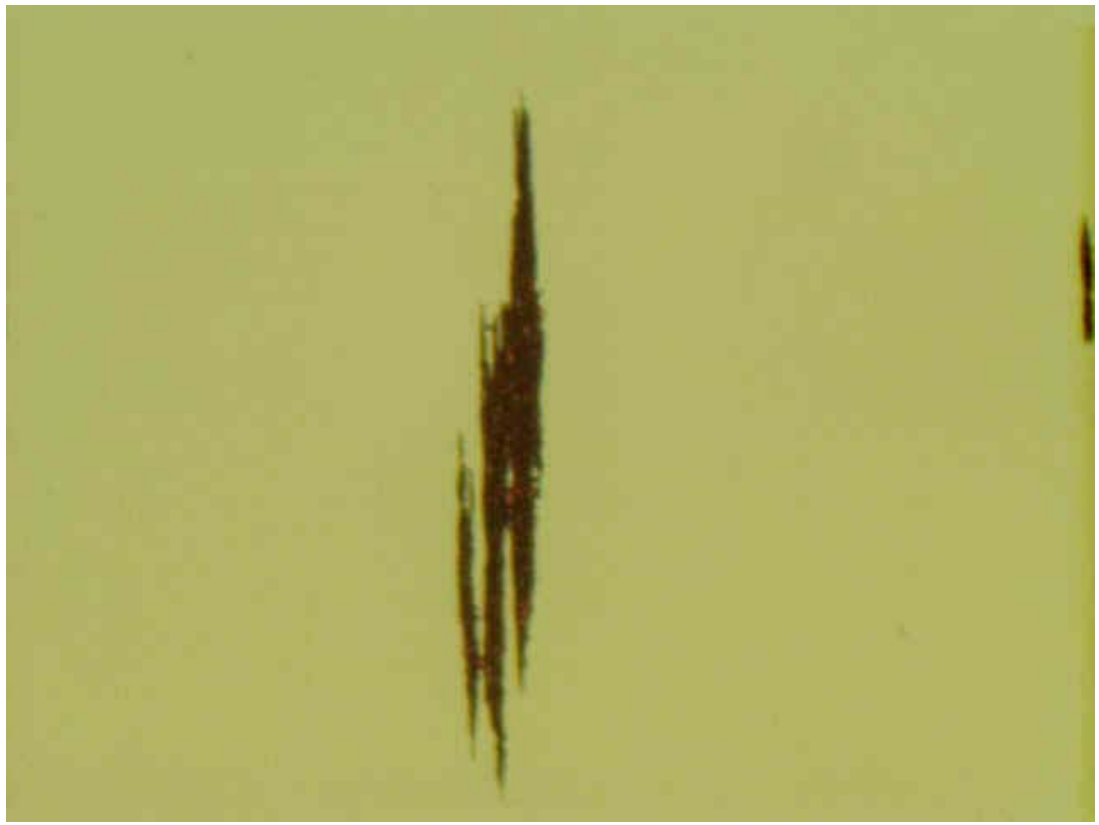
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	6/23/05	90114	800 hours	6858 miles plus 8000 hours	500x	73432 90114	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles, major diameters up to 90 microns, were noted. A light amount of ferrous laminar particulate (~20 microns), soot particles, abnormally large sand/dirt (~40 microns) particles, red oxide (rust), and dark metallo oxide was noted. A moderate amount of fibers and filter media with embedded wear debris was noted. Please see attached images.							
Special Features	~20 microns ferrous laminar particulate.							

Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	6/23/05	90114	800 hours	6858 miles plus 8000 hours	500x	73432 90114	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles, major diameters up to 90 microns, were noted. A light amount of ferrous laminar particulate (~20 microns), soot particles, abnormally large sand/dirt (~40 microns) particles, red oxide (rust), and dark metallo oxide was noted. A moderate amount of fibers and filter media with embedded wear debris was noted. Please see attached images.							
Special Features	Major diameters up to 90 micron of ferrous fatigue particles.							

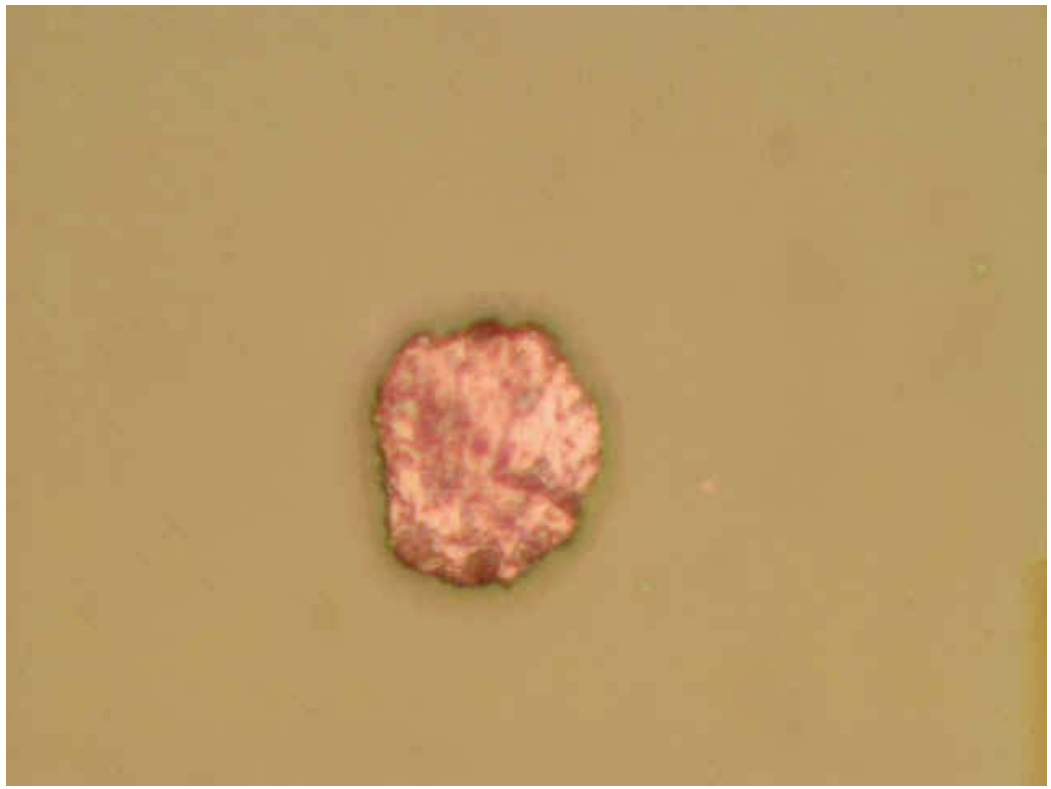


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	6/23/05	90114	800 hours	6858 miles plus 8000 hours	800x	73432 90114	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous fatigue particles, major diameters up to 90 microns, were noted. A light amount of ferrous laminar particulate (~20 microns), soot particles, abnormally large sand/dirt (~40 microns) particles, red oxide (rust), and dark metallo oxide was noted. A moderate amount of fibers and filter media with embedded wear debris was noted. Please see attached images.							
Special Features	Rubbing wear and sand/dirt particle							

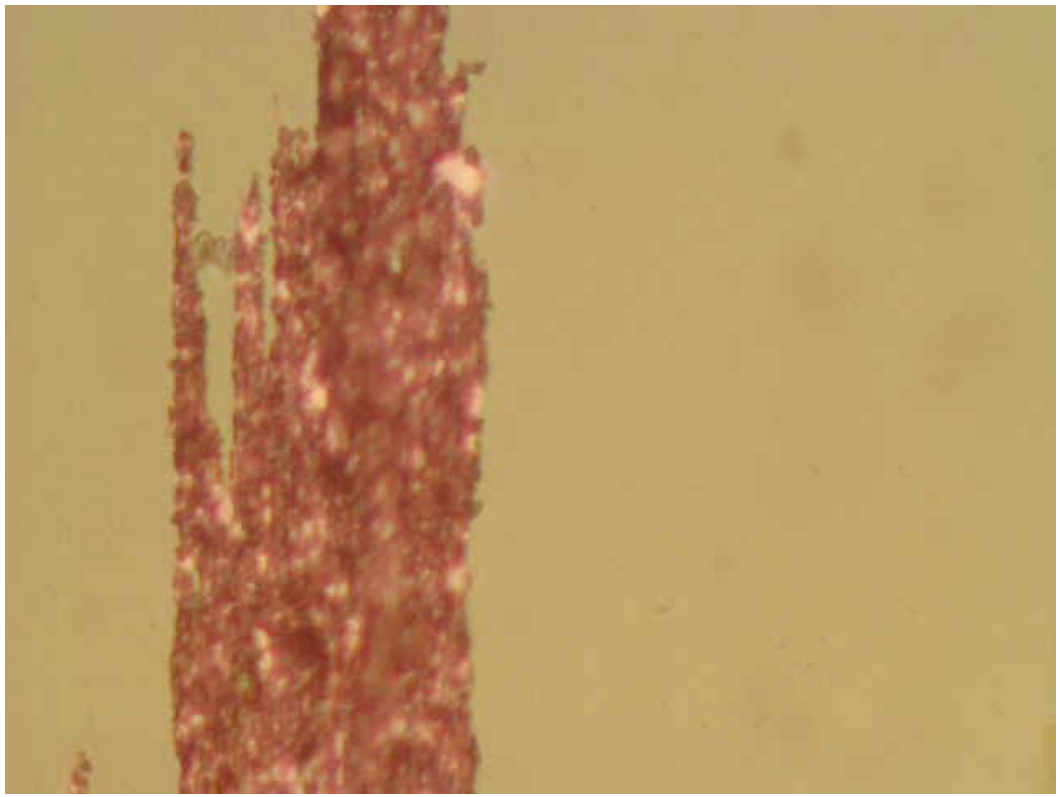
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	6/23/05	90115	800 hours	6858 miles plus 8000 hours	100x	73432 90115	Entry
Comments	Ferrographic analysis of the cross section of the bypass filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous laminar particulate (~20 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	A light amount of fine ferrous particulate, typical of normal rubbing wear.							



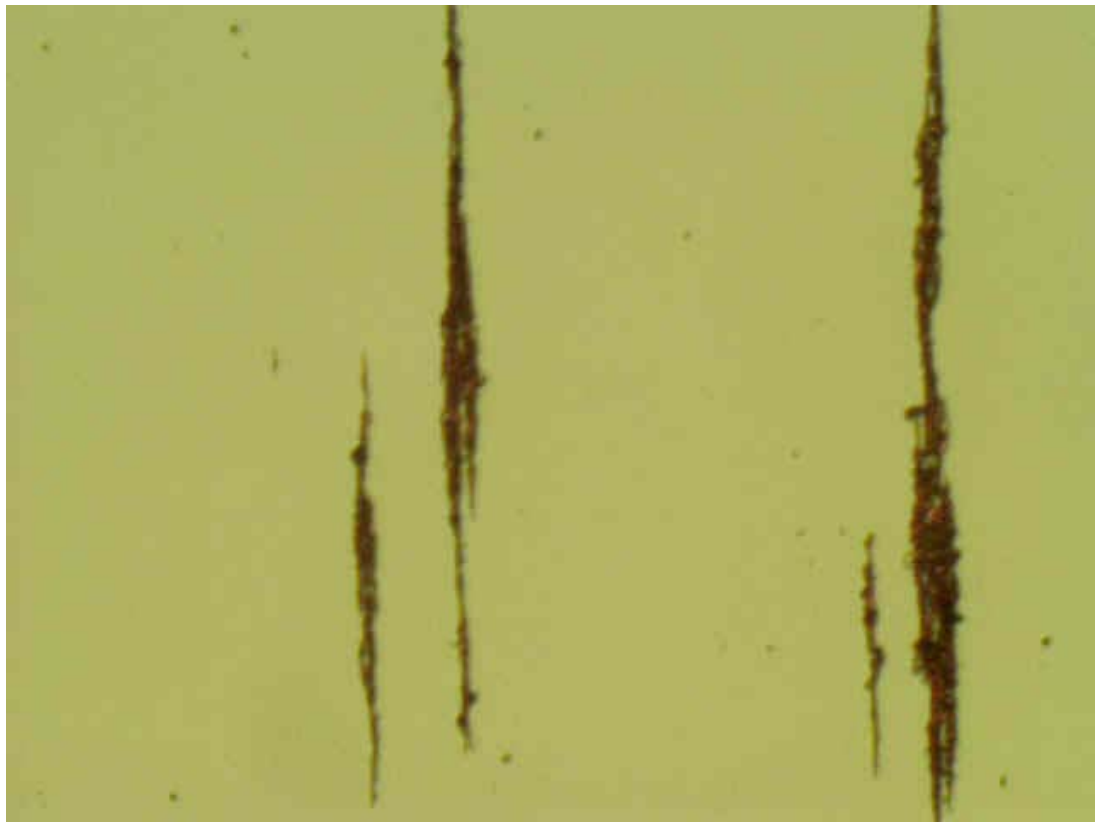
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	6/23/05	90115	800 hours	6858 miles plus 8000 hours	500x	73432 90115	Entry
Comments	Ferrographic analysis of the cross section of the bypass filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous laminar particulate (~20 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	~40 micron ferrous laminar particulate							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	6/23/05	90115	800 hours	6858 miles plus 8000 hours	500x	73432 90115	Entry
Comments	Ferrographic analysis of the cross section of the bypass filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous laminar particulate (~20 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	Rubbing wear with sand particle							



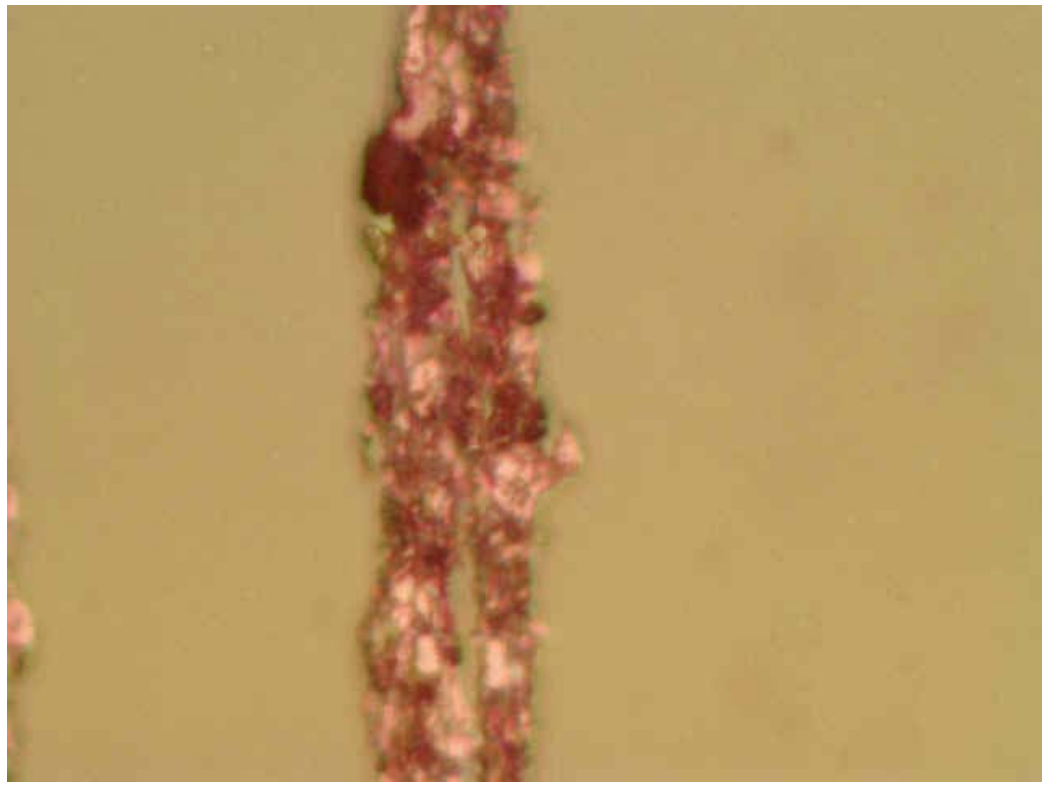
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	6/23/05	90117	800 hours	6858 miles plus 8000 hours	100x	73432 90117	Entry
Comments	Ferrographic analysis of the cross section of the full flow filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous abnormal sliding wear particulate (~60 microns), ferrous fatigue particulate (~90 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	A light amount of fine ferrous particulate, typical of normal rubbing wear.							



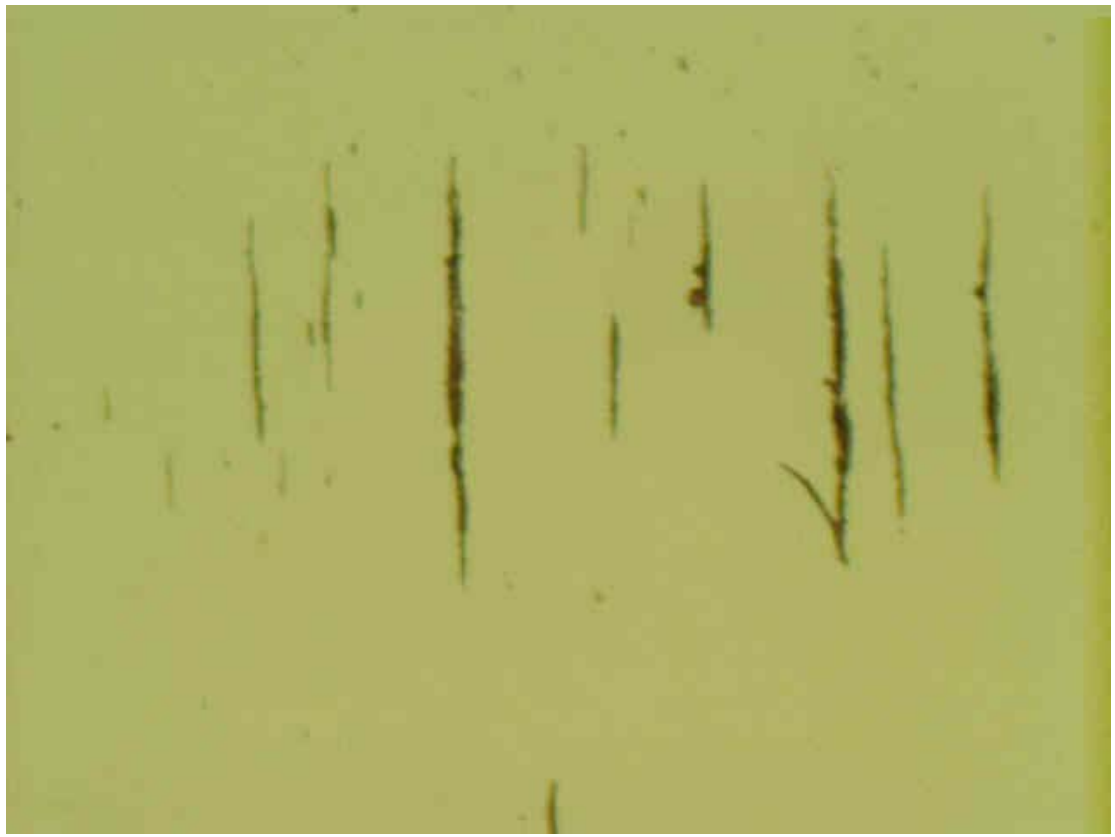
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	6/23/05	90117	800 hours	6858 miles plus 8000 hours	100x	73432 90117	Entry
Comments	Ferrographic analysis of the cross section of the full flow filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous abnormal sliding wear particulate (~60 microns), ferrous fatigue particulate (~90 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	~90 microns ferrous fatigue particulate.							

Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	6/23/05	90117	800 hours	6858 miles plus 8000 hours	500x	73432 90117	Entry
Comments	Ferrographic analysis of the cross section of the full flow filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous abnormal sliding or severe wear particulate (~60 microns), ferrous fatigue particulate (~90 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	~ 60 microns ferrous abnormal sliding or severe wear particulate.							

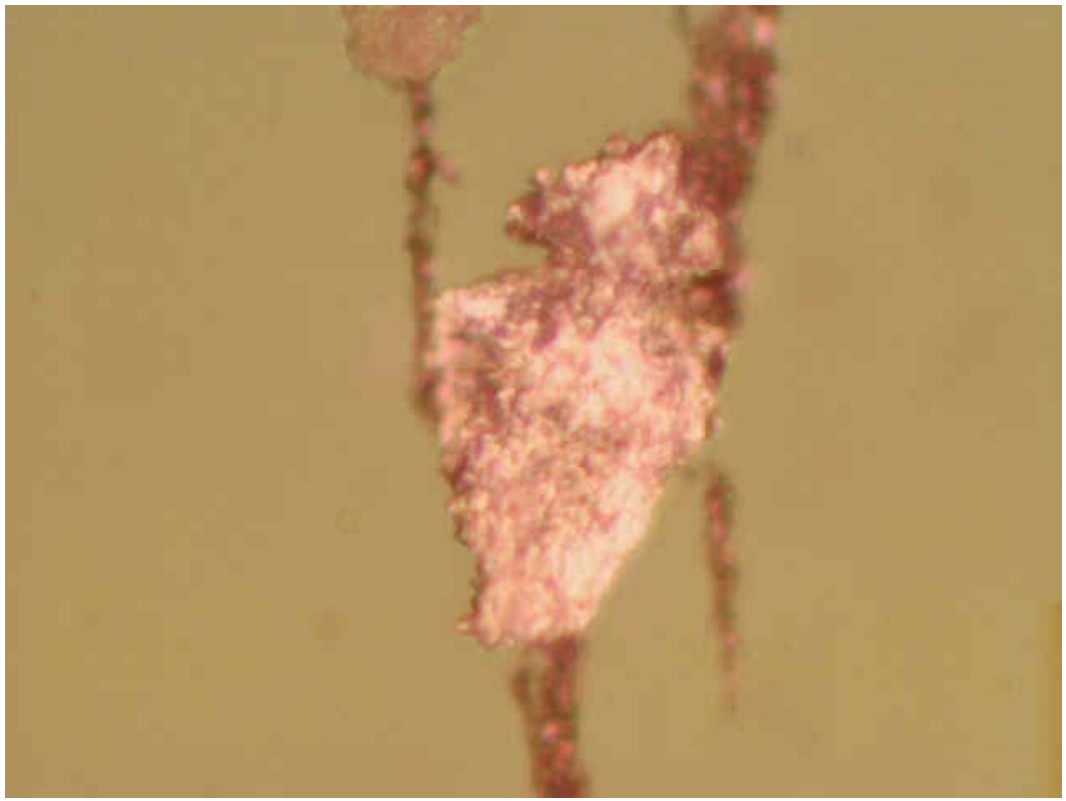
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	6/23/05	90117	800 hours	6858 miles plus 8000 hours	500x	73432 90117	Entry
Comments	Ferrographic analysis of the cross section of the full flow filter indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous abnormal sliding wear particulate (~60 microns), ferrous fatigue particulate (~90 microns), soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	Dark metallo oxide on rubbing wear							



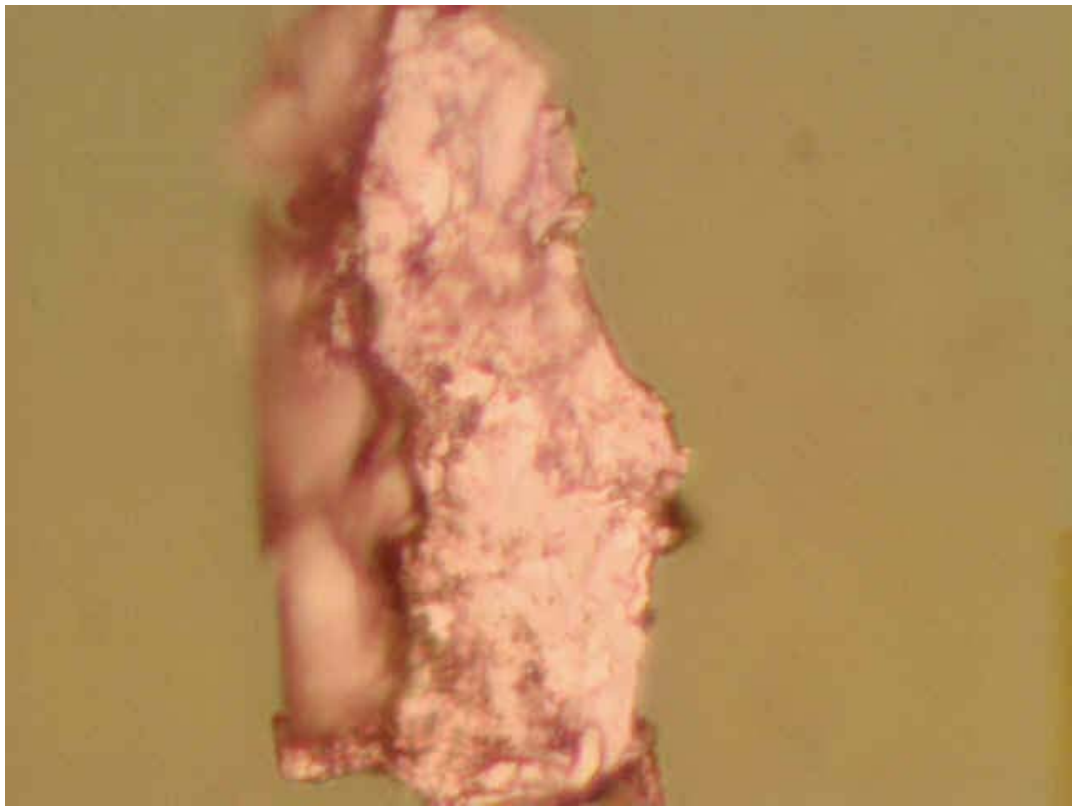
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	6/23/05	90116	800 hours	6858 miles plus 8000 hours	100x	73432 90116	Entry
Comments	Ferrographic analysis of the bypass filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of abnormal ferrous sliding wear particles, major diameters up to 60 microns were noted. A light amount ferrous laminar particulate (~40 microns) particles, red oxide (rust), cutting wear, and dark metallo oxide was noted. Please see attached images.							
Special Features	A light amount of fine ferrous particulate, typical of normal rubbing wear.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	6/23/05	90116	800 hours	6858 miles plus 8000 hours	500x	73432 90116	Entry
Comments	Ferrographic analysis of the bypass filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of abnormal ferrous sliding wear particles, major diameters up to 60 microns were noted. A light amount ferrous laminar particulate (~40 microns) particles, red oxide (rust), cutting wear, and dark metallo oxide was noted. Please see attached images.							
Special Features	~40 micron ferrous laminar particulate							

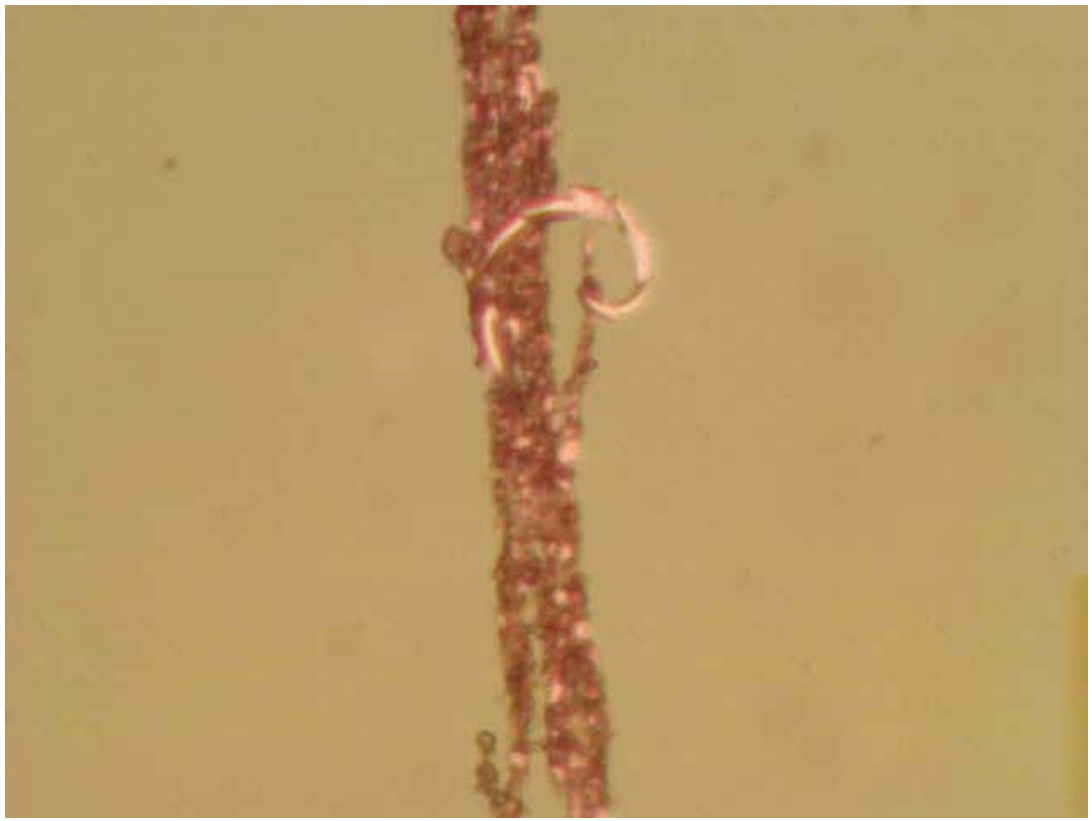


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	6/23/05	90116	800 hours	6858 miles plus 8000 hours	500x	73432 90116	Entry
Comments	Ferrographic analysis of the bypass filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of abnormal ferrous sliding wear particles, major diameters up to 60 microns were noted. A light amount ferrous laminar particulate (~40 microns) particles, red oxide (rust), cutting wear and dark metallo oxide was noted. Please see attached images.							
Special Features	60 micron sliding or severe wear particle							

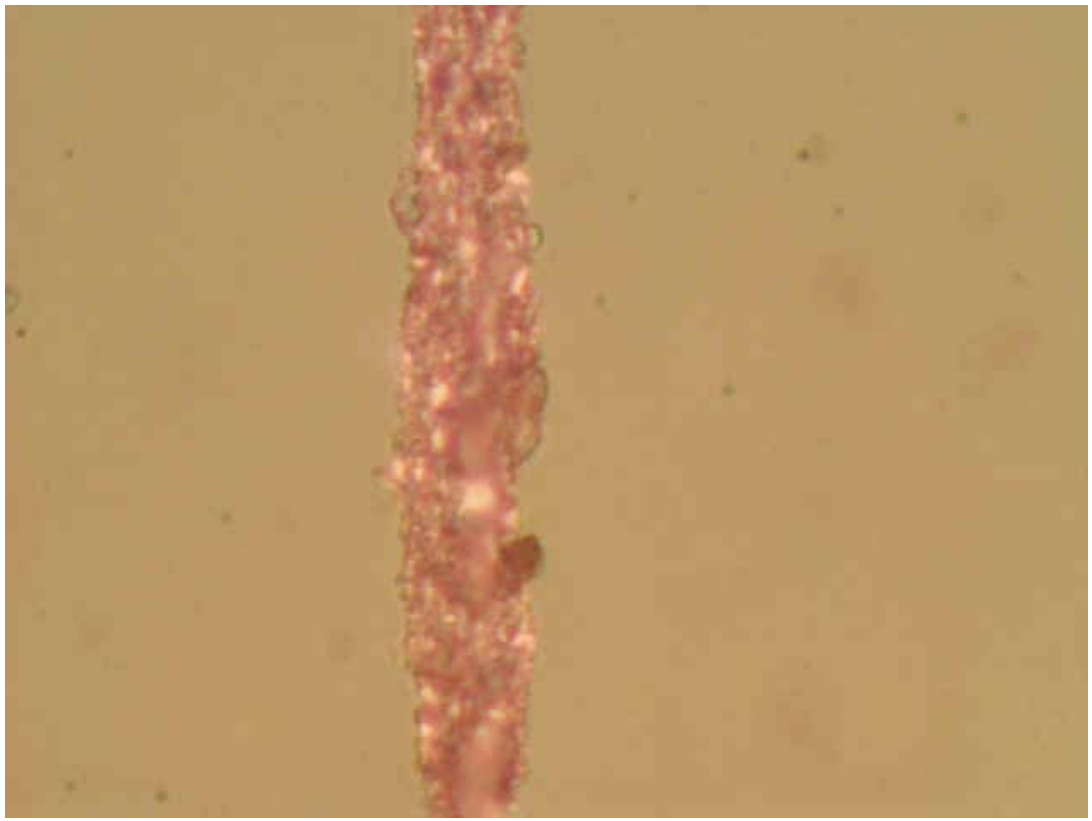


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	6/23/05	90116	800 hours	6858 miles plus 8000 hours	500x	73432 90116	Entry
Comments	Ferrographic analysis of the bypass filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of abnormal ferrous sliding wear particles, major diameters up to 60 microns were noted. A light amount ferrous laminar particulate (~40 microns) particles, red oxide (rust), cutting wear, and dark metallo oxide was noted. Please see attached images.							
Special Features	Cutting wear							

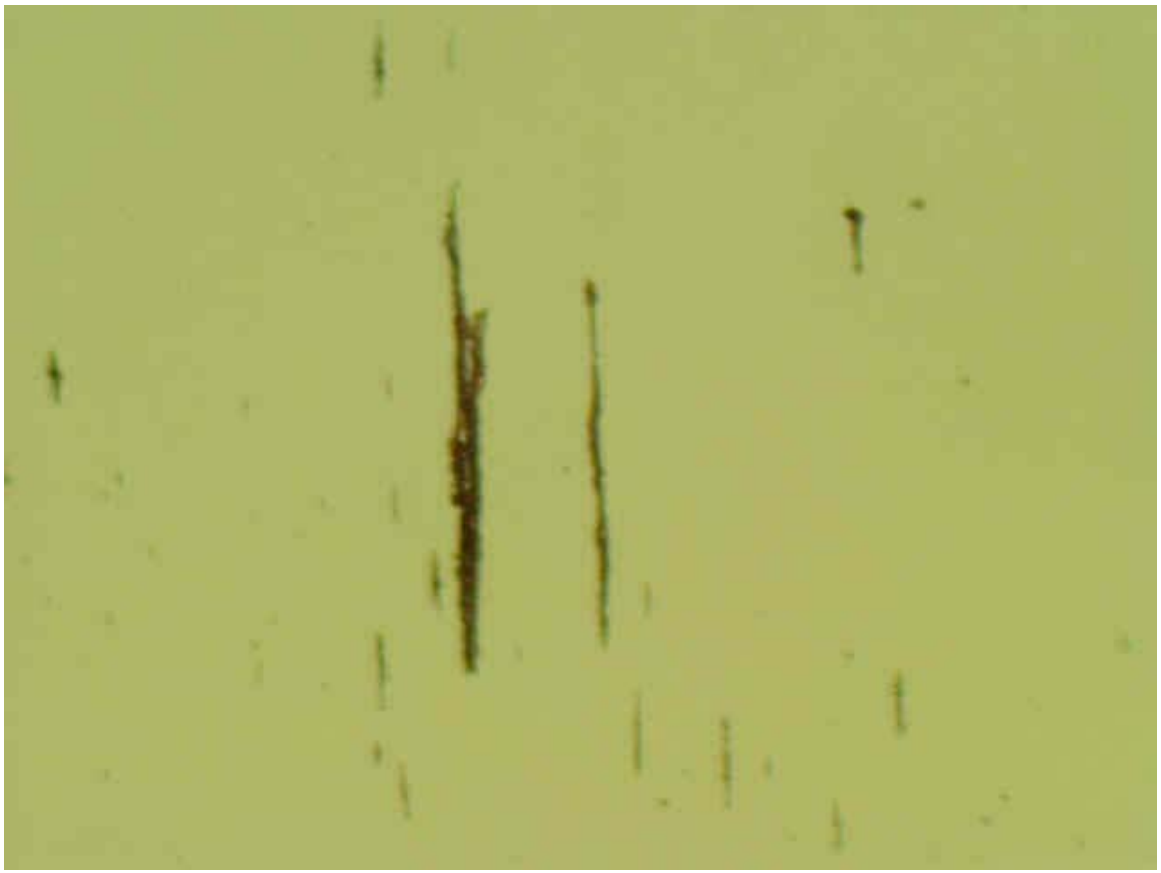
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	6/23/05	90116	800 hours	6858 miles plus 8000 hours	500x	73432 90116	Entry
Comments	Ferrographic analysis of the bypass filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of abnormal ferrous sliding wear particles, major diameters up to 60 microns were noted. A light amount ferrous laminar particulate (~40 microns) particles, red oxide (rust), cutting wear, and dark metallo oxide was noted. Please see attached images.							
Special Features	10 micron cutting wear							



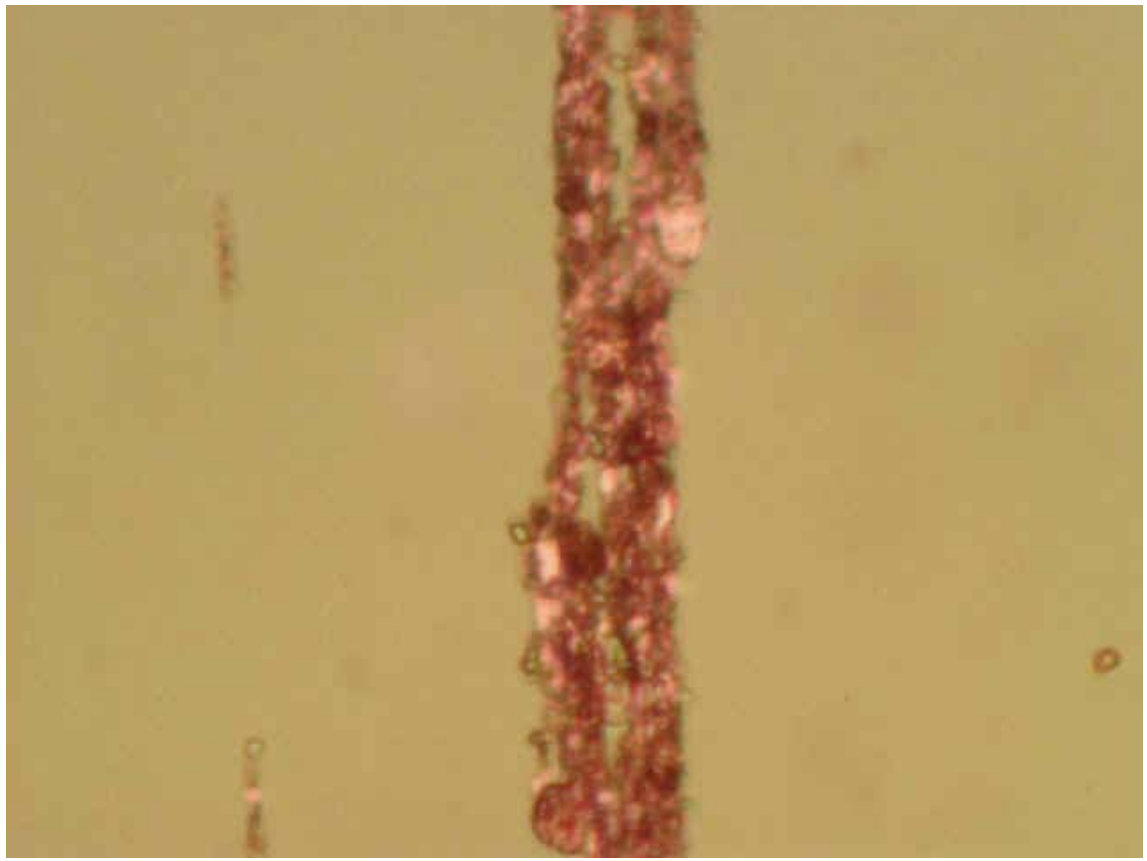
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	6/23/05	90116	800 hours	6858 miles plus 8000 hours	800x	73432 90116	Entry
Comments	Ferrographic analysis of the bypass filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of abnormal ferrous sliding wear particles, major diameters up to 60 microns were noted. A light amount ferrous laminar particulate (~40 microns) particles, red oxide (rust), cutting wear, and dark metallo oxide was noted. Please see attached images.							
Special Features	Rubbing wear							



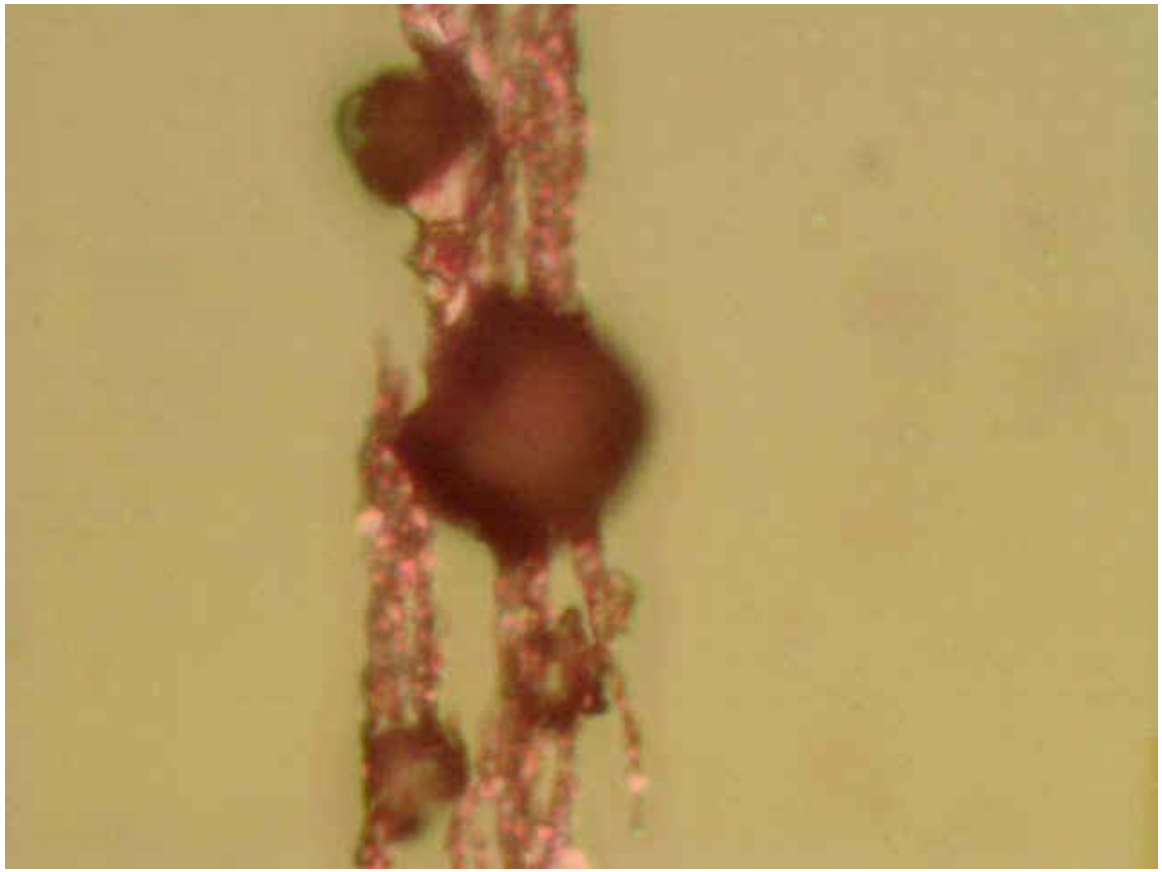
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	6/23/05	90118	800 hours	6858 miles plus 8000 hours	100x	73432 90118	Entry
Comments	Ferrographic analysis of the full flow filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	A light amount of fine ferrous particulate, typical of normal rubbing wear.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	6/23/05	90118	800 hours	6858 miles plus 8000 hours	100x	73432 90118	Entry
Comments	Ferrographic analysis of the full flow filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	Rubbing wear							

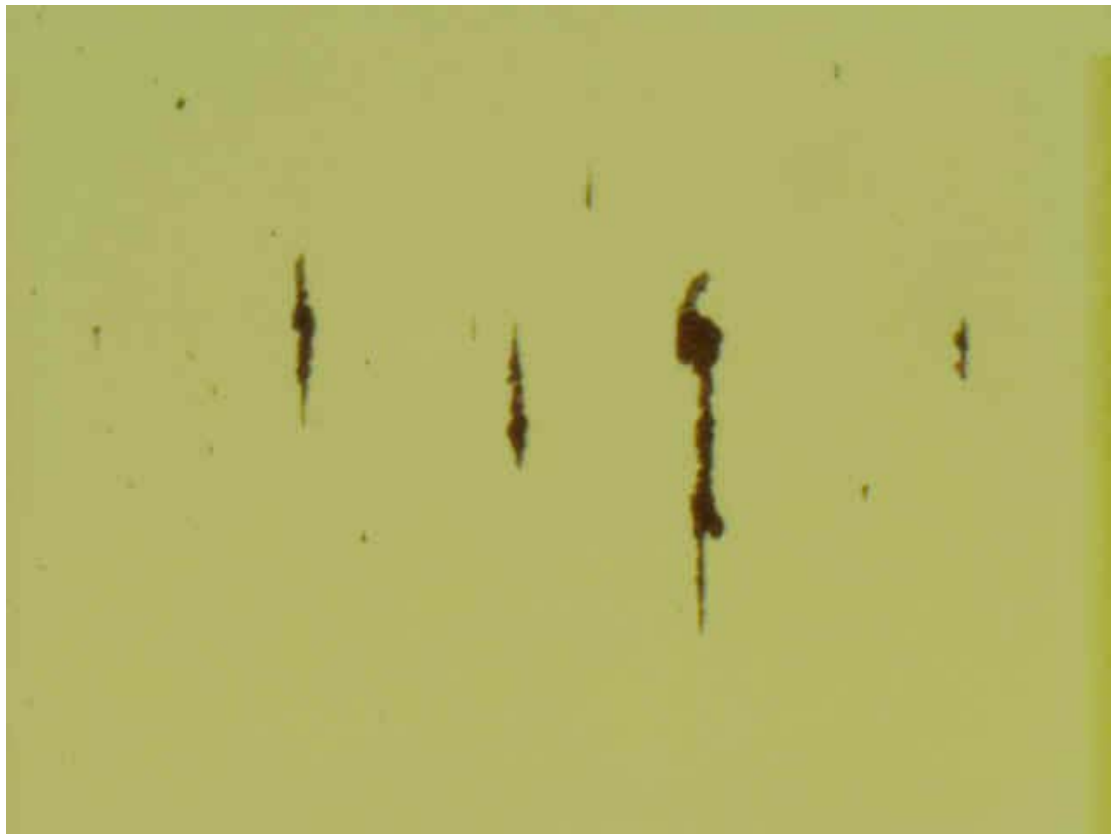


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	6/23/05	90118	800 hours	6858 miles plus 8000 hours	100x	73432 90118	Entry
Comments	Ferrographic analysis of the full flow filter residue oil indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	Soot particles on rubbing wear particulate							

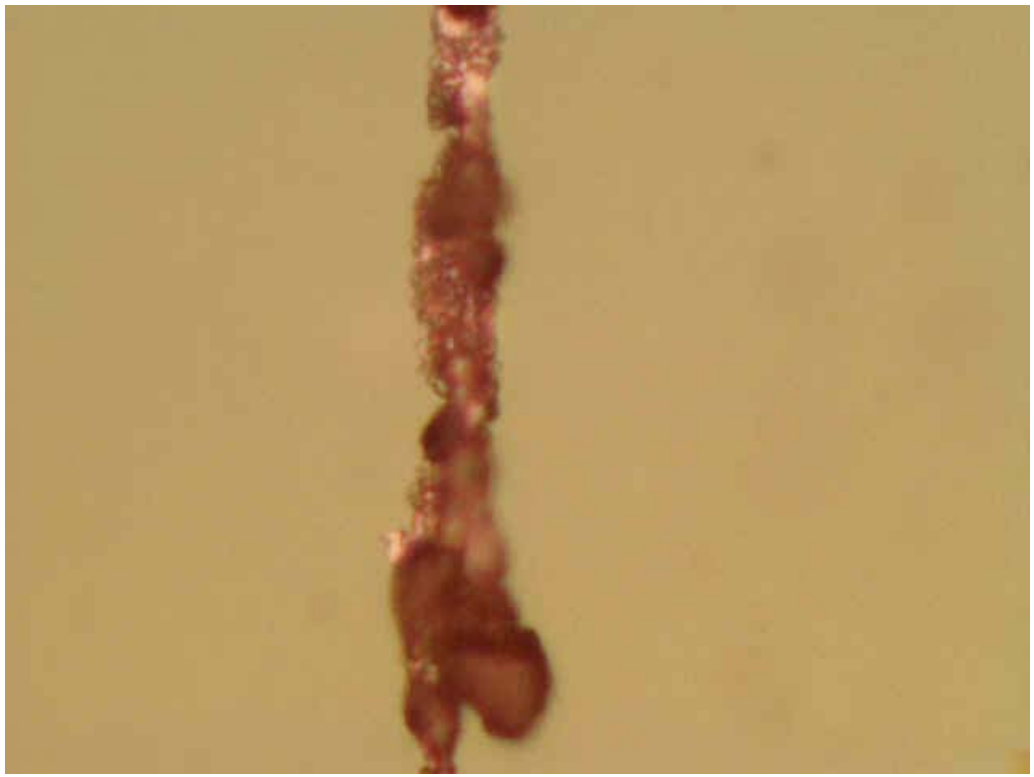


Appendix K-4. Ferrograms – 1,000 hours Bus 73432

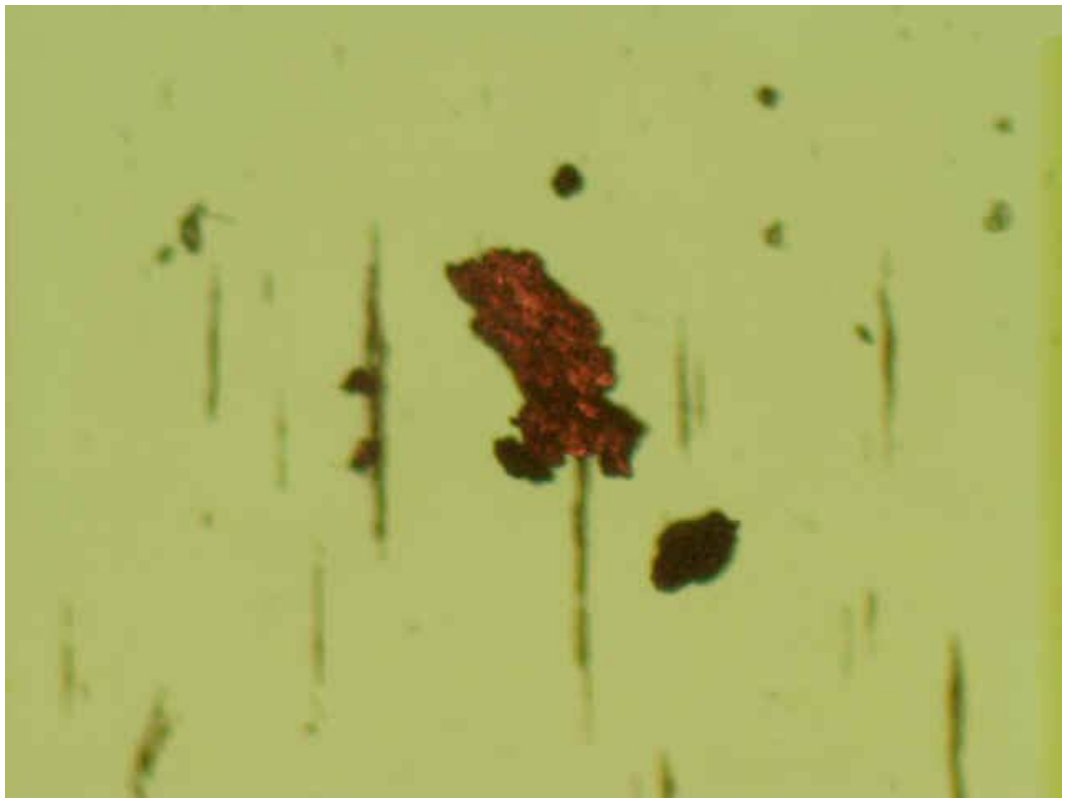
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	7/5/05	90155	1000 hours	6858 miles plus 1000 hours	100x	73432 90155	Entry
Comments	Ferrogram of the crank case sample shows a light amount of fine (<10 micron) ferrous particulate, typical of normal rubbing wear. Please see attached images.							
Special Features	Shows a light amount of fine (<10 micron) ferrous particulate, typical of normal rubbing wear.							



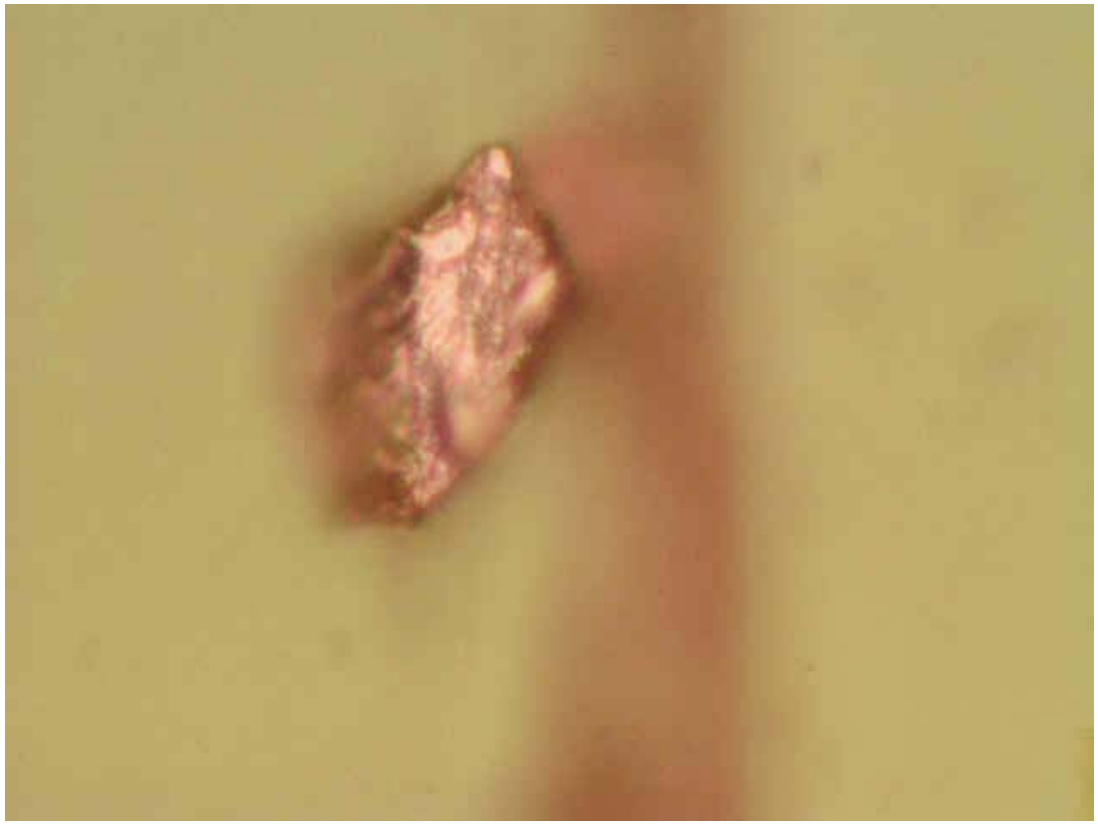
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Used Oil	7/5/05	90155	1000 hours	6858 miles plus 1000 hours	500x	73432 90155	Entry
Comments	Ferrogram of the crank case sample shows a light amount of fine (<10 micron) ferrous particulate, typical of normal rubbing wear. Please see attached images.							
Special Features	Rubbing wear							



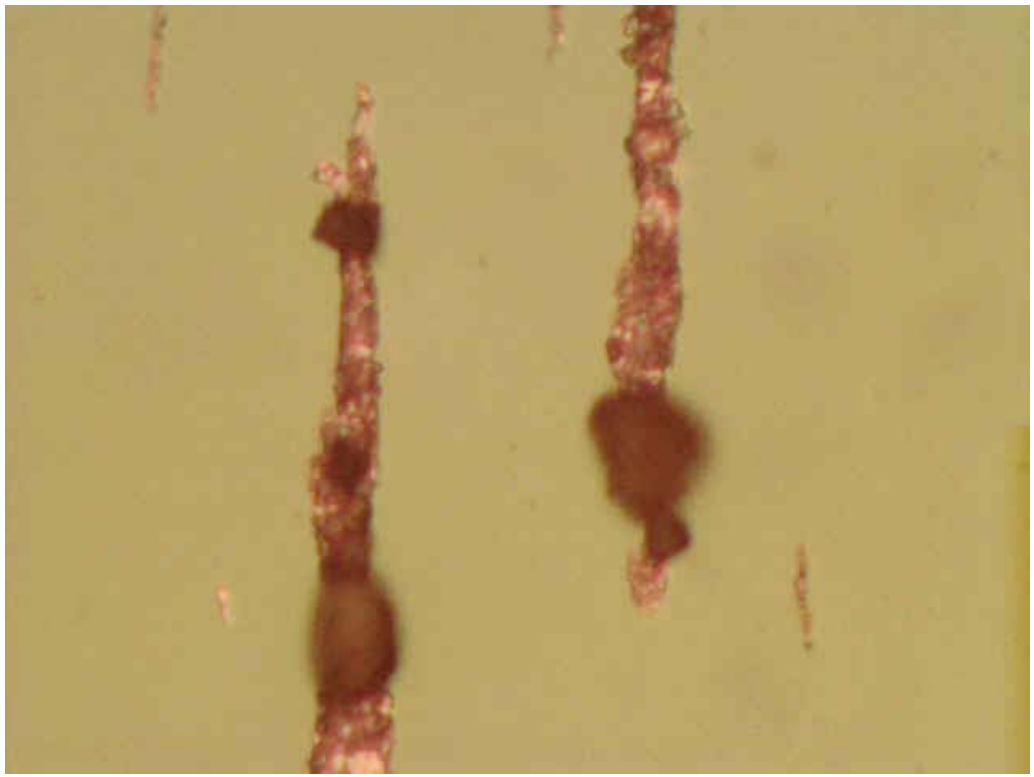
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	7/5/05	90156	1000 hours	6858 miles plus 1000 hours	100x	73432 90156	Entry
Comments	Ferrogram from the bypass filter cross section shows a light amount of fine (<10µm) ferrous particulate, typical of normal operating condition. Please see attached images.							
Special Features	A discrete copper alloy laminar particle, measuring 132 µm, is noted.							



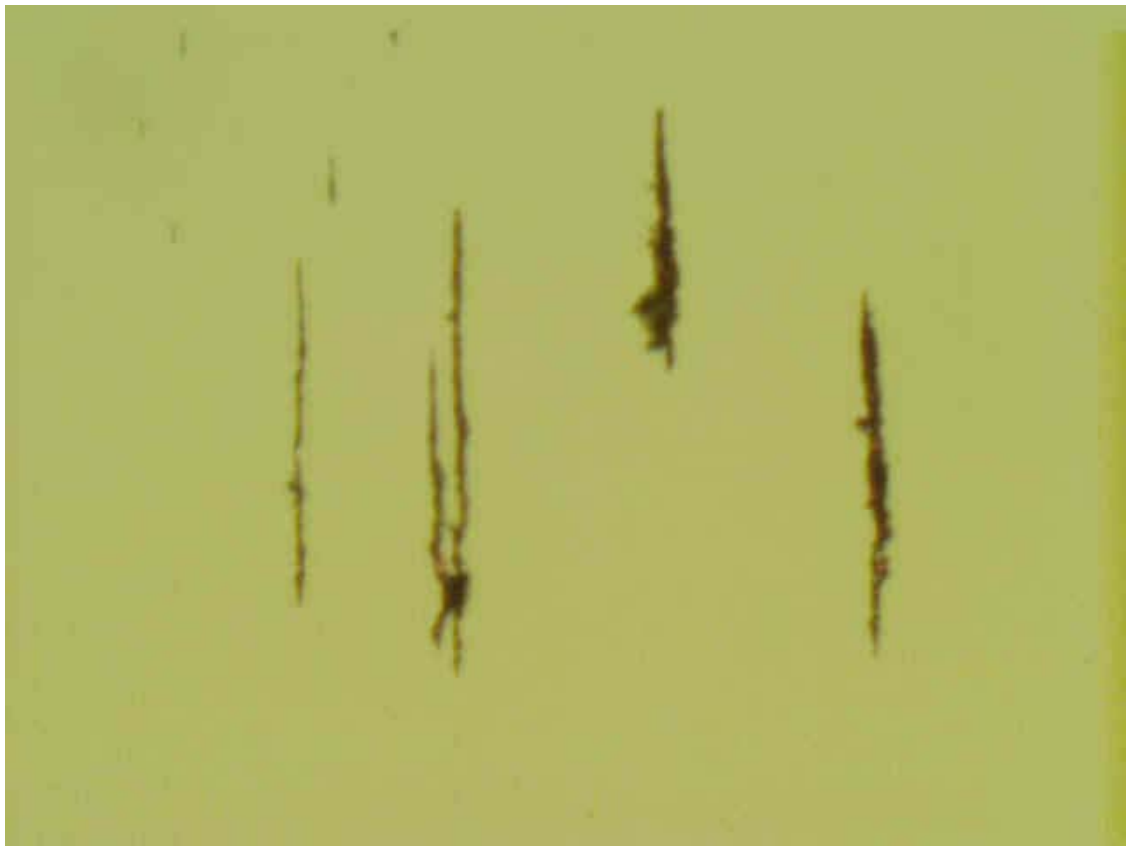
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	7/5/05	90156	1000 hours	6858 miles plus 1000 hours	500x	73432 90156	Entry
Comments	Ferrogram from the bypass filter cross section shows a light amount of fine (<10µm) ferrous particulate, typical of normal operating condition. A discrete fatigue particle, measuring 29 µm, and a discrete copper alloy laminar particle, measuring 132 µm, are noted. Please see attached images.							
Special Features	A discrete fatigue particle, measuring 29 µm							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Filter	7/5/05	90156	1000 hours	6858 miles plus 1000 hours	500x	73432 90156	Entry
Comments	Ferrogram from the bypass filter cross section shows a light amount of fine (<10µm) ferrous particulate, typical of normal operating condition. A discrete fatigue particle, measuring 29 µm, and a discrete copper alloy laminar particle, measuring 132 µm, are noted. Please see attached images.							
Special Features	Soot or dark metallo oxide particles							

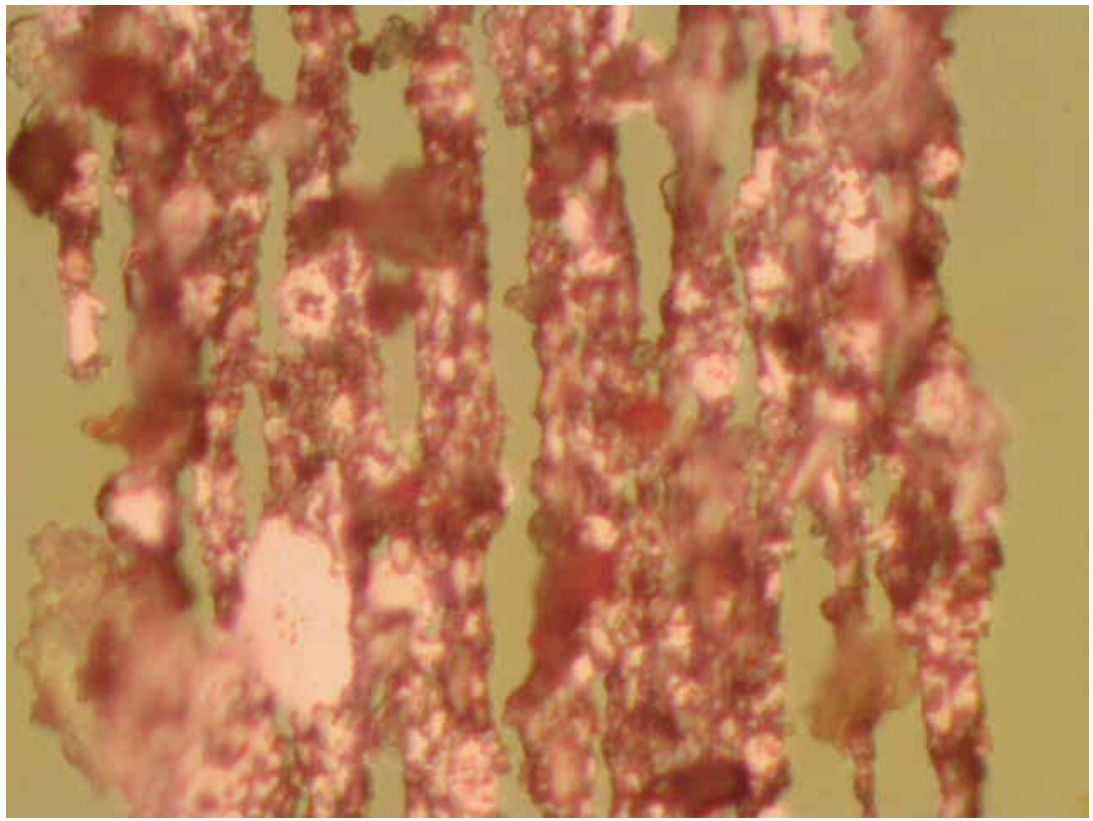


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	7/5/05	90158	1000 hours	6858 miles plus 1000 hours	100x	73432 90158	Entry
Comments	Ferrogram from the full flow filter cross section shows a moderate amount of fine (<10µm) ferrous particulate, consistent with normal operation. A discrete 28 µm aluminum laminar particle is present, but is not considered problematic at this time. Please see attached images. Continue to monitor.							
Special Features	Shows a moderate amount of fine ferrous particulate.							

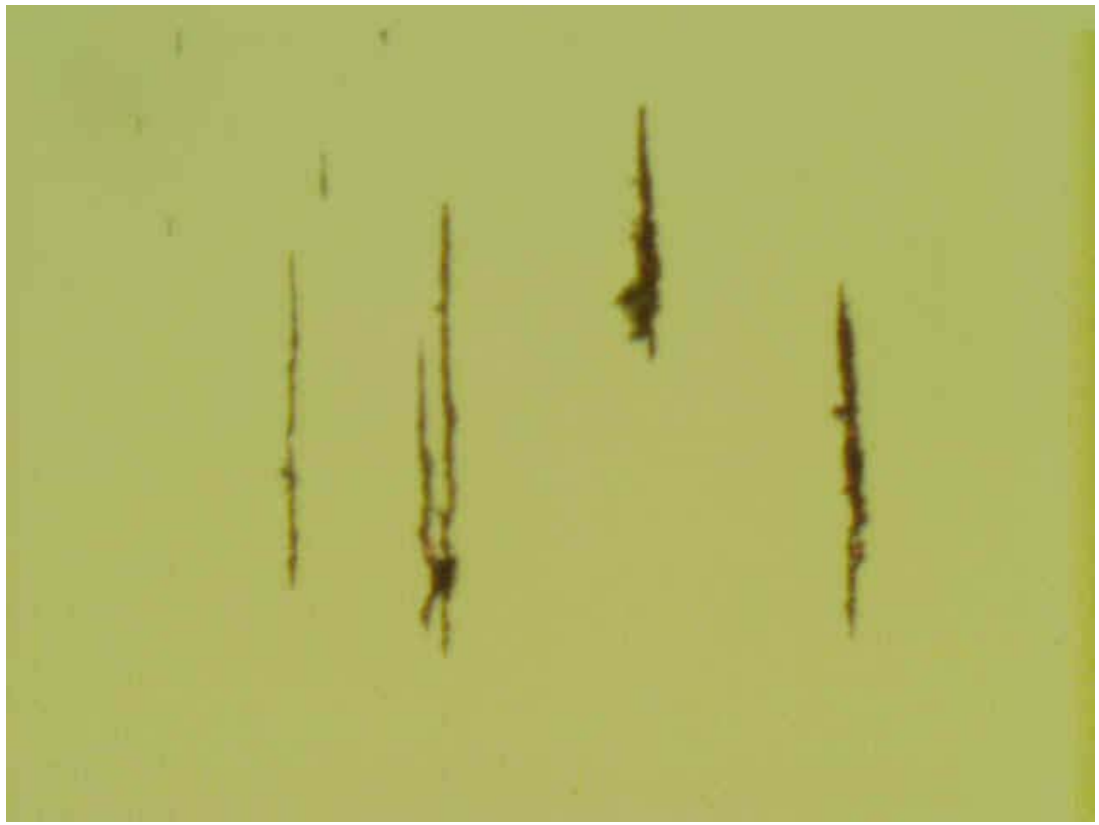


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	7/5/05	90158	1000 hours	6858 miles plus 1000 hours	500x	73432 90158	Entry
Comments	Ferrogram from the full flow filter cross section shows a moderate amount of fine (<10µm) ferrous particulate, consistent with normal operation. A discrete 28 µm aluminum laminar particle is present, but is not considered problematic at this time. Please see attached images. Continue to monitor.							
Special Features	A discrete 28 µm aluminum laminar particle noted.							

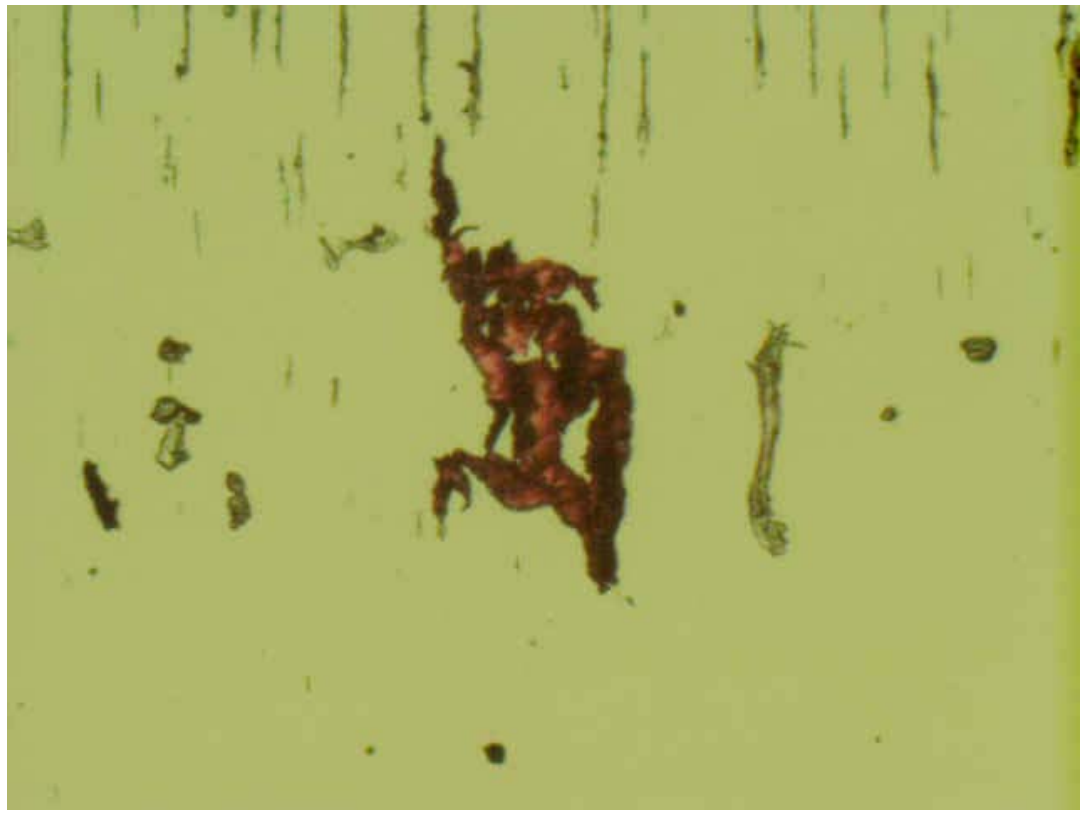
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Filter	7/5/05	90158	1000 hours	6858 miles plus 1000 hours	500x	73432 90158	Entry
Comments	Ferrogram from the full flow filter cross section shows a moderate amount of fine (<10µm) ferrous particulate, consistent with normal operation. A discrete 28 µm aluminum laminar particle is present, but is not considered problematic at this time. Please see attached images. Continue to monitor.							
Special Features	Rubbing wear with sand/dirt particulates and oxides							



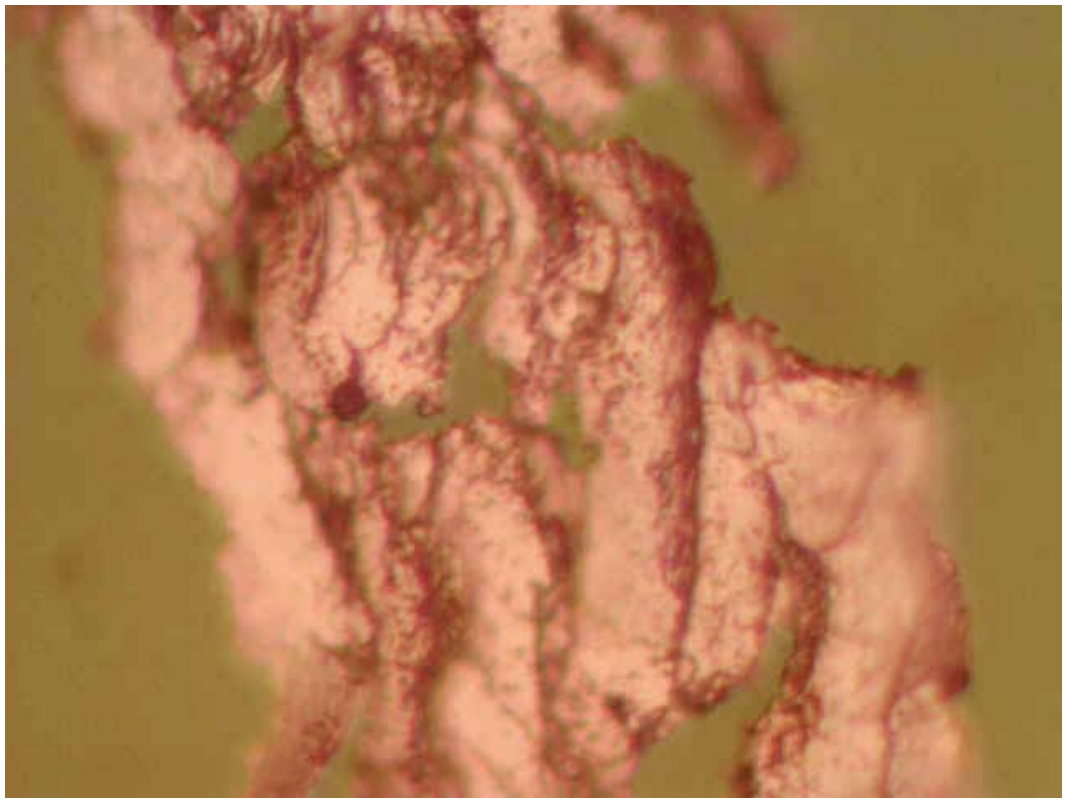
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	7/5/05	90157	1000 hours	6858 miles plus 1000 hours	100x	73432 90157	Entry
Comments	Ferrogram of the bypass filter residue shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A discrete 200 µm ferrous and a discrete 44 µm aluminum laminar particle are noted. Please see attached images. Continue to monitor per schedule.							
Special Features	Shows a light amount of fine ferrous particulate, typical of normal rubbing wear.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	7/5/05	90157	1000 hours	6858 miles plus 1000 hours	100x	73432 90157	Entry
Comments	Ferrogram of the bypass filter residue shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A discrete 200 µm ferrous and a discrete 44 µm aluminum laminar particle are noted. Please see attached images. Continue to monitor per schedule.							
Special Features	A discrete 200 µm ferrous laminar particle with sand/dirt debris.							

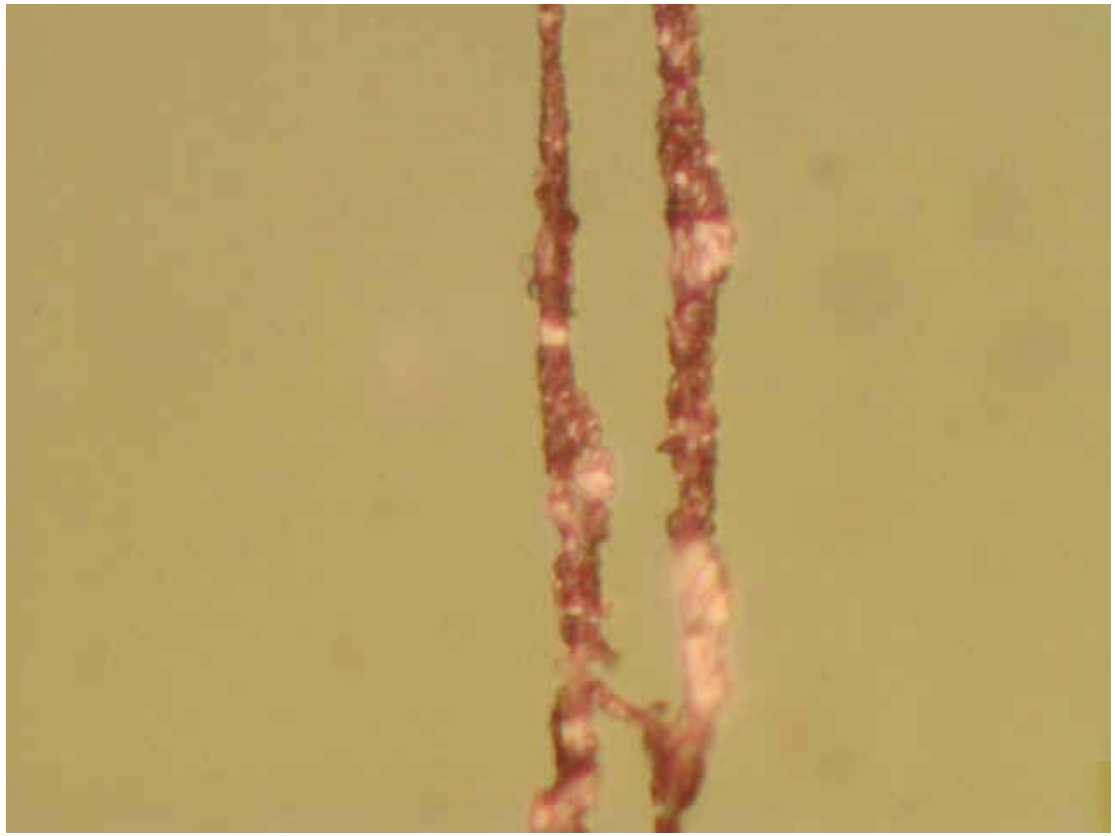


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	7/5/05	90157	1000 hours	6858 miles plus 1000 hours	500x	73432 90157	Entry
Comments	Ferrogram of the bypass filter residue shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A discrete 200 µm ferrous and a discrete 44 µm aluminum laminar particle are noted. Please see attached images. Continue to monitor per schedule.							
Special Features	A discrete 200 µm ferrous laminar particle noted.							

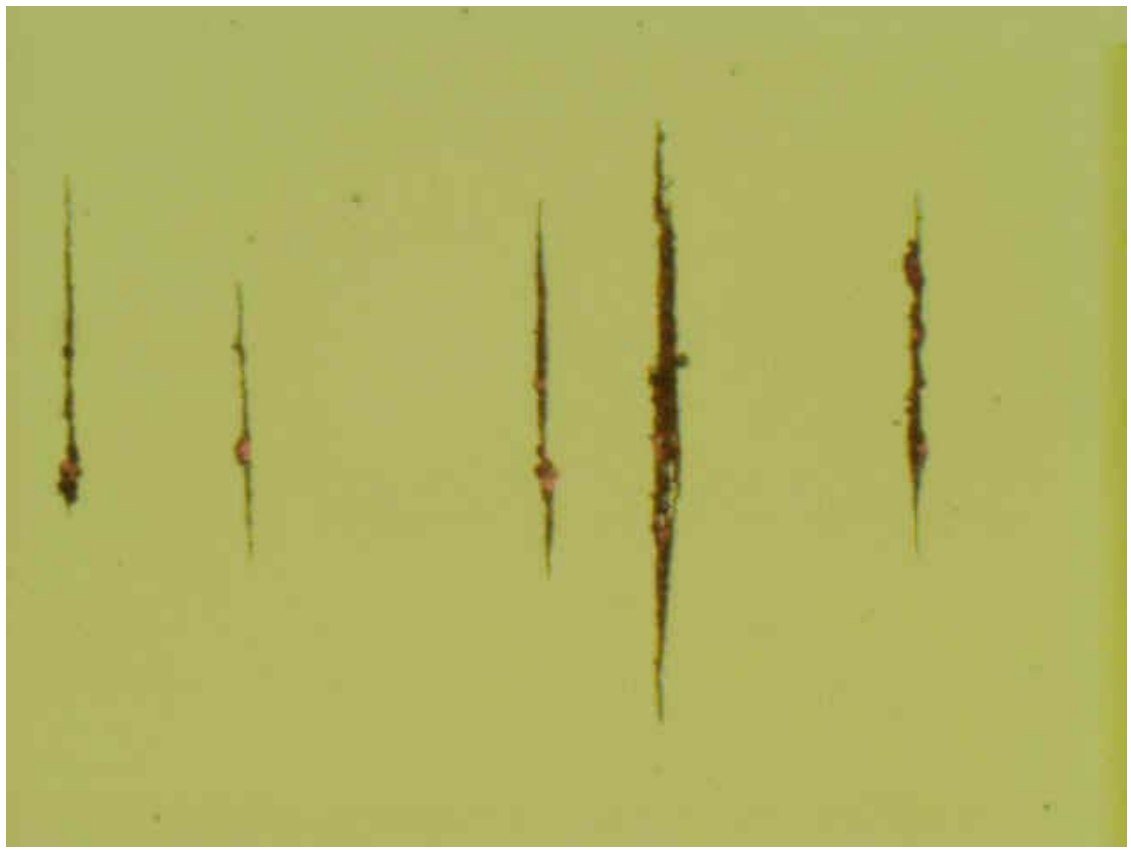


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	7/5/05	90157	1000 hours	6858 miles plus 1000 hours	500x	73432 90157	Entry
Comments	Ferrogram of the bypass filter residue shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A discrete 200 µm ferrous and a discrete 44 µm aluminum laminar particle are noted. Please see attached images. Continue to monitor per schedule.							
Special Features	A discrete 44 µm aluminum laminar particle noted.							

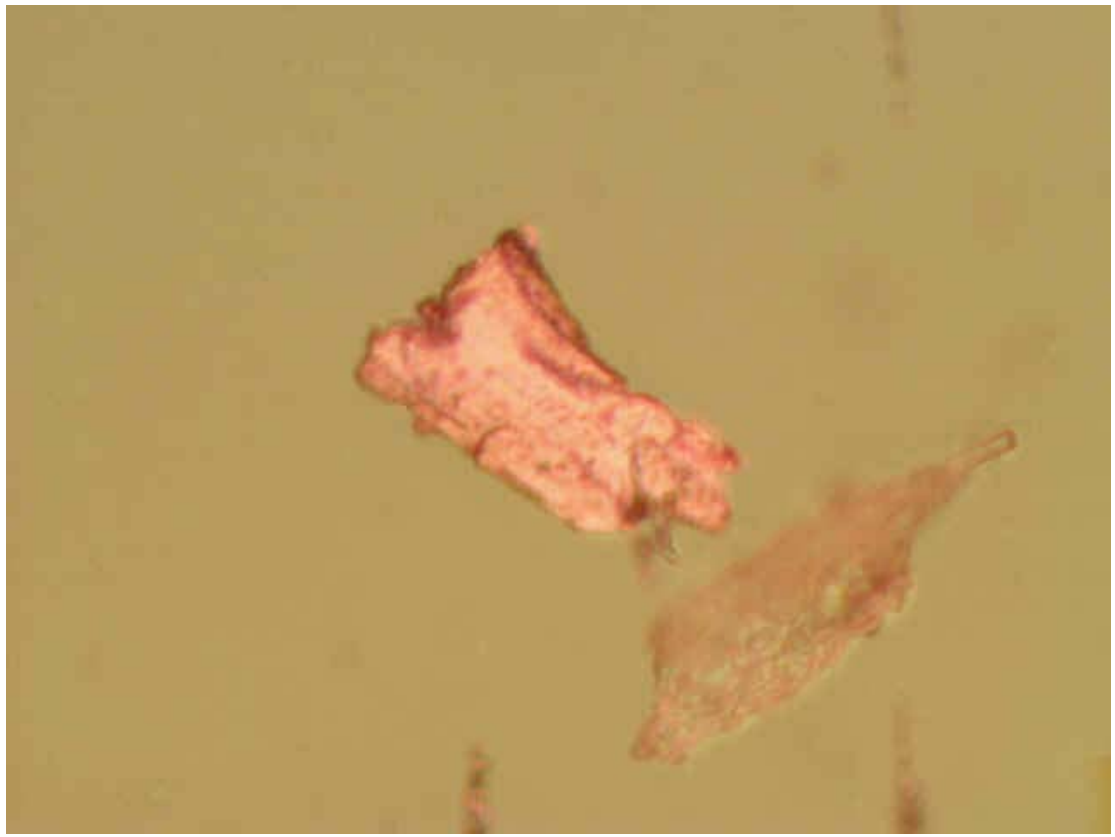
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Bypass Residual	7/5/05	90157	1000 hours	6858 miles plus 1000 hours	500x	73432 90157	Entry
Comments	Ferrogram of the bypass filter residue shows a light amount of fine ferrous particulate, typical of normal rubbing wear. A discrete 200 µm ferrous and a discrete 44 µm aluminum laminar particle are noted. Please see attached images. Continue to monitor per schedule.							
Special Features	Rubbing wear							



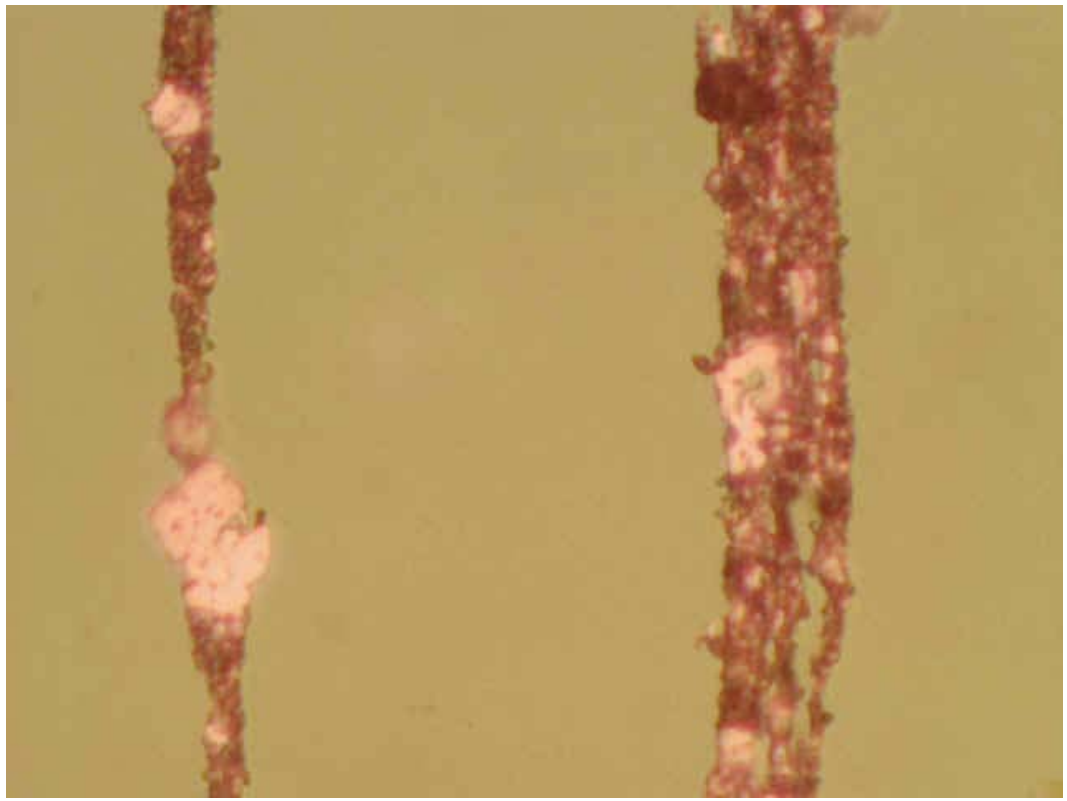
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	7/5/05	90159	1000 hours	6858 miles plus 1000 hours	100x	73432 90159	Entry
Comments	Ferrographic analysis of the full flow filter residue shows a light amount of fine (<10 µm) particulate, typical of normal rubbing wear. A discrete 30 µm laminar copper particle is noted, but is not considered problematic at this time. Please see attached images. Continue to monitor.							
Special Features	Shows a light amount of fine (<10 µm) particulate, typical of normal rubbing wear.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	7/5/05	90159	1000 hours	6858 miles plus 1000 hours	500x	73432 90159	Entry
Comments	Ferrographic analysis of the full flow filter residue shows a light amount of fine (<10 µm) particulate, typical of normal rubbing wear. A discrete 30 µm laminar copper particle is noted, but is not considered problematic at this time. Please see attached images. Continue to monitor.							
Special Features	A discrete 30 µm laminar copper particle noted.							

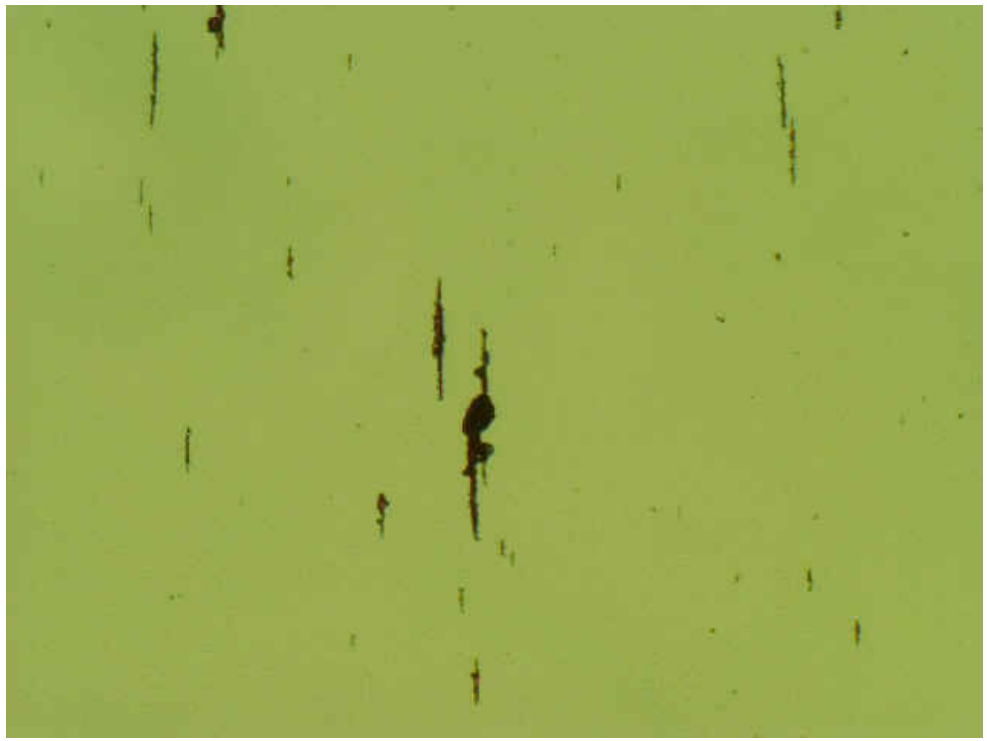


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73432	Full Flow Residual	7/5/05	90159	1000 hours	6858 miles plus 1000 hours	500x	73432 90159	Entry
Comments	Ferrographic analysis of the full flow filter residue shows a light amount of fine (<10 µm) particulate, typical of normal rubbing wear. A discrete 30 µm laminar copper particle is noted, but is not considered problematic at this time. Please see attached images. Continue to monitor.							
Special Features	Rubbing wear with laminar particles							

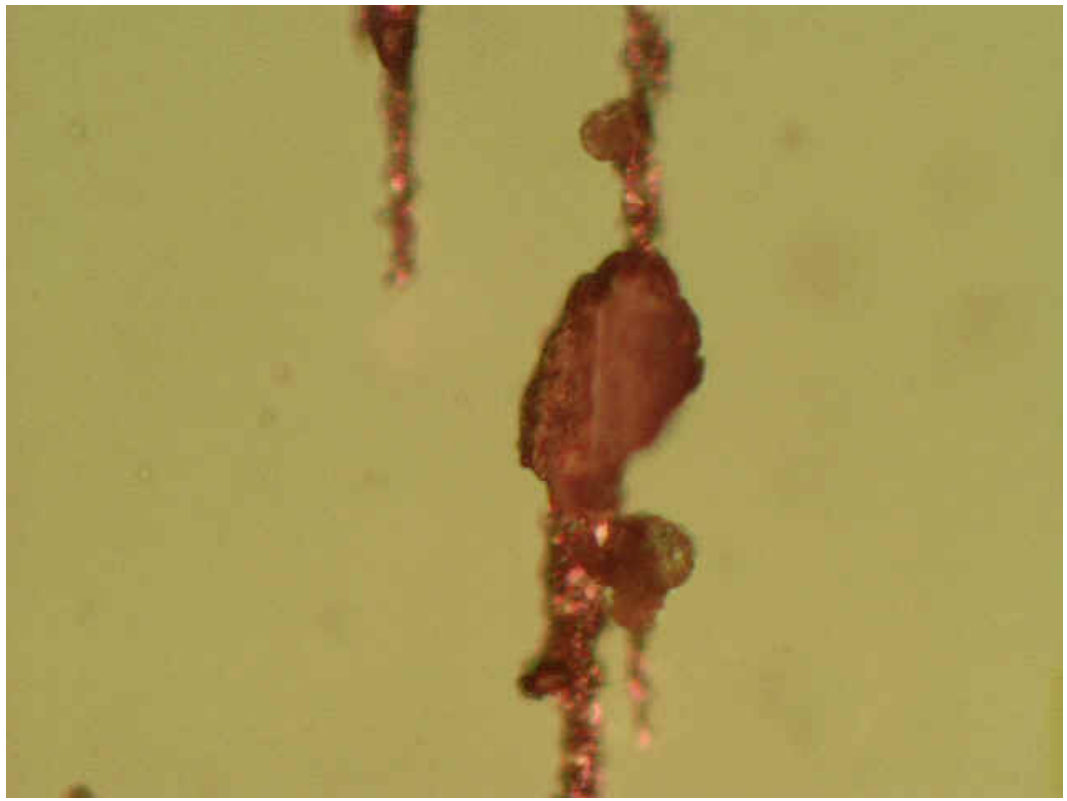


Appendix K-5. Ferrograms – 5,000 miles Bus 73433

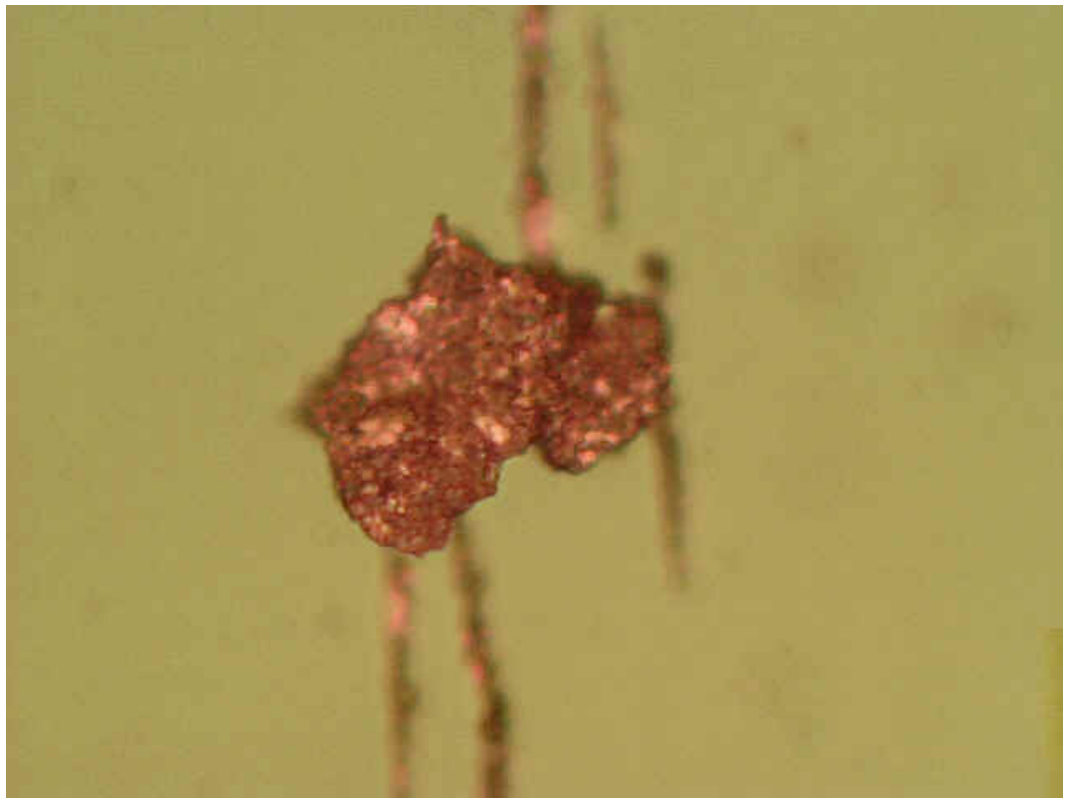
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used oil	4/26/05	89304	@5000 miles	6858 miles	100x	73433 89304	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear with laminar particulates							



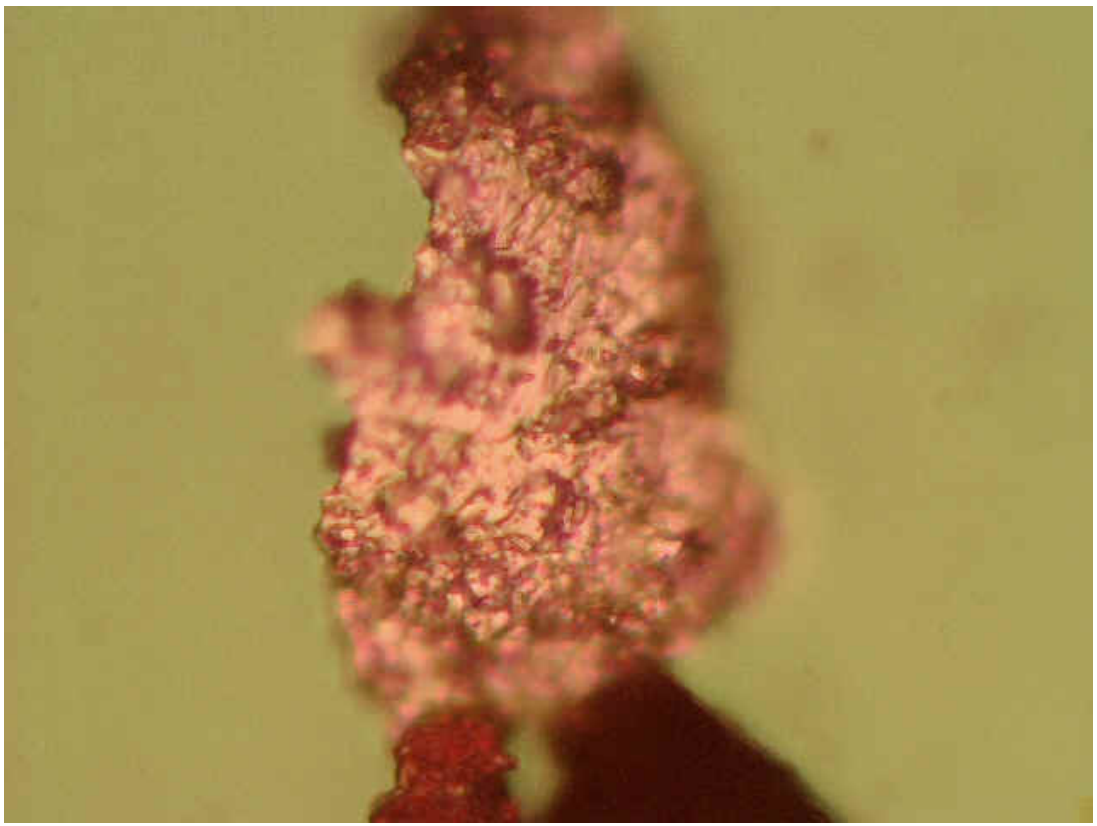
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used oil	4/26/05	89304	@5000 miles	6858 miles	500x	73433 89304	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Laminar particulate on rubbing wear							



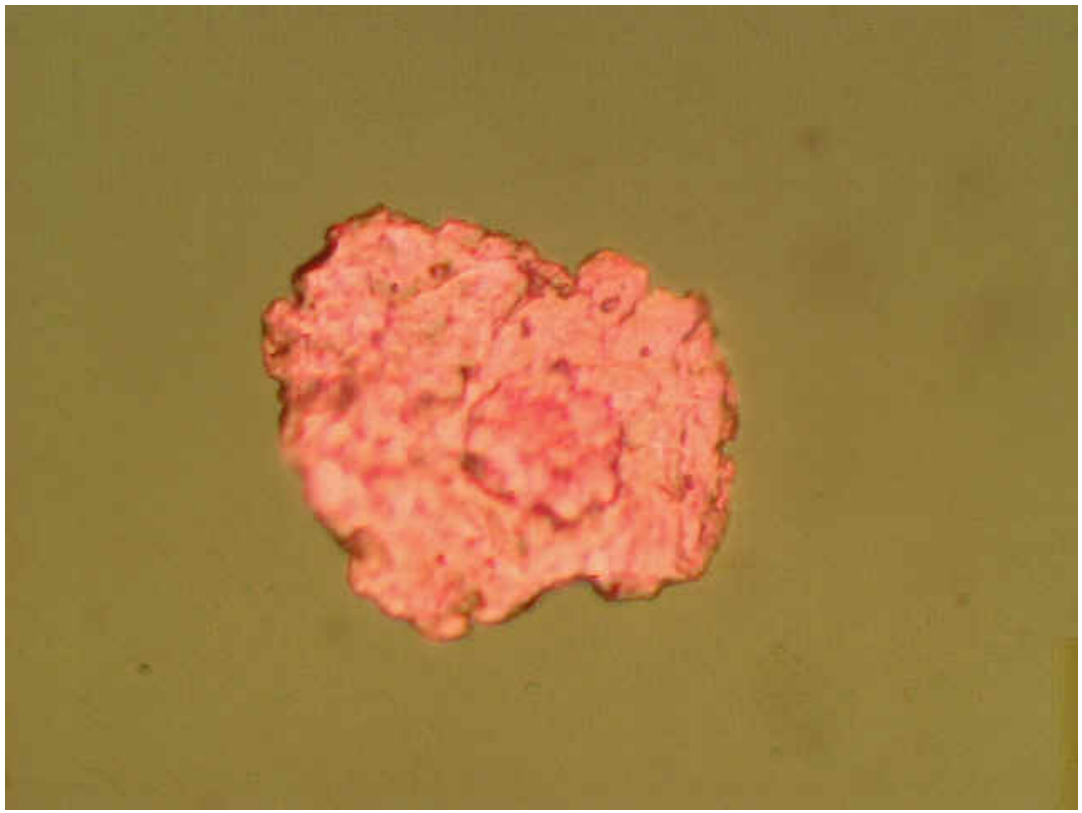
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used oil	4/26/05	89304	@5000 miles	6858 miles	500x	73433 89304	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous fatigue							



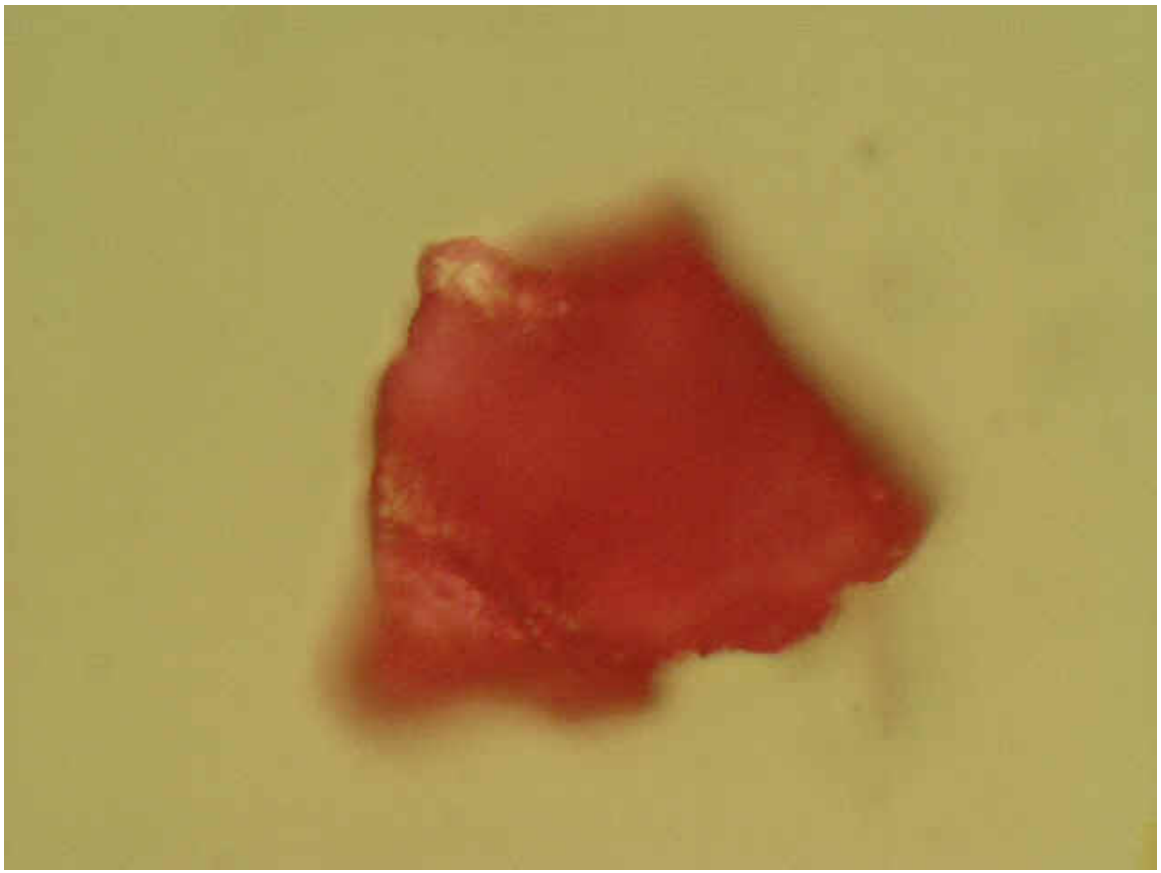
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used oil	4/26/05	89304	@5000 miles	6858 miles	500x	73433 89304	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous fatigue with soot							



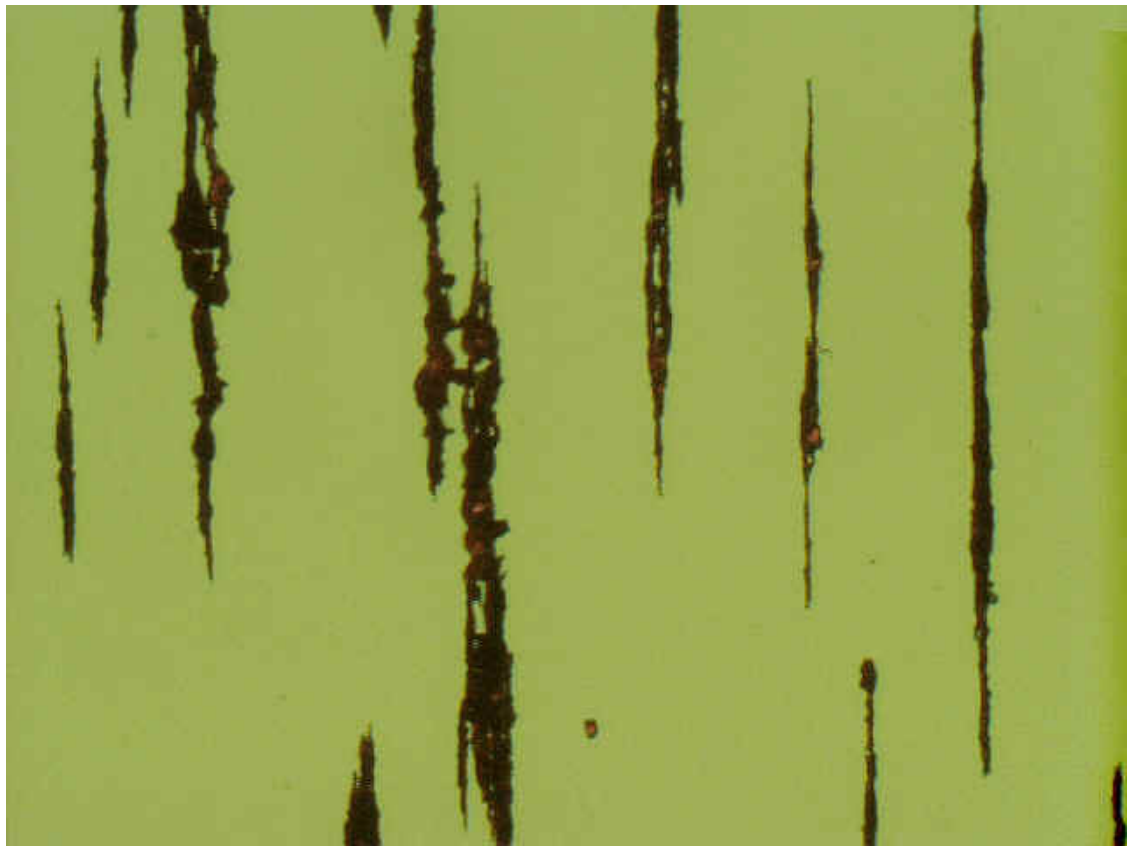
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used oil	4/26/05	89304	@5000 miles	6858 miles	500x	73433 89304	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Non-ferrous laminar particulate							



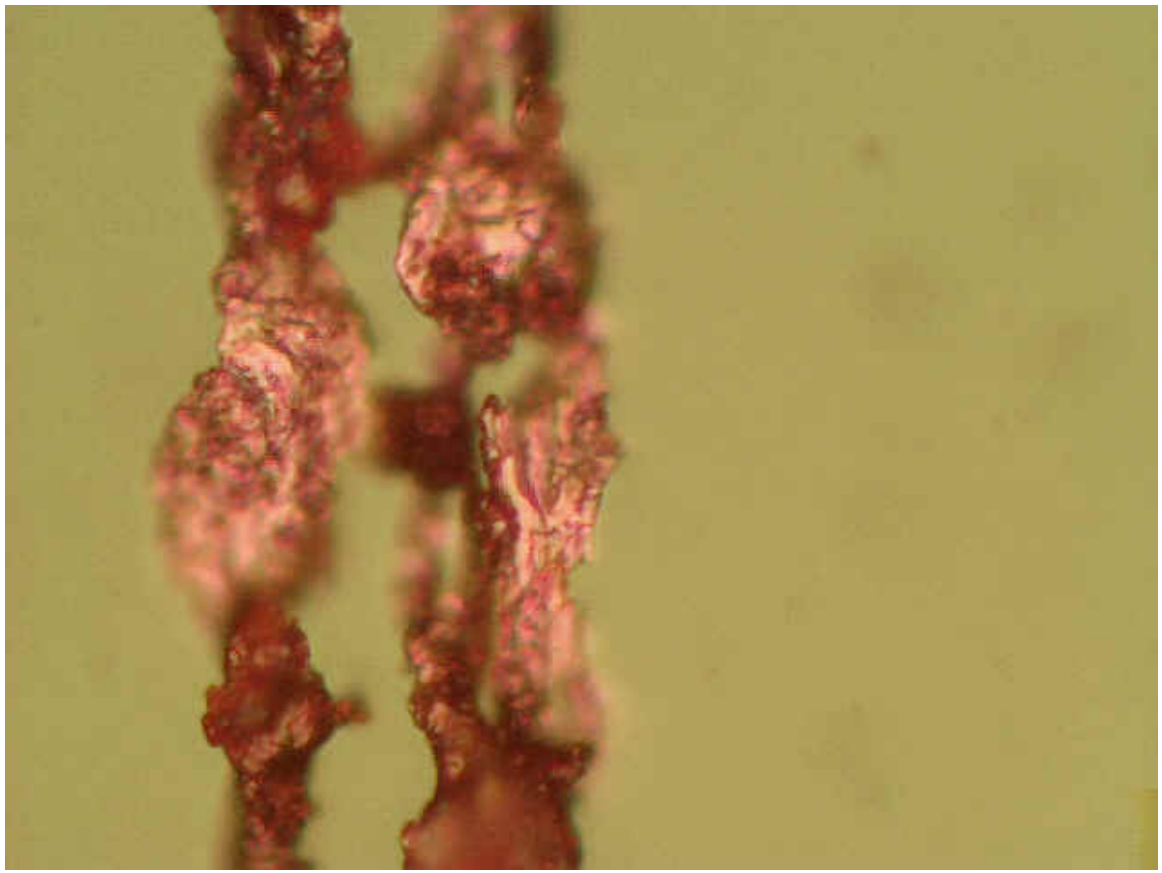
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used oil	4/26/05	89304	@5000 miles	6858 miles	500x	73433 89304	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Sand particle							



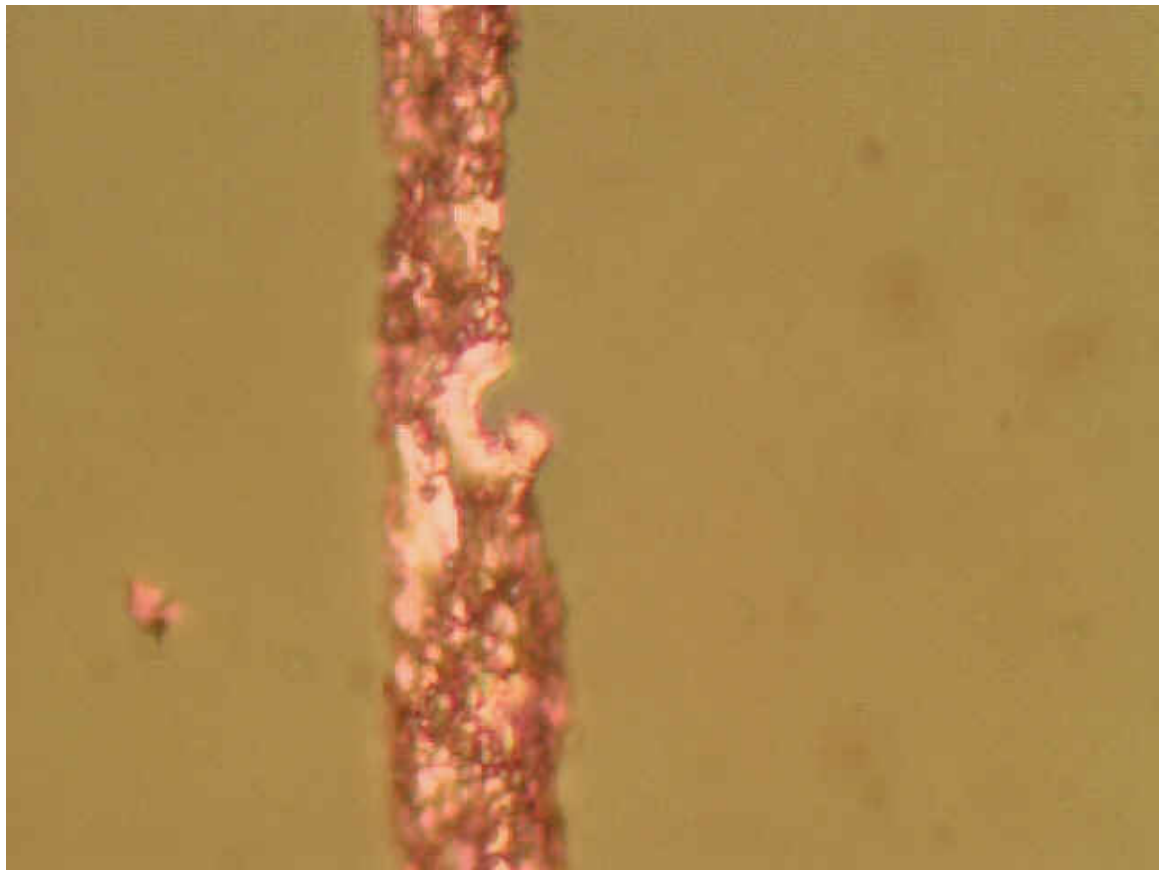
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	4/26/05	89305	@5000 miles	6858 miles	100x	73433 89305	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear							



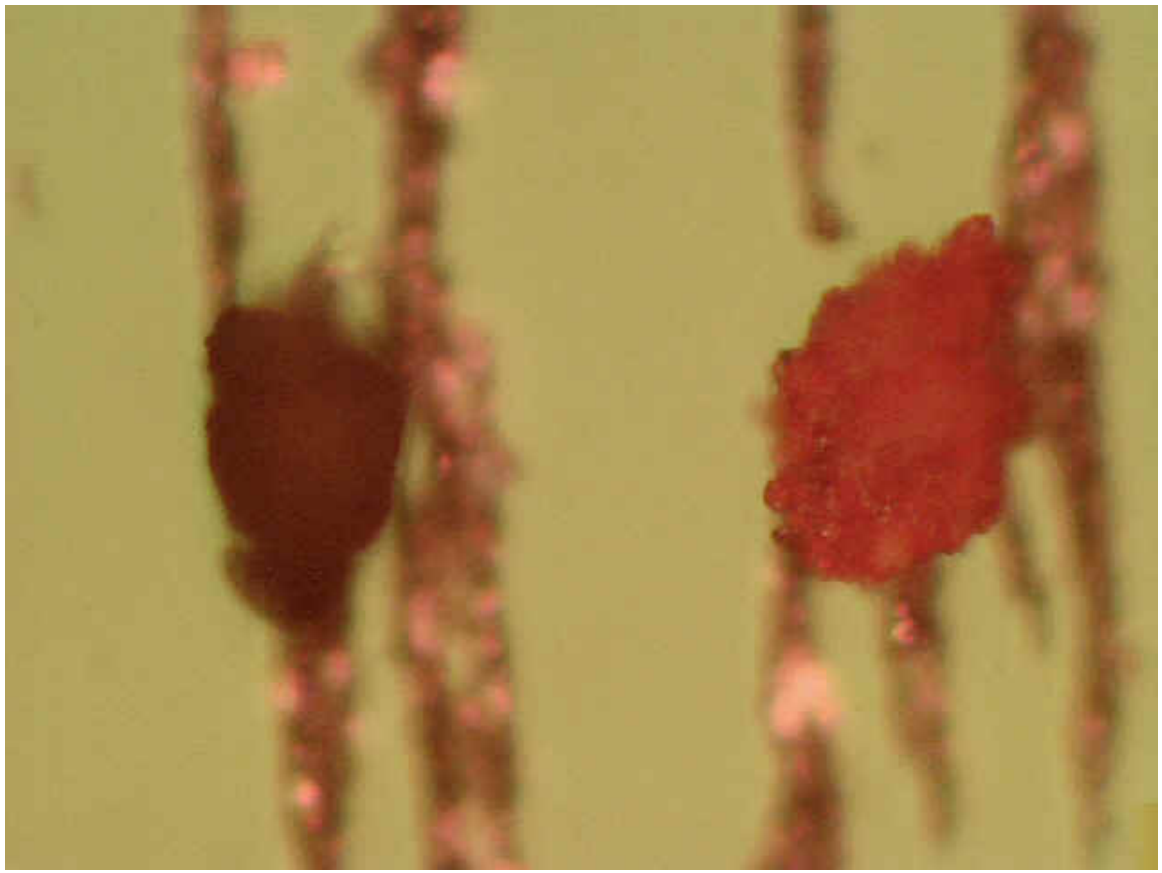
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	4/26/05	89305	@5000 miles	6858 miles	500x	73433 89305	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Fatigue wear particulates							



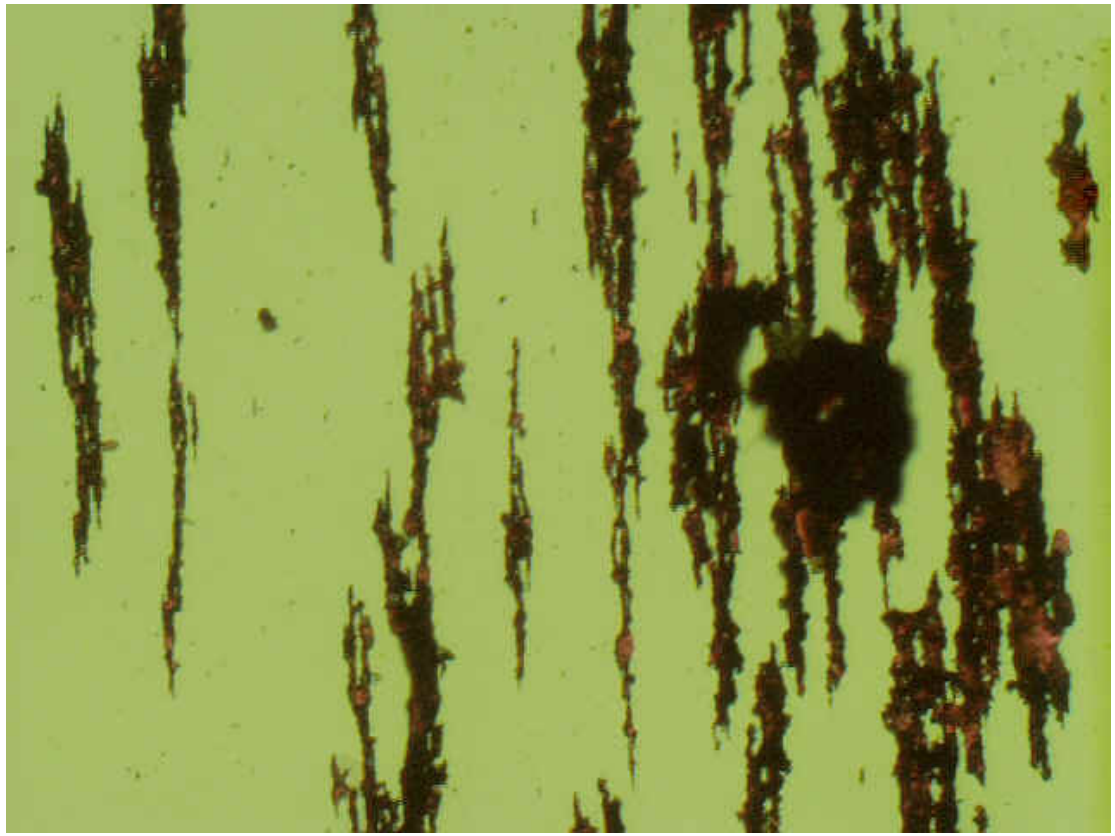
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	4/26/05	89305	@5000 miles	6858 miles	800x	73433 89305	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous Cutting Wear							



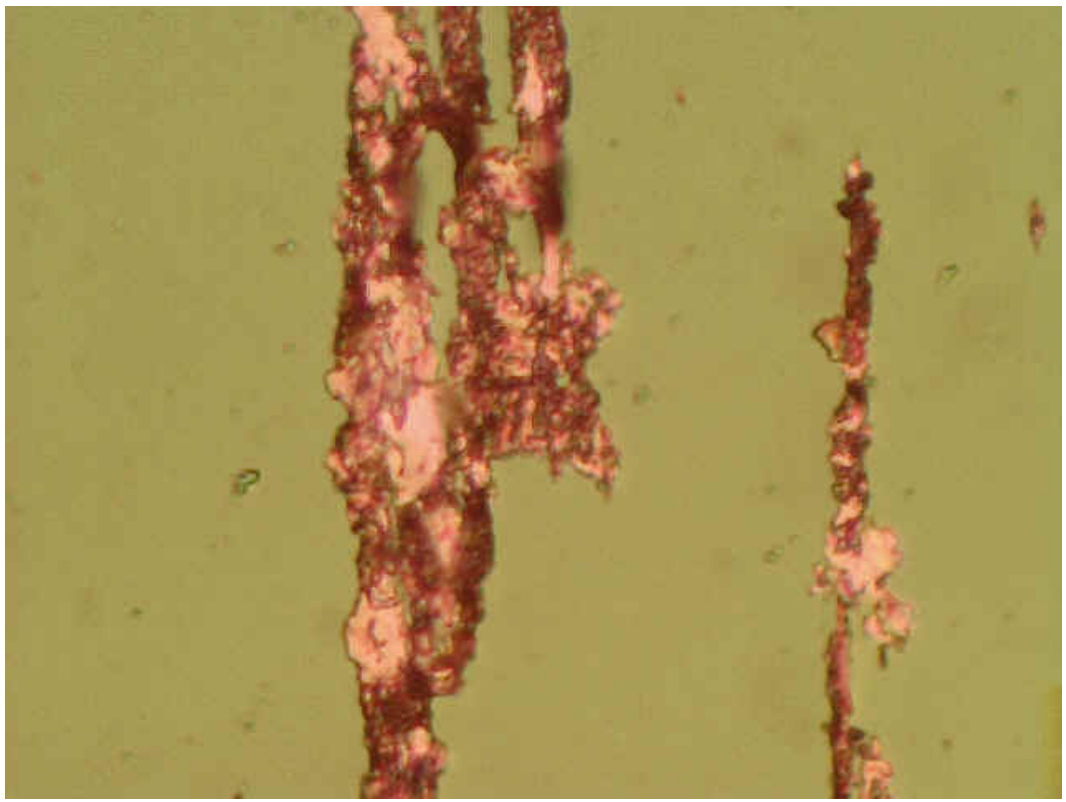
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	4/26/05	89305	@5000 miles	6858 miles	500x	73433 89305	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear with soot and sand							



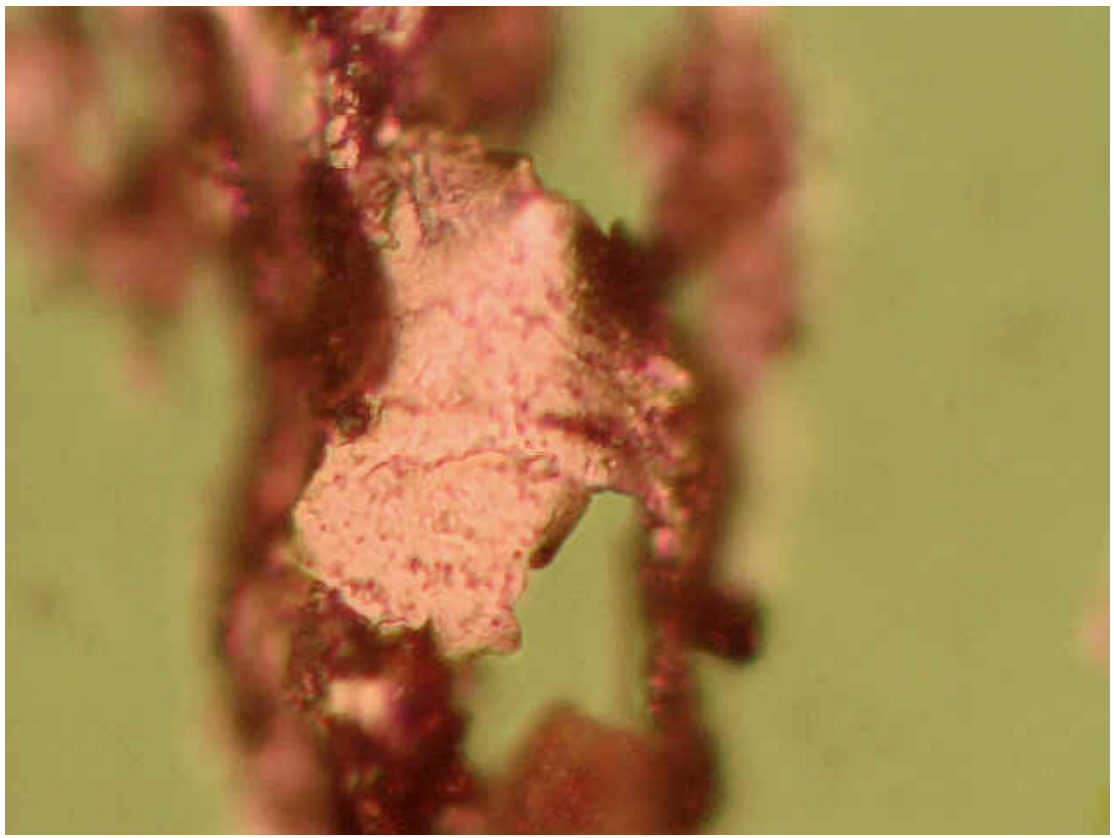
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	4/26/05	89307	@5000 miles	6858 miles	100x	73433 89307	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear with larger non-ferrous laminar particulate							



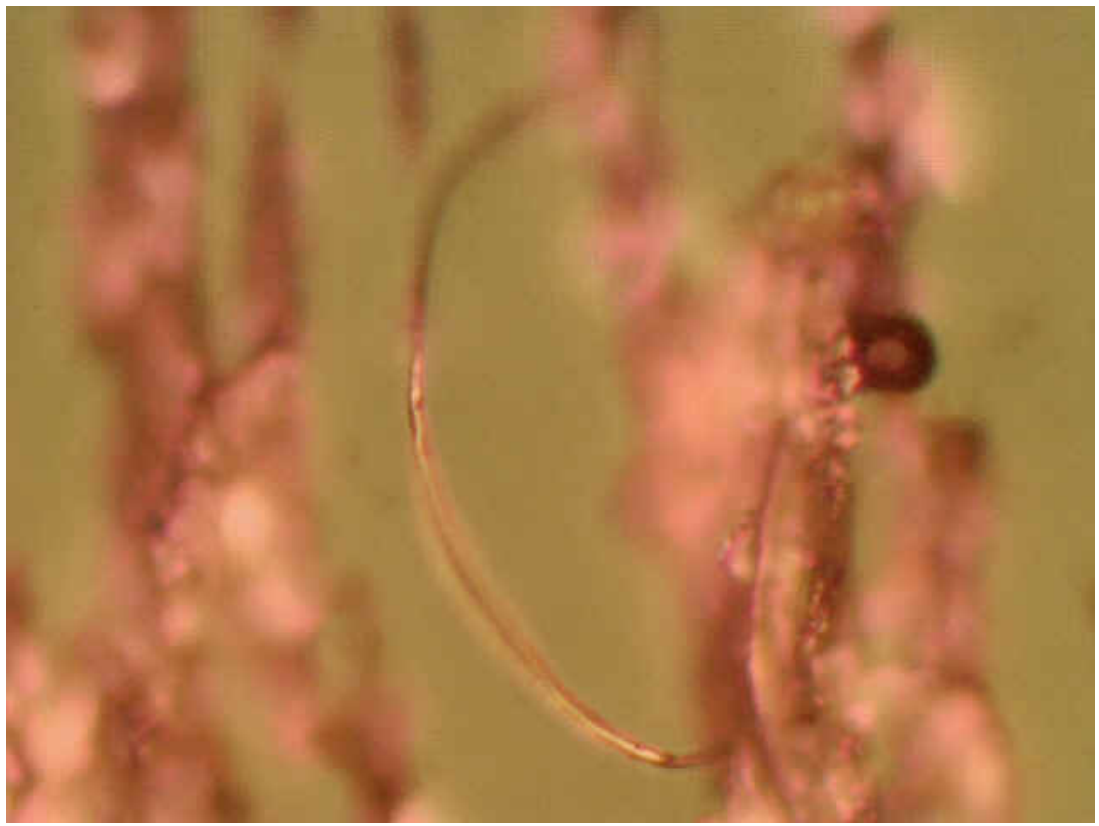
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	4/26/05	89307	@5000 miles	6858 miles	500x	73433 89307	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear							



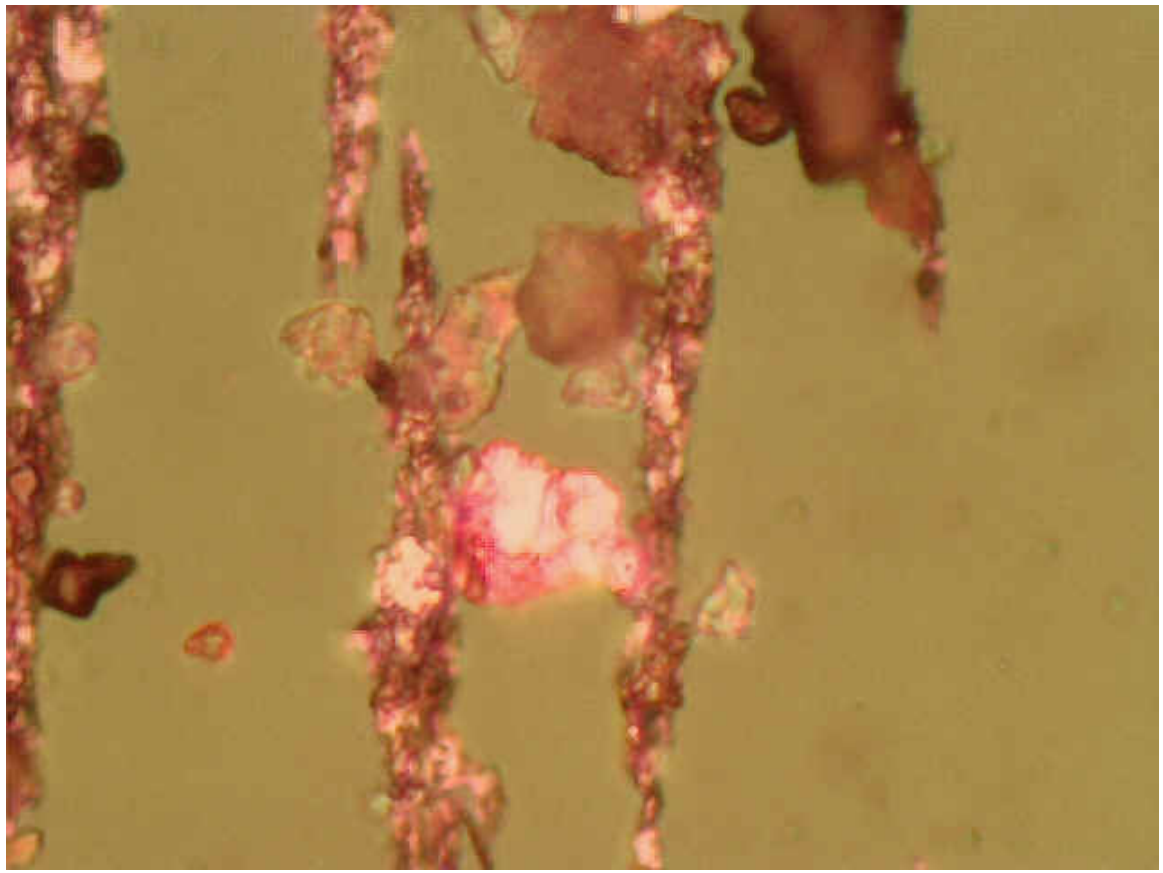
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	4/26/05	89307	@5000 miles	6858 miles	500x	73433 89307	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous laminar wear							



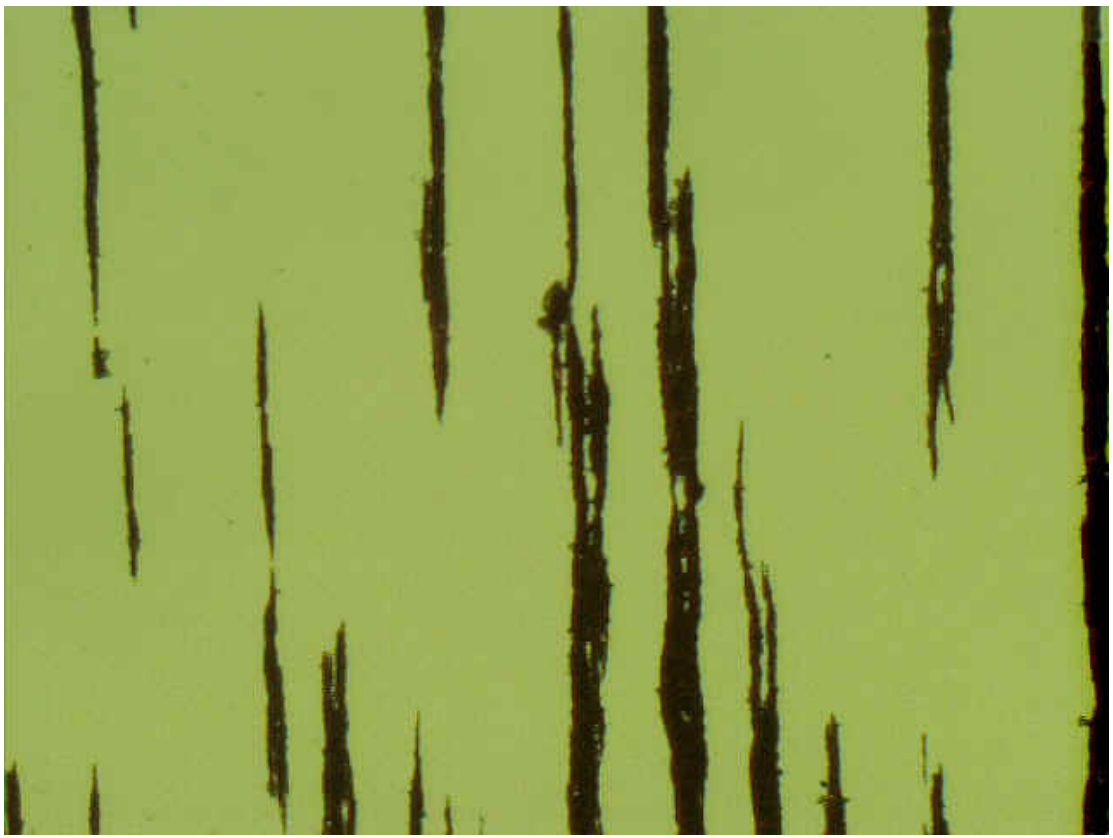
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	4/26/05	89307	@5000 miles	6858 miles	800x	73433 89307	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous Cutting							



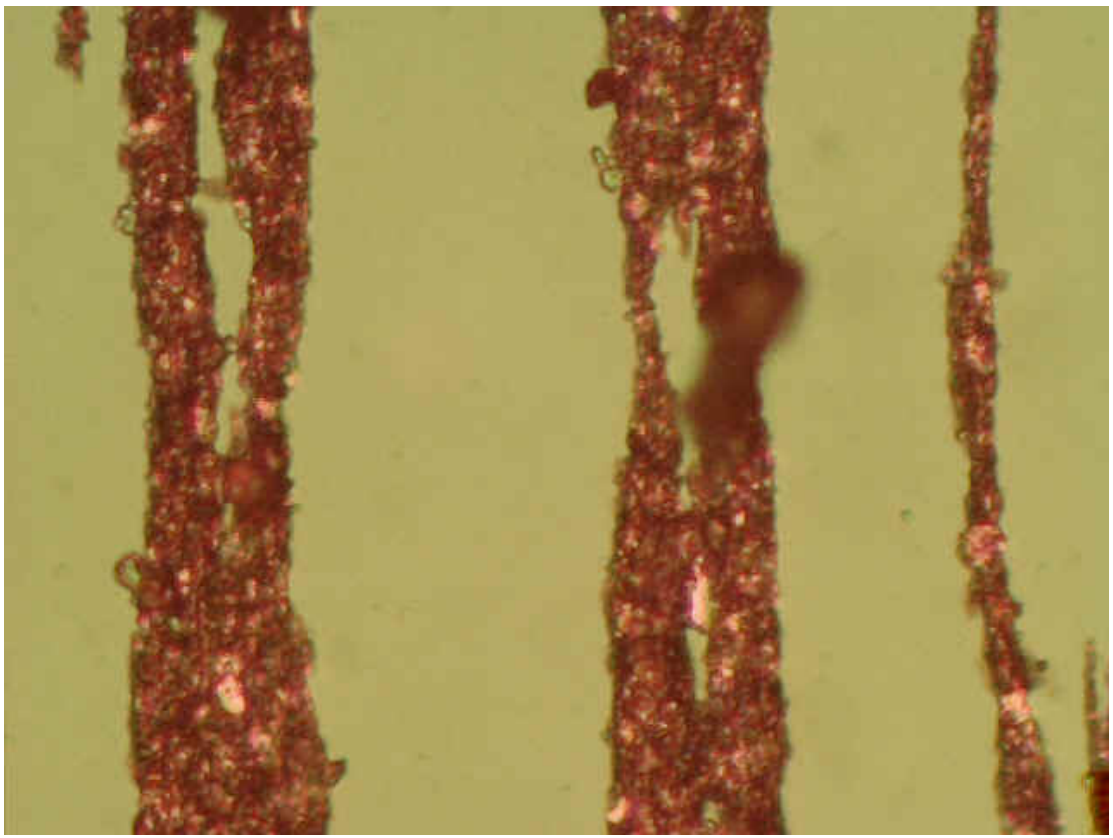
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	4/26/05	89307	@5000 miles	6858 miles	800x	73433 89307	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Dark metallo oxide particles, sand and non ferrous (sand) particle							



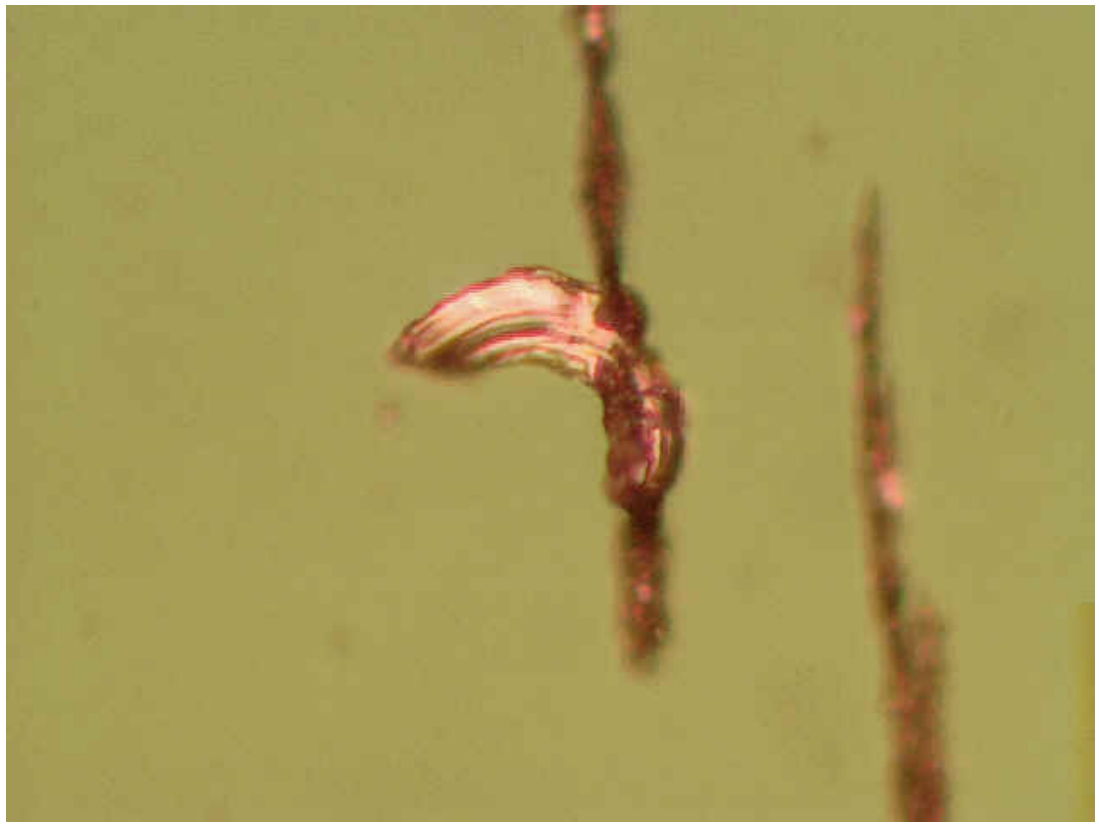
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	4/26/05	89306	@5000 miles	6858 miles	100x	73433 89306	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear							



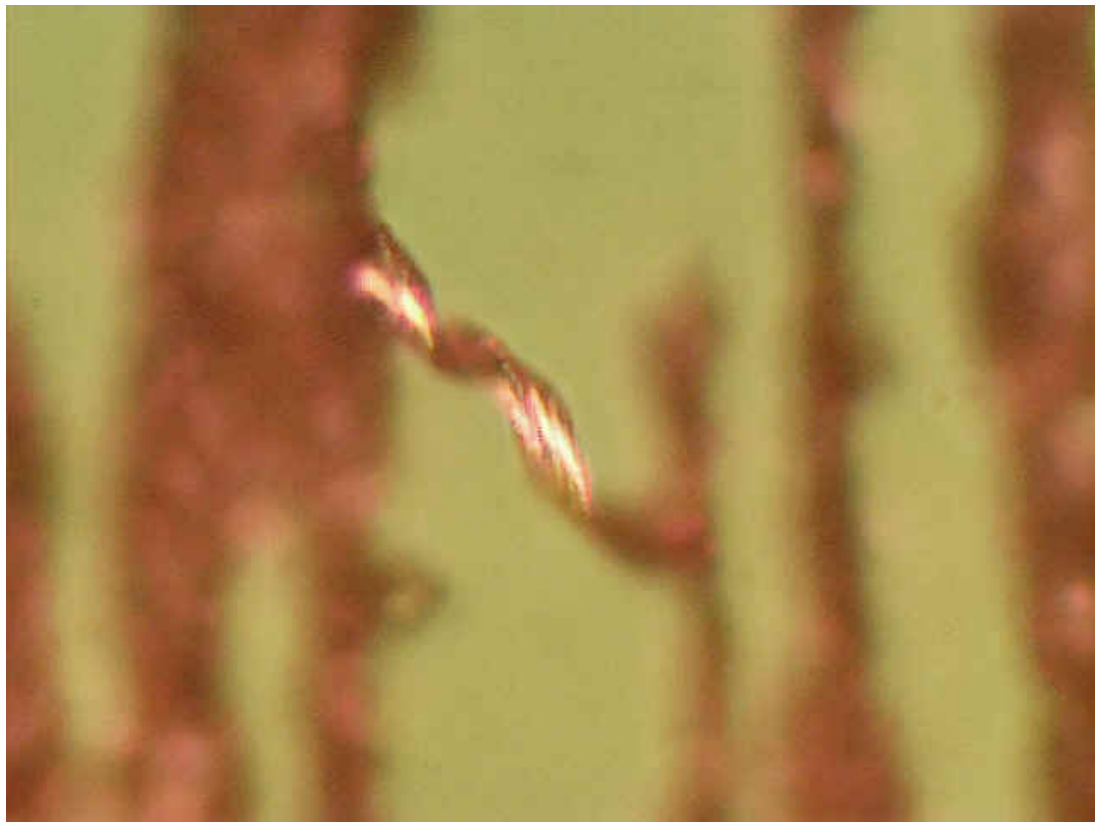
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	4/26/05	89306	@5000 miles	6858 miles	500x	73433 89306	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear and sand/dirt particle							



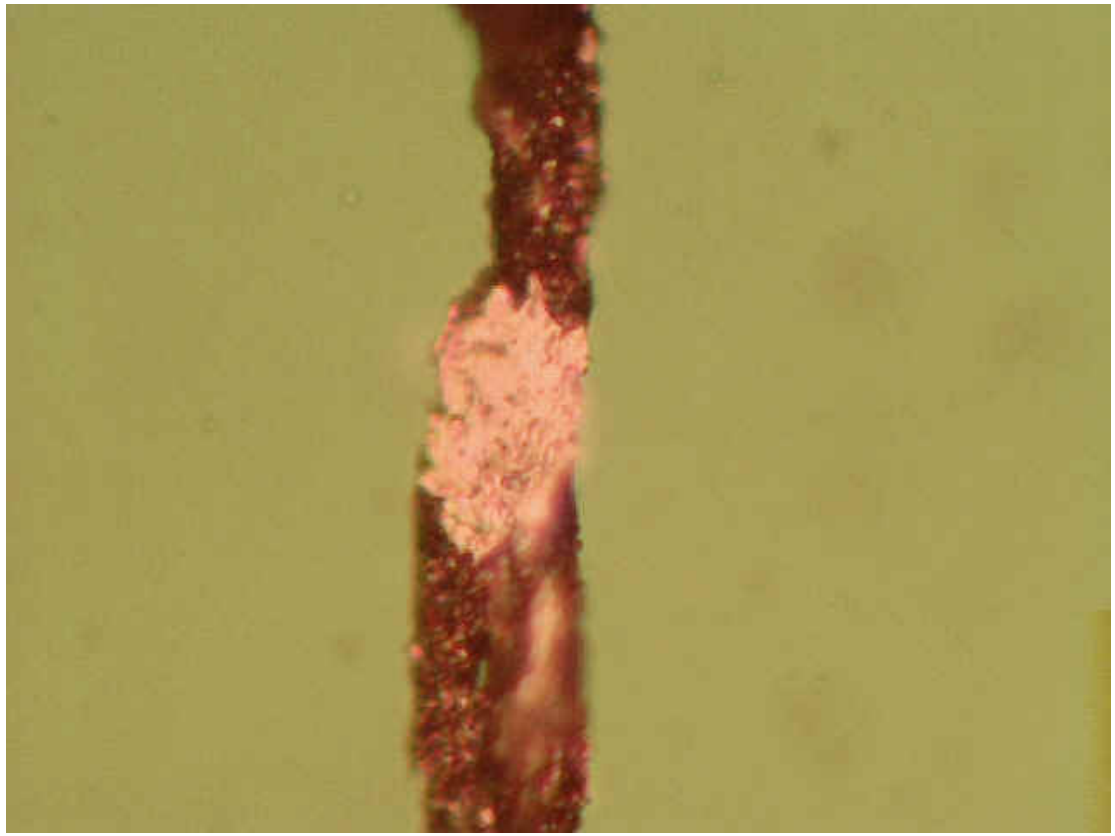
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	4/26/05	89306	@5000 miles	6858 miles	800x	73433 89306	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous Cutting Wear							



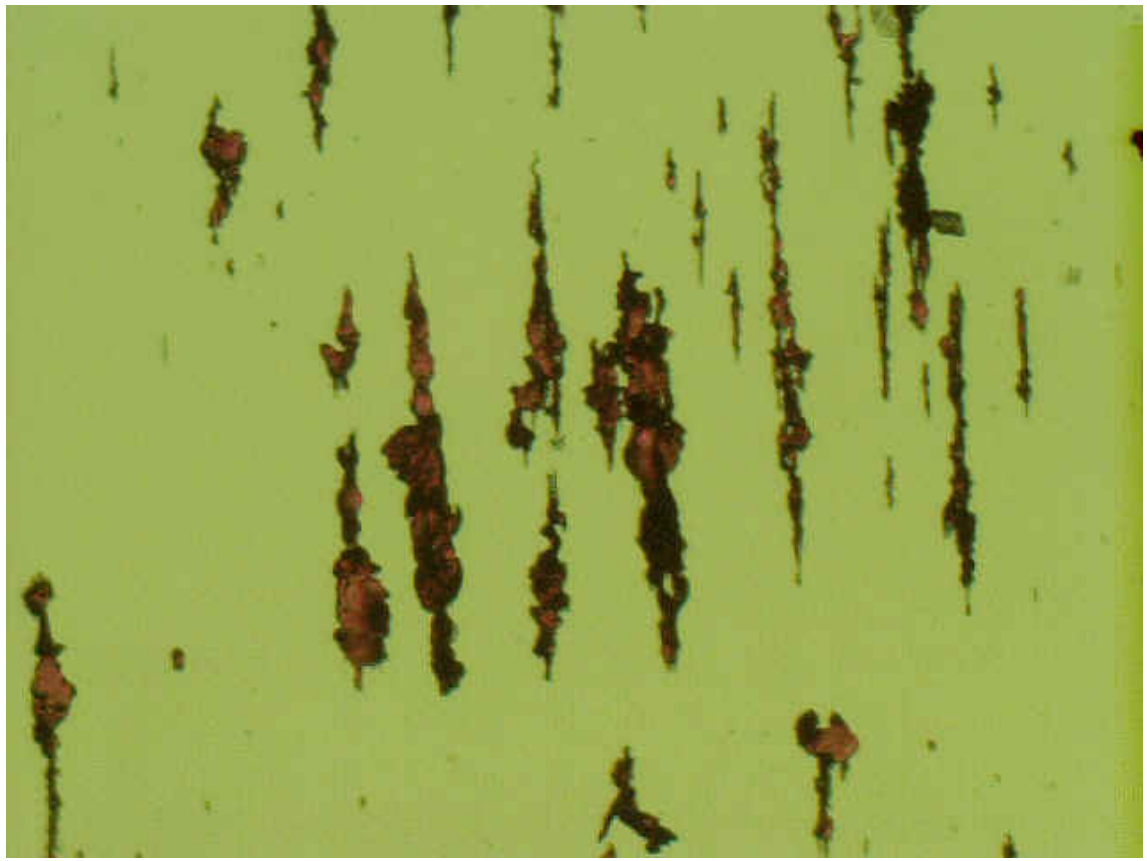
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	4/26/05	89306	@5000 miles	6858 miles	800x	73433 89306	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous Cutting Wear							



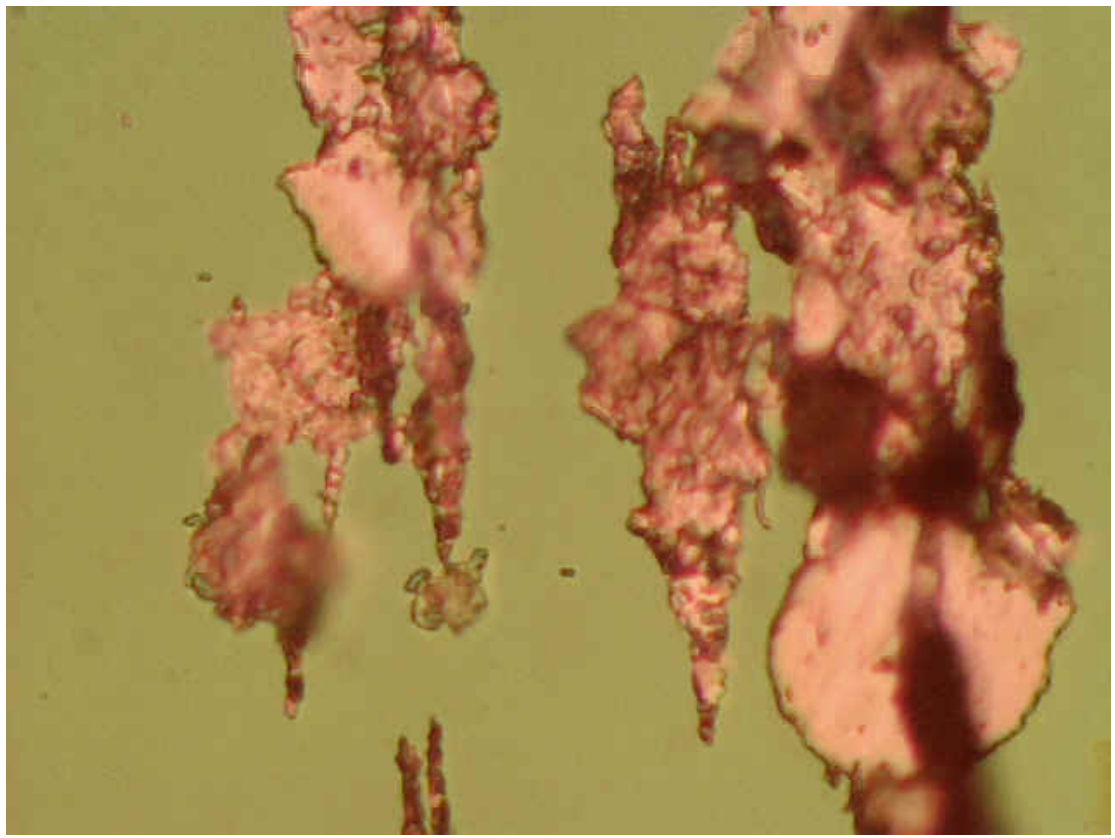
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	4/26/05	89306	@5000 miles	6858 miles	500x	73433 89306	One the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous Laminar							



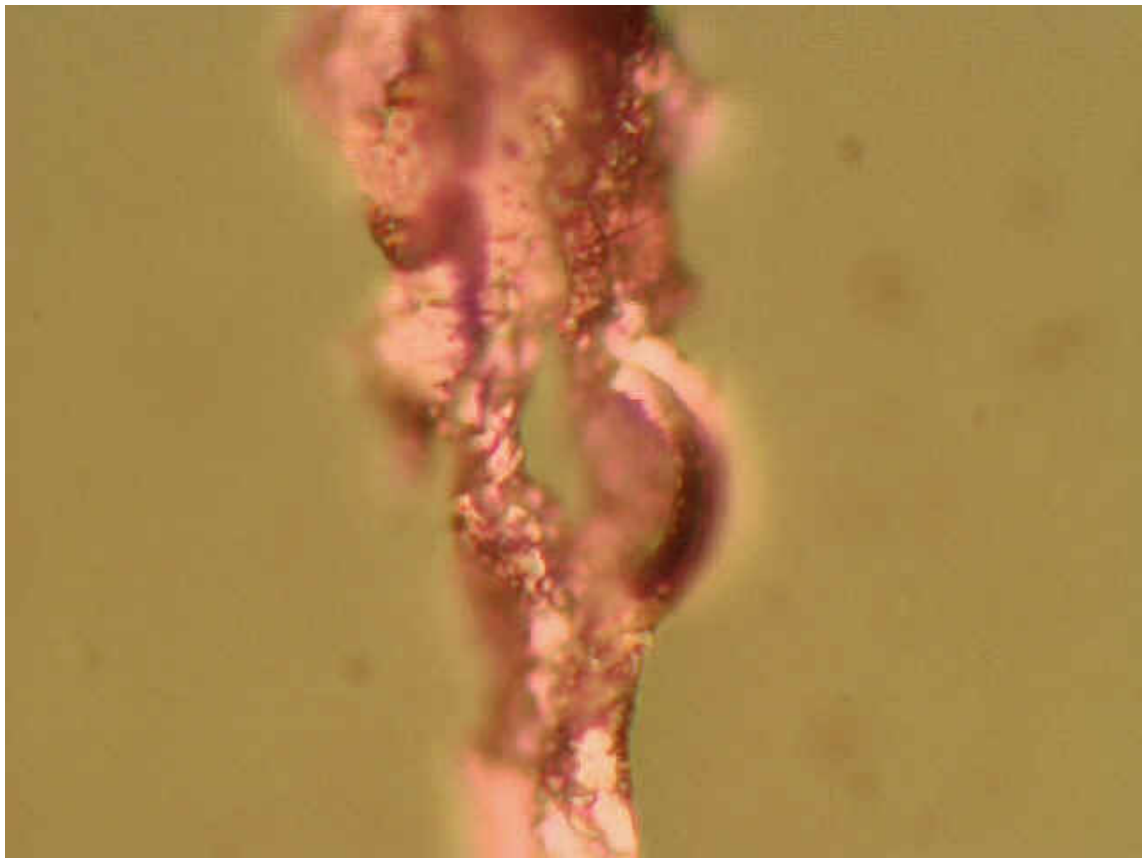
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	4/26/05	89308	@5000 miles	6858 miles	100x	73433 89308	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Rubbing wear with oxides particulates							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	4/26/05	89308	@5000 miles	6858 miles	500x	73433 89308	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Fatigue wear							

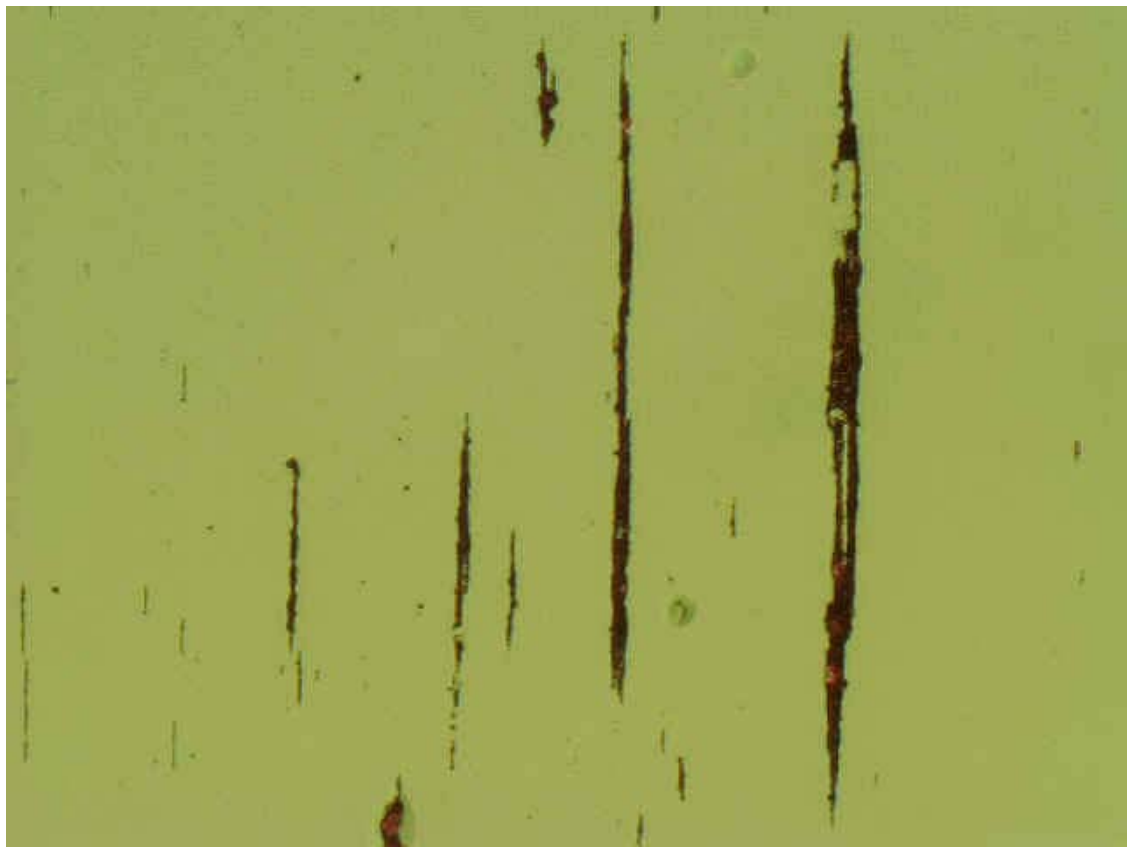


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	4/26/05	89308	@5000 miles	6858 miles	800x	73433 89308	On the slide
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, ferrous fatigue particulate (~50 microns), and ferrous and non-ferrous laminar particulate (~35 microns).							
Special Features	Ferrous Cutting Wear							

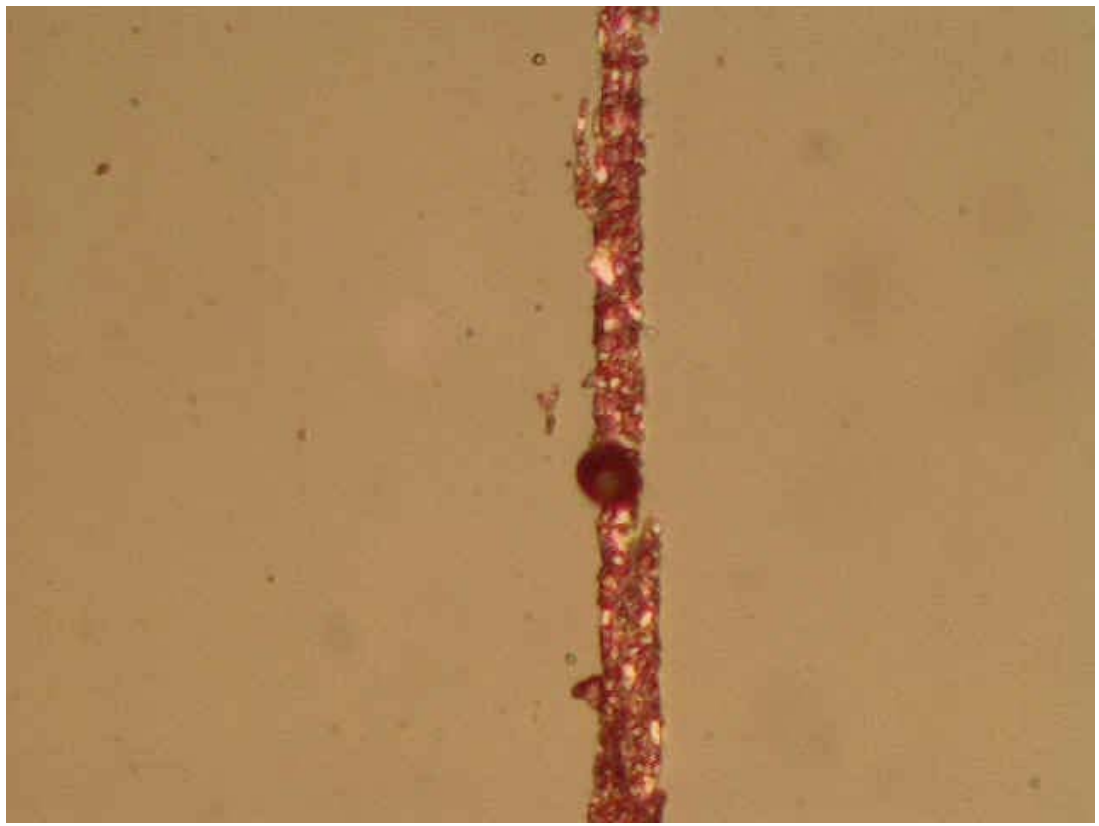


Appendix K-6. Ferrograms – 400 hours Bus 73433

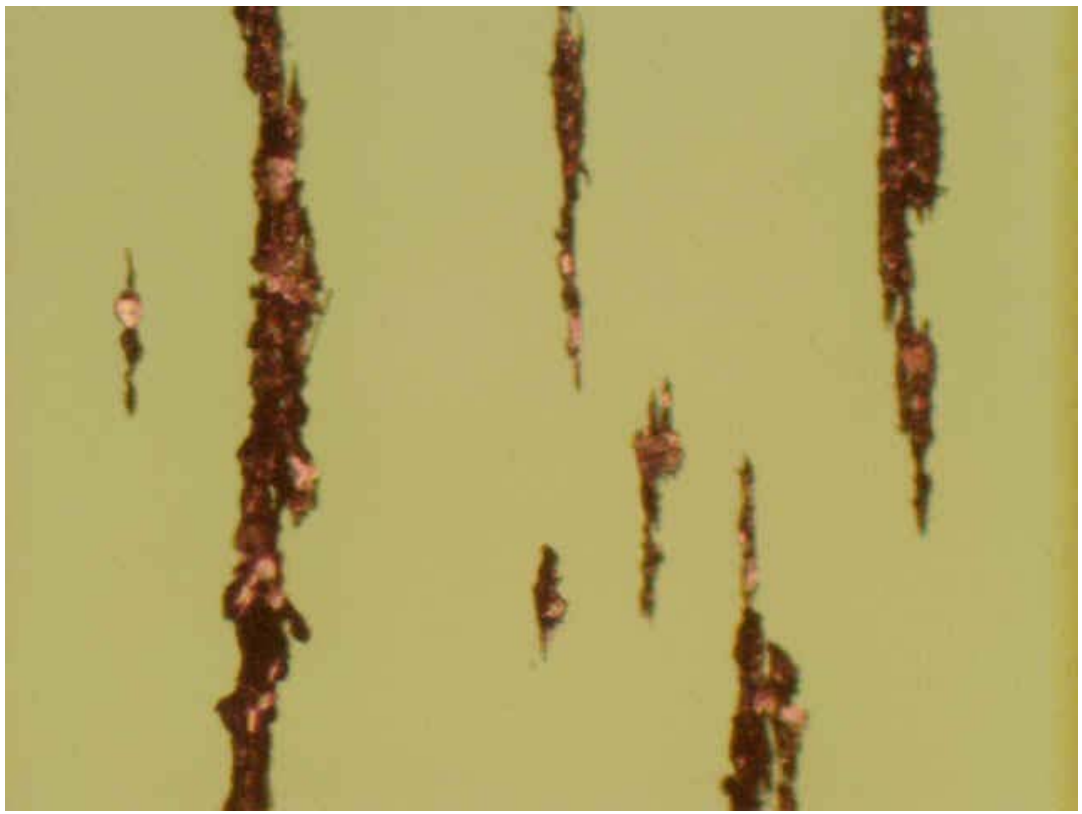
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	5/19/05	89814	@400 hours	6858 miles plus 400 hours	100x	73433 89814	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot particulate was noted. Please see attached images.							
Special Features	Rubbing wear							



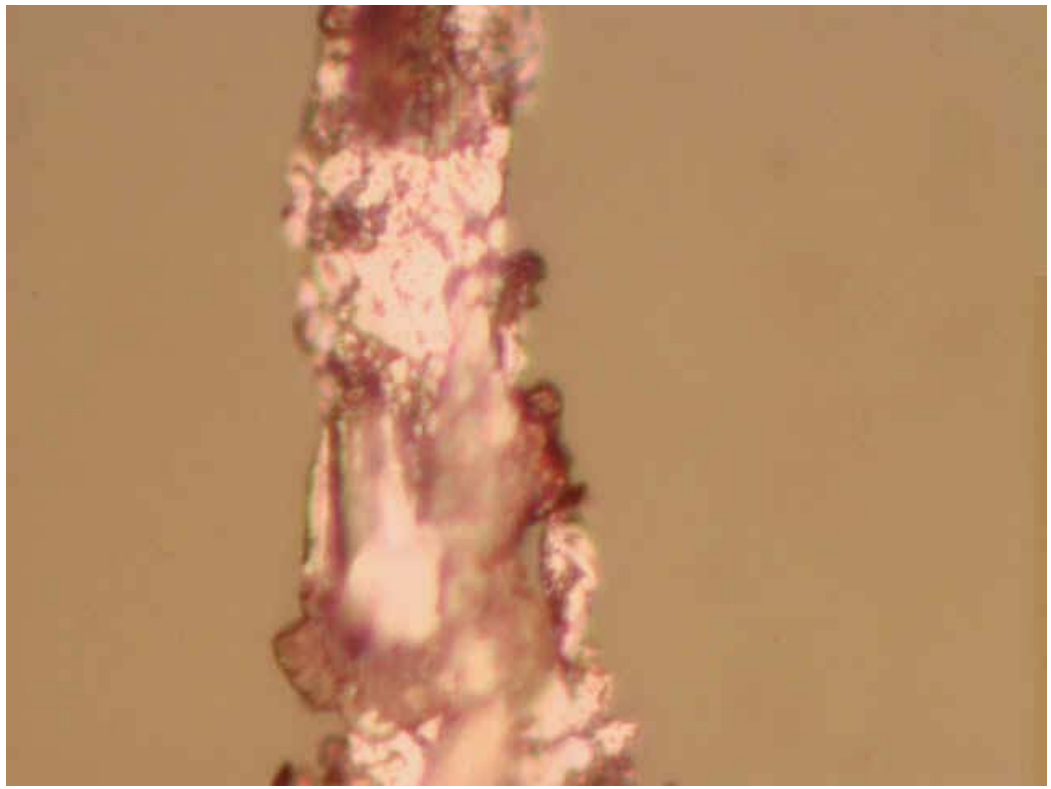
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	5/19/05	89814	@400 hours	6858 miles plus 400 hours	500x	73433 89814	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot particulate was noted. Please see attached images.							
Special Features	Dark metallo oxide							



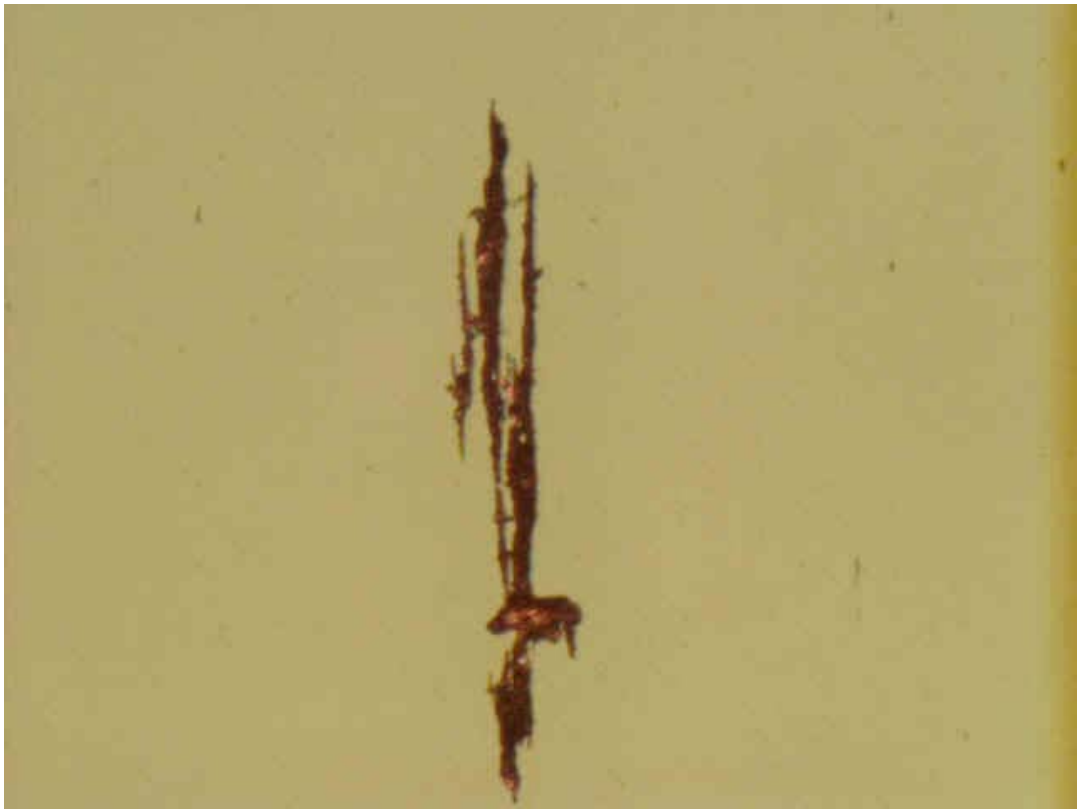
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Filter	5/19/05	89816	@400 hours	6858 miles plus 400 hours	100x	73433 89816	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot, ferrous fatigue particulate (~100 microns), and ferrous laminar particulate (~45 microns) was noted. A light amount of the debris had a blue tint, suggesting the particles were formed during localized elevated temperature Please see attached images.							
Special Features	Rubbing wear with oxide particulates							



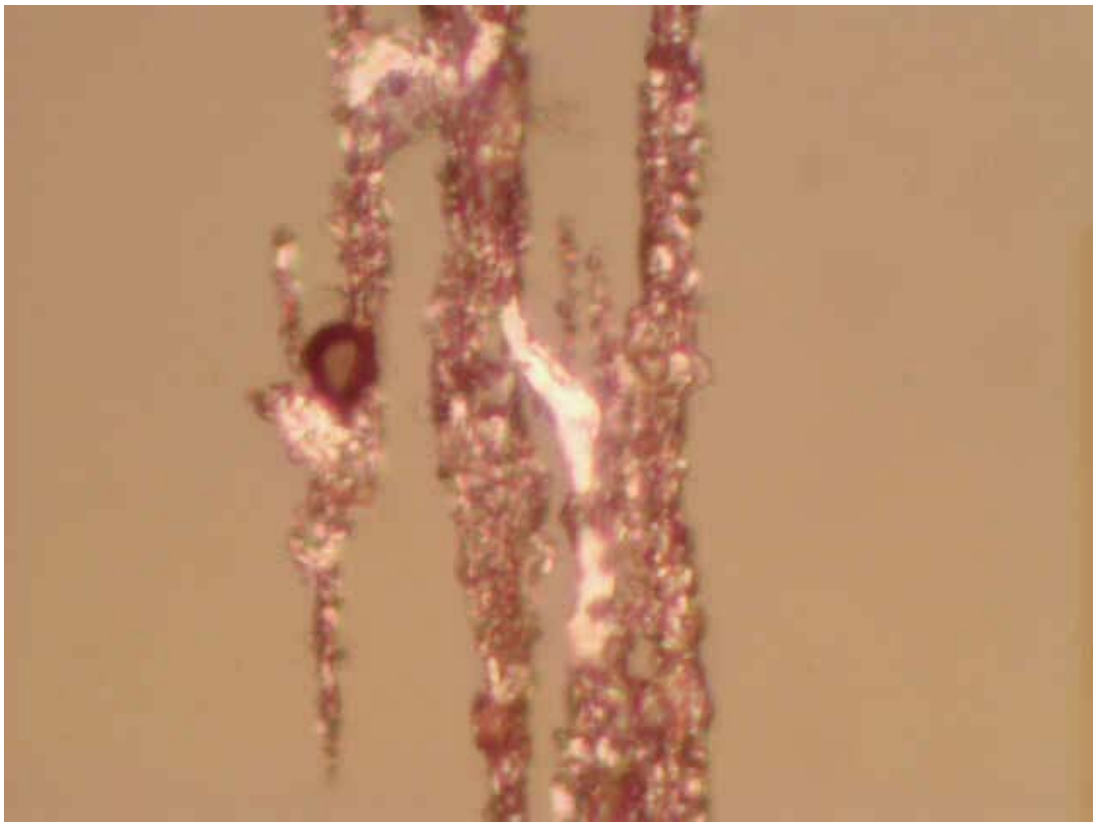
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	5/19/05	89816	@400 hours	6858 miles plus 400 hours	500x	73433 89816	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot, ferrous fatigue particulate (~100 microns), and ferrous laminar particulate (~45 microns) was noted. A light amount of the debris had a blue tint, suggesting the particles were formed during localized elevated temperature. Please see attached images.							
Special Features	Fatigue wear							



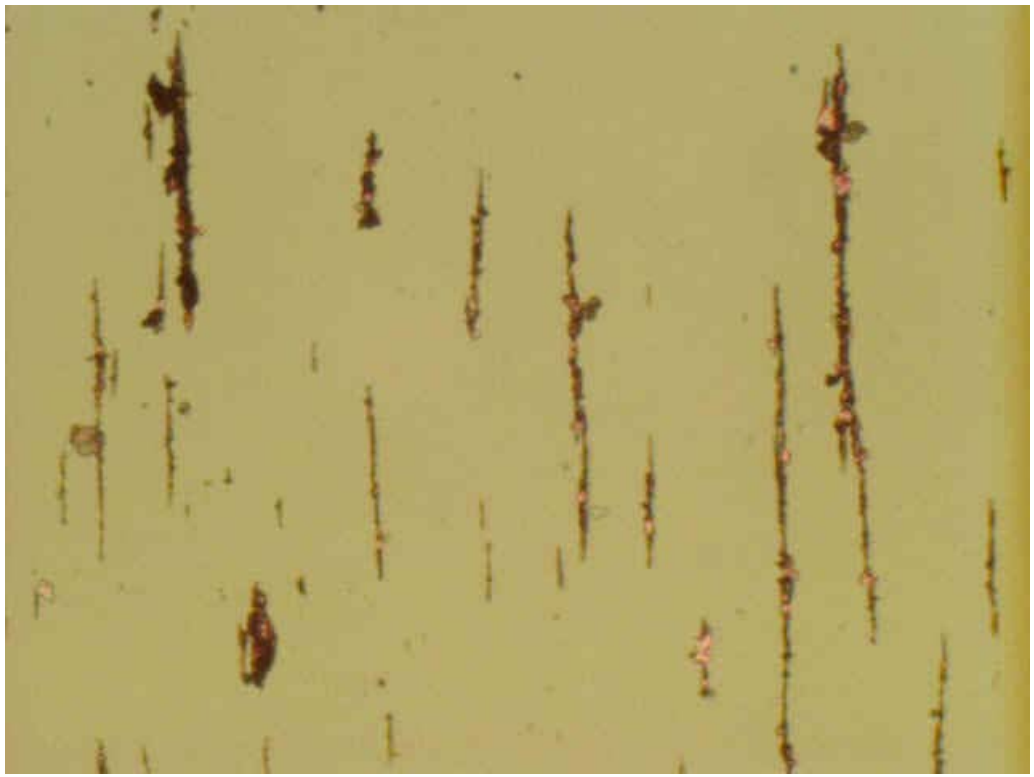
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	5/19/05	89815	@400 hours	6858 miles plus 400 hours	100x	73433 89815	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot and ferrous fatigue particulate (~50 microns) was noted. Please see attached images.							
Special Features	Rubbing wear with fatigue particle							



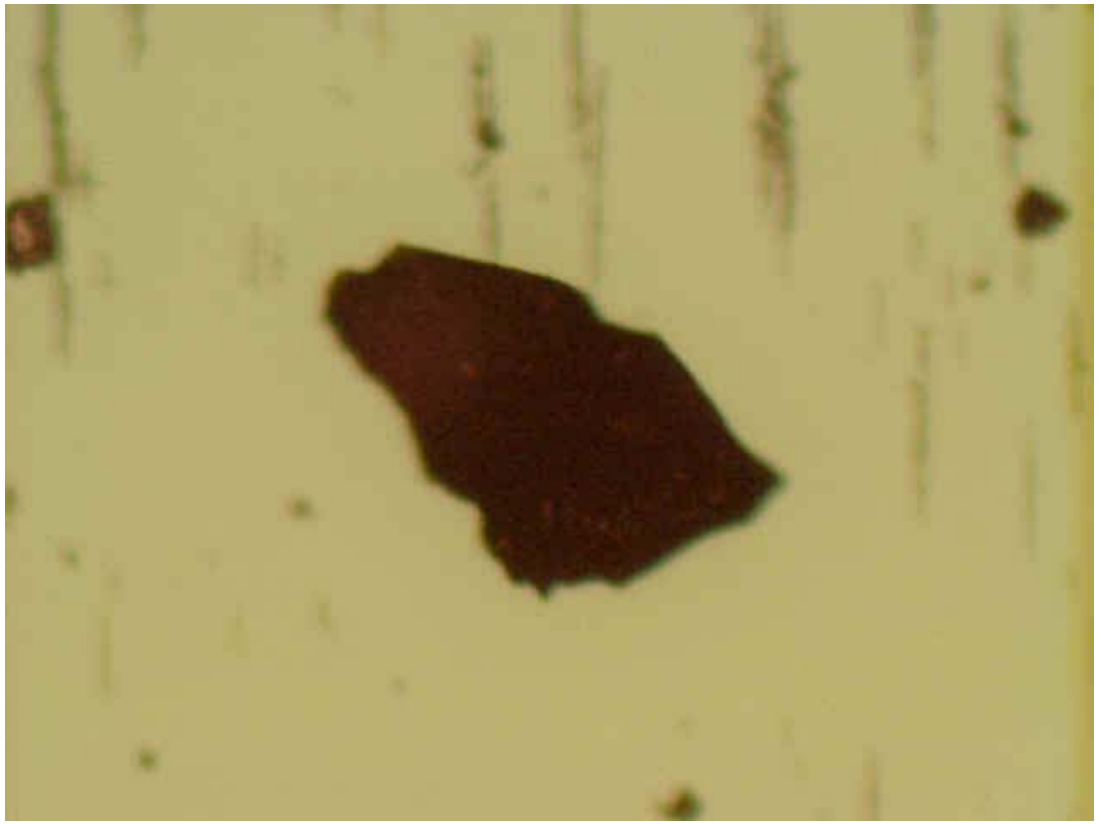
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	5/19/05	89815	@400 hours	6858 miles plus 400 hours	500x	73433 89815	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot and ferrous fatigue particulate (~50 microns) was noted. Please see attached images.							
Special Features	Dark metallo oxide, rubbing and cutting wear							



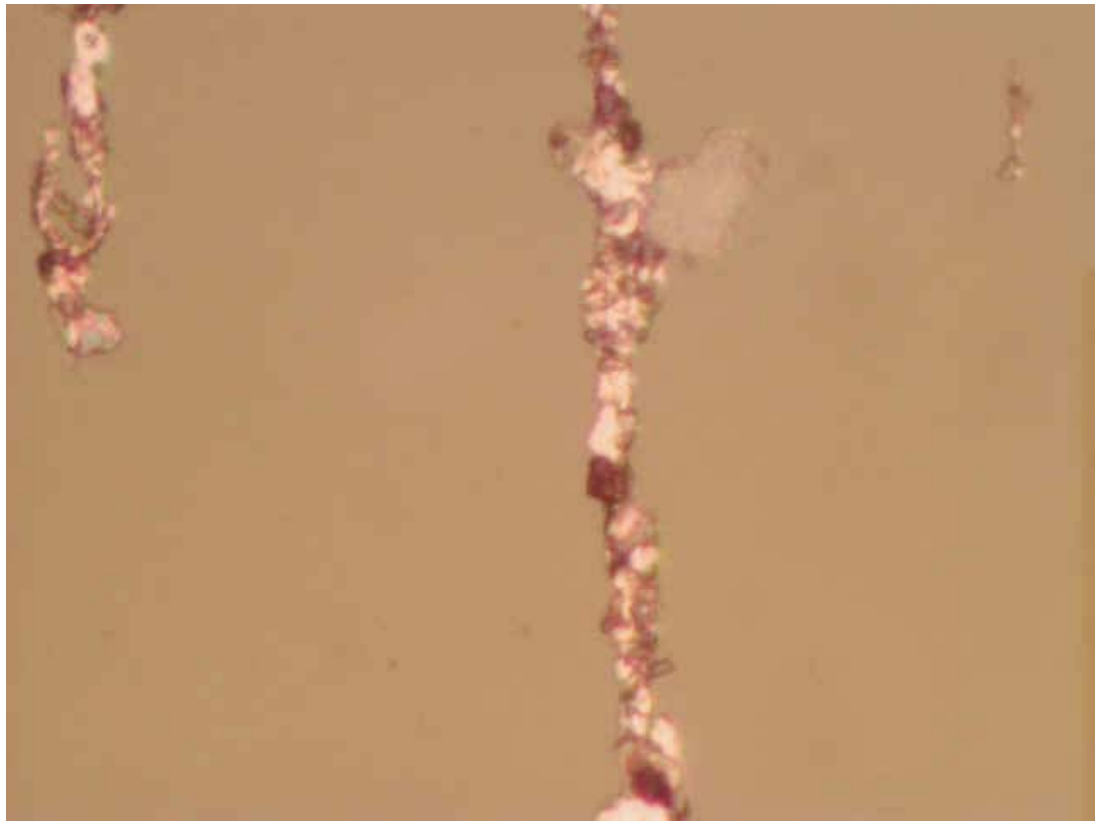
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	5/19/05	89817	@400 hours	6858 miles plus 400 hours	100x	73433 89817	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, soot, sand/dirt, and ferrous laminar particulate (~30 microns) were noted. Please see attached images.							
Special Features	Rubbing wear with sand/dirt and ferrous laminar particulates							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	5/19/05	89817	@400 hours	6858 miles plus 400 hours	100x	73433 89817	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, soot, sand/dirt, and ferrous laminar particulate (~30 microns) were noted. Please see attached images.							
Special Features	Soot							

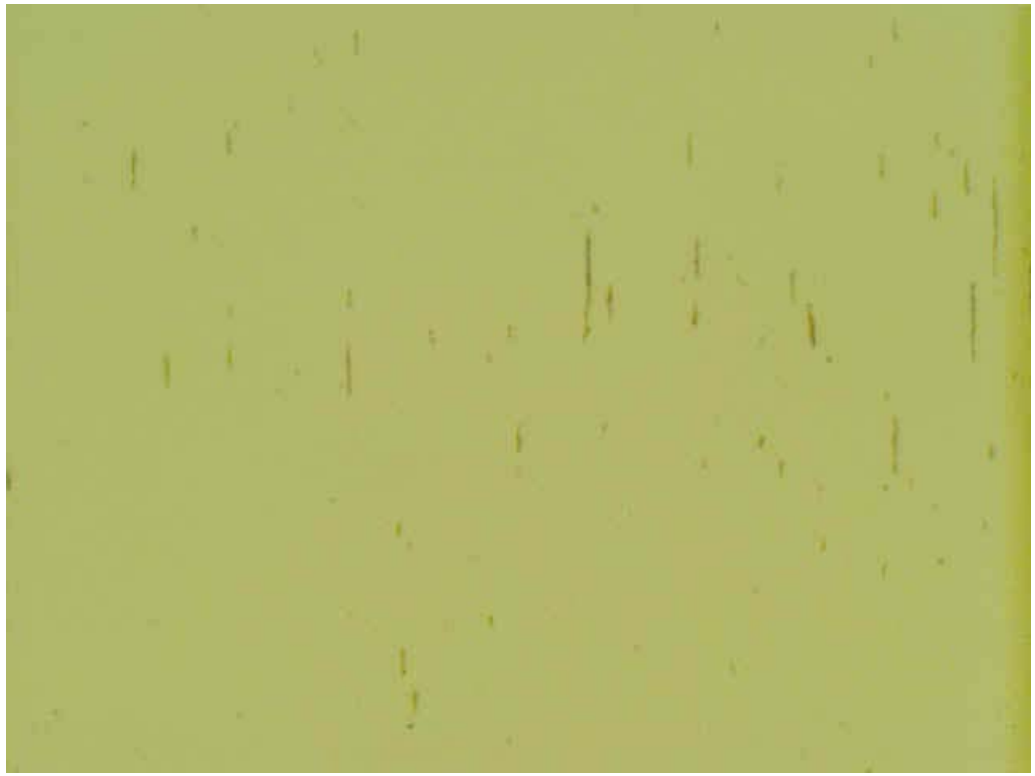


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	5/19/05	89817	@400 hours	6858 miles plus 400 hours	500x	73433 89817	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, soot, sand/dirt, and ferrous laminar particulate (~30 microns) were noted. Please see attached images.							
Special Features	Rubbing and laminar wear with sand/dirt particle							

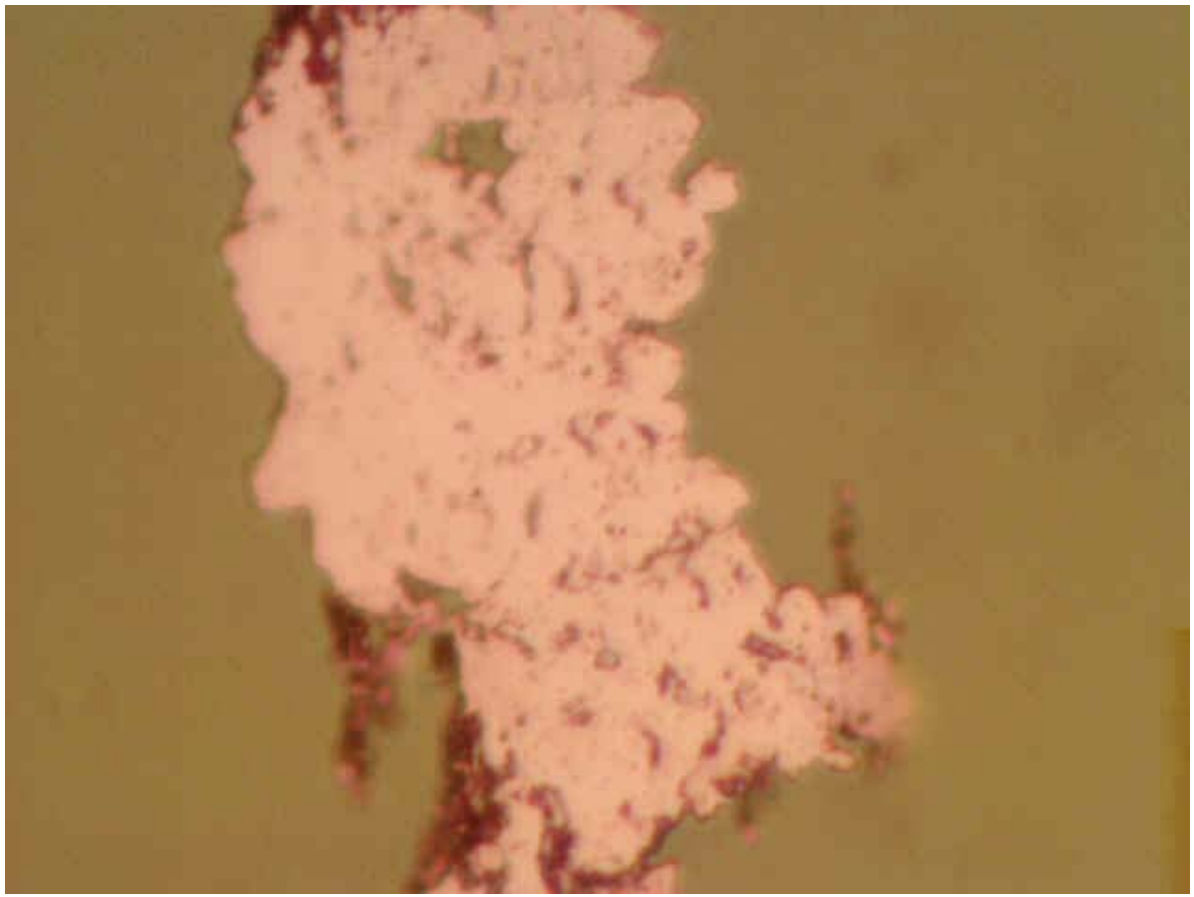


Appendix K-7. Ferrograms – 800 hours Bus 73433

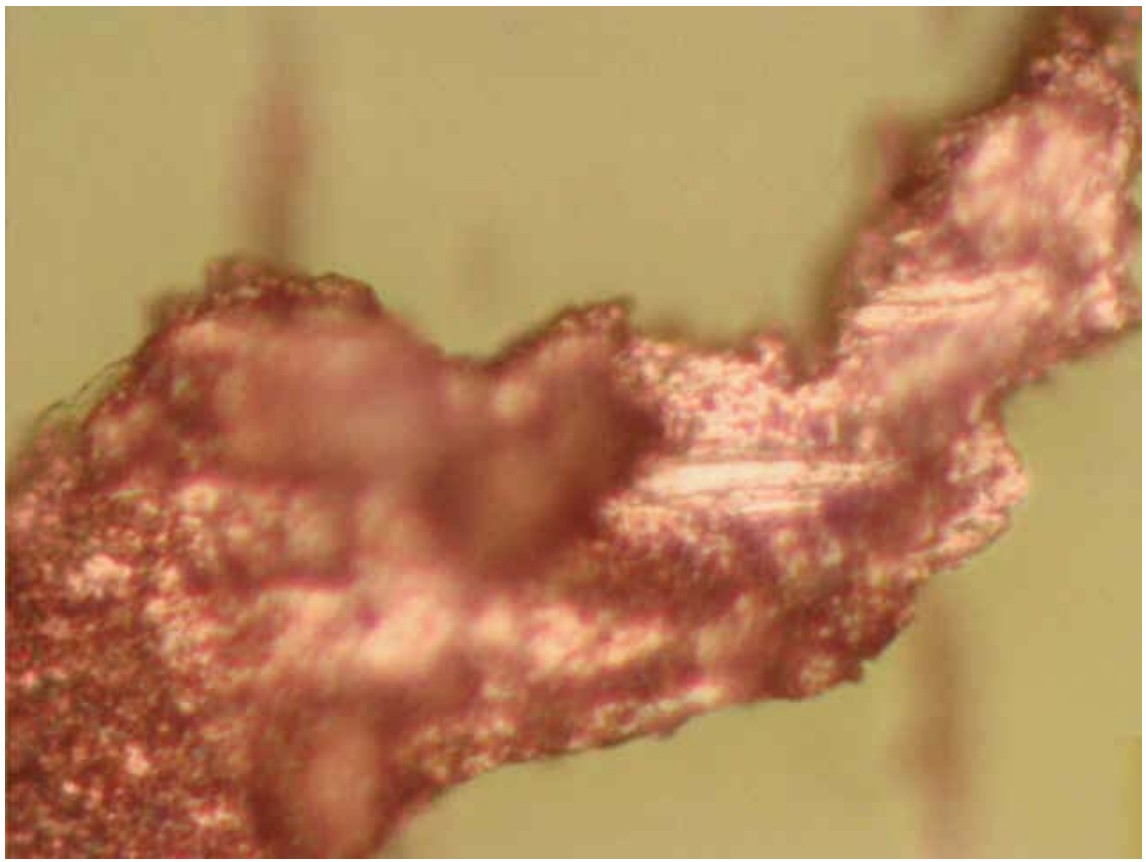
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil Sample	6/19/05	90003	800 hours	7754 miles plus 800 hours	100x	73433 90003	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, soot, ferrous laminar particulate (~120 microns), and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	Fine rubbing wear							



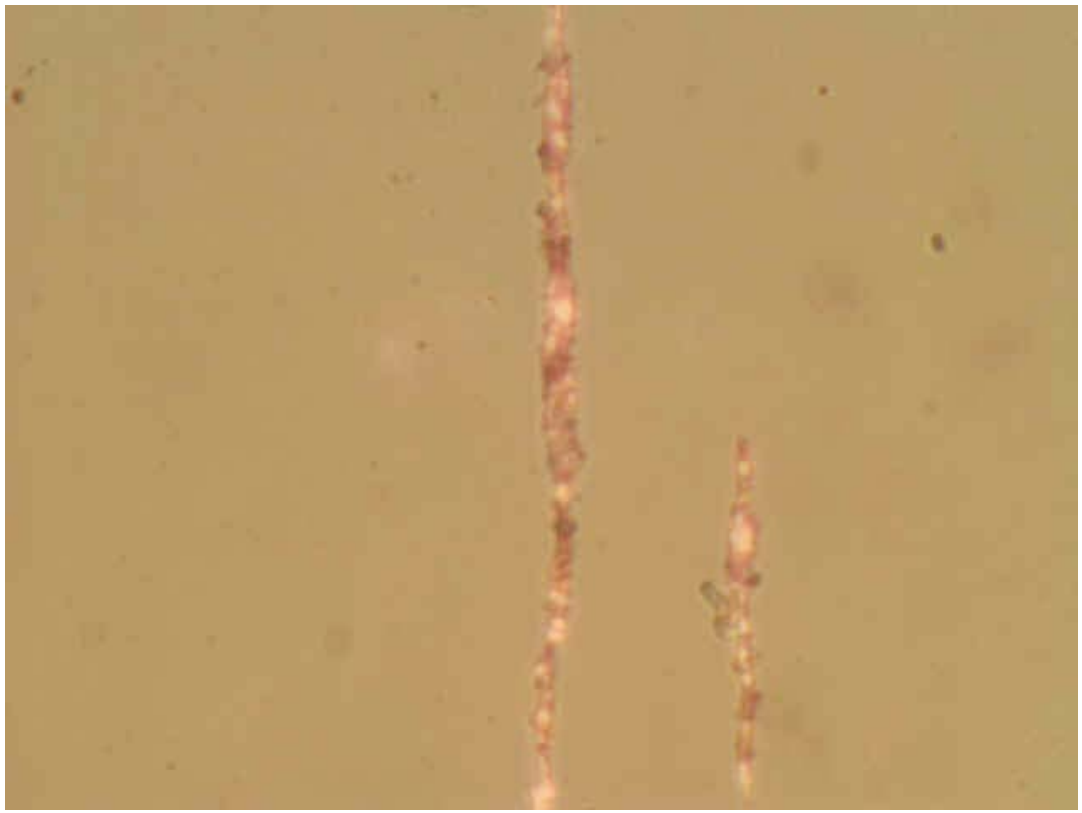
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil Sample	6/19/05	90003	800 hours	7754 miles plus 800 hours	500x	73433 90003	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, soot, ferrous laminar particulate (~120 microns), and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	~60 micron ferrous laminar particulate.							



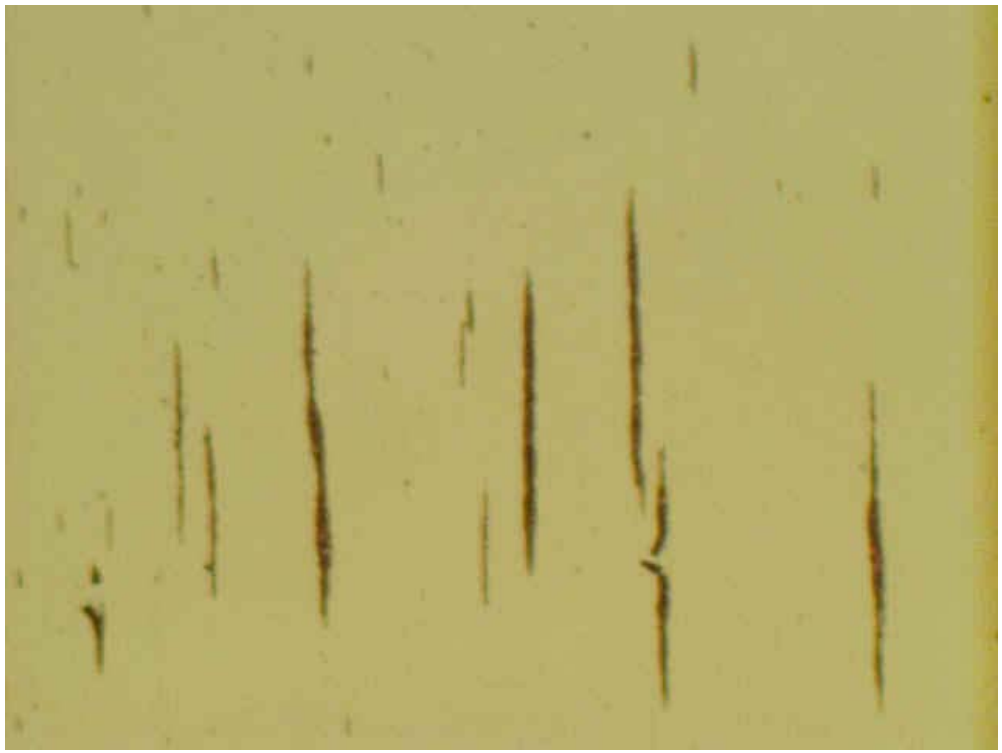
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil Sample	6/19/05	90003	800 hours	7754 miles plus 800 hours	500x	73433 90003	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, soot, ferrous laminar particulate (~120 microns), and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	~120 micron ferrous laminar particulate with out of focus debris							



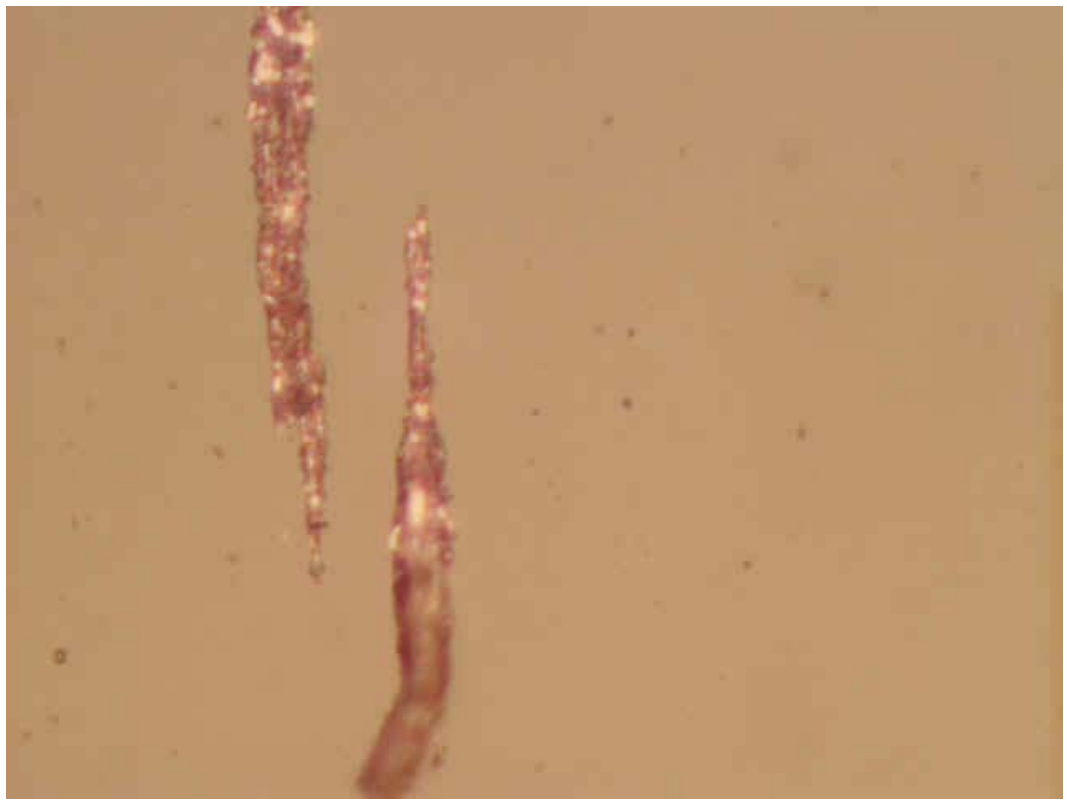
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil Sample	6/19/05	90003	800 hours	7754 miles plus 800 hours	800x	73433 90003	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, soot, ferrous laminar particulate (~120 microns), and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	Rubbing wear							



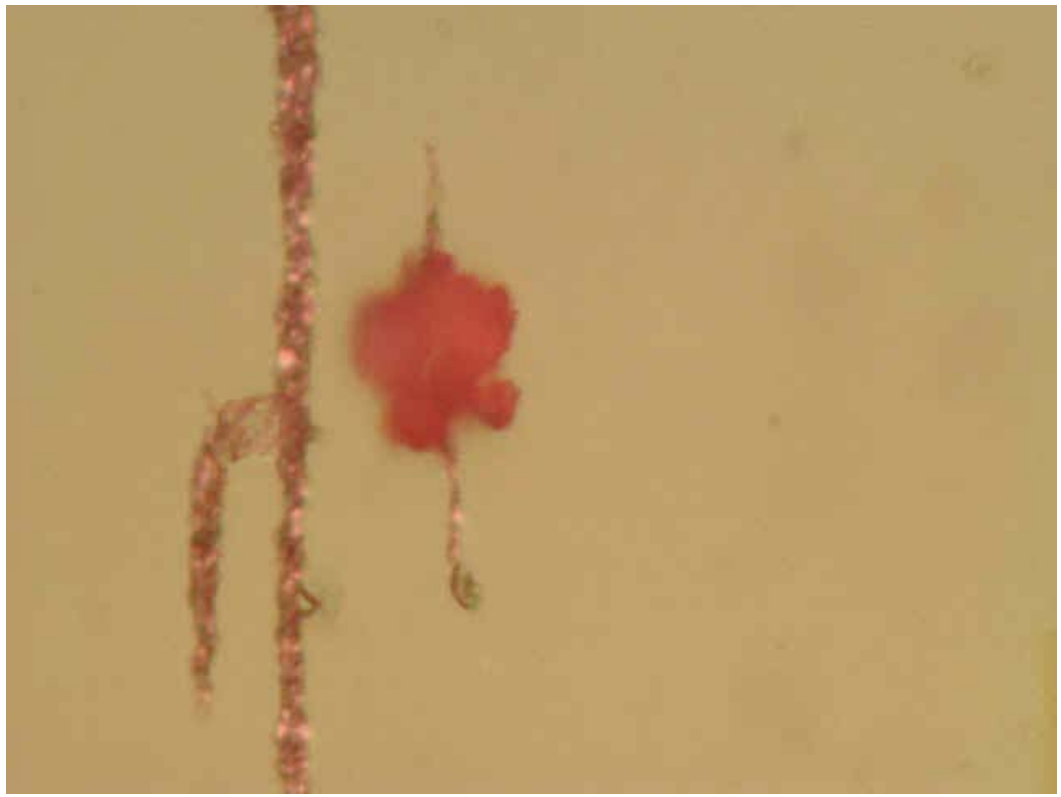
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/19/05	89999	800 hours	7754 miles plus 800 hours	100x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot was noted. Two isolated ferrous spherical particles, with major diameters of 20 and 5 microns were noted. Please see attached images.							
Special Features	Fine rubbing wear							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/19/05	89999	800 hours	7754 miles plus 800 hours	800x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot was noted. Two isolated ferrous spherical particles, with major diameters of 20 and 5 microns were noted. Please see attached images.							
Special Features	Rubbing wear							

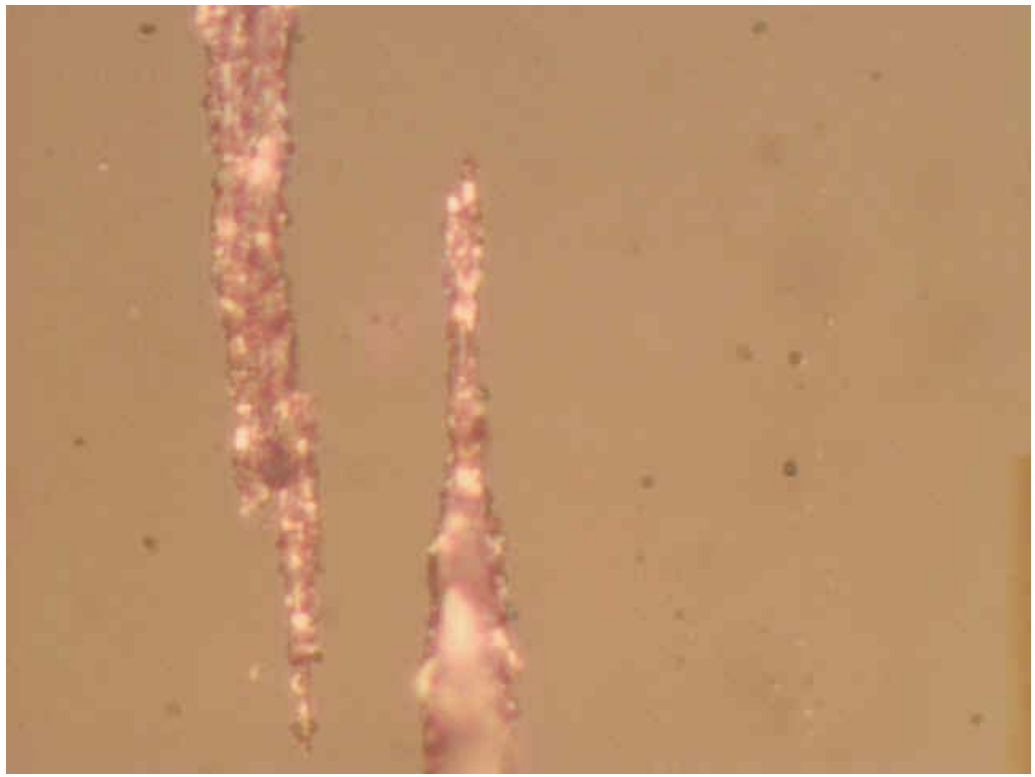


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/19/05	89999	800 hours	7754 miles plus 800 hours	500x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot was noted. Two isolated ferrous spherical particles, with major diameters of 20 and 5 microns were noted. Please see attached images.							
Special Features	Sand particle with rubbing wear.							

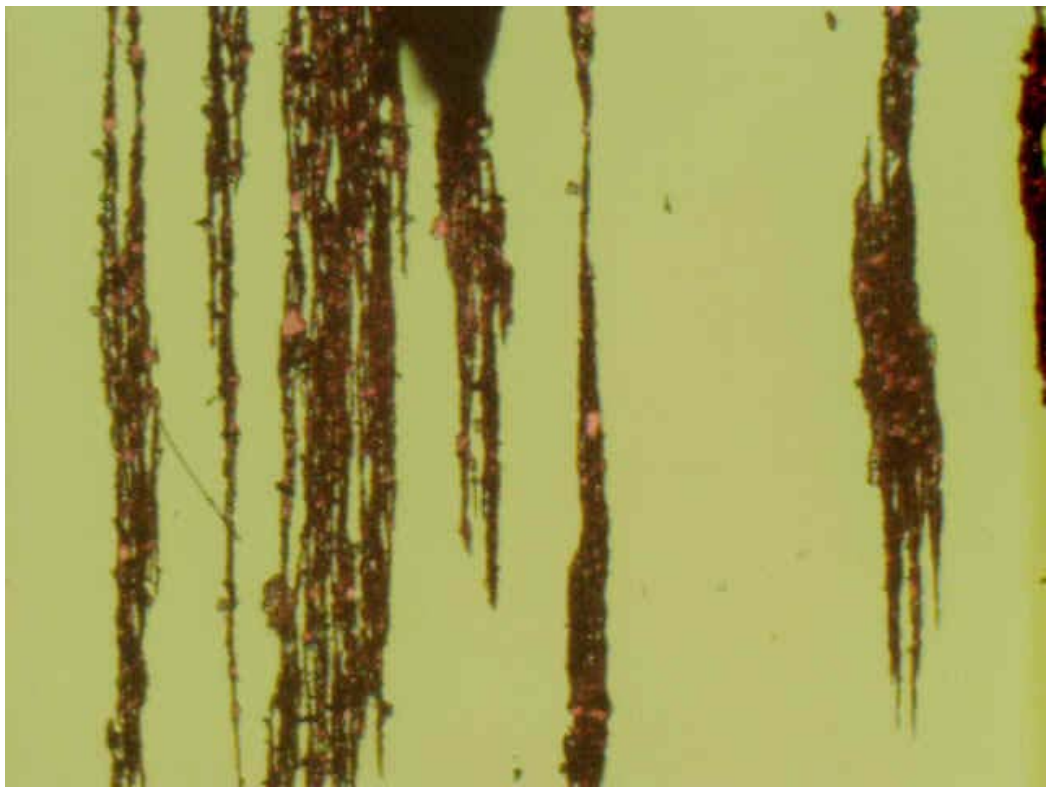


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/19/05	89999	800 hours	7754 miles plus 800 hours	500x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot was noted. Two isolated ferrous spherical particles, with major diameters of 20 and 5 microns were noted. Please see attached images..							
Special Features	20 micron ferrous sphere							

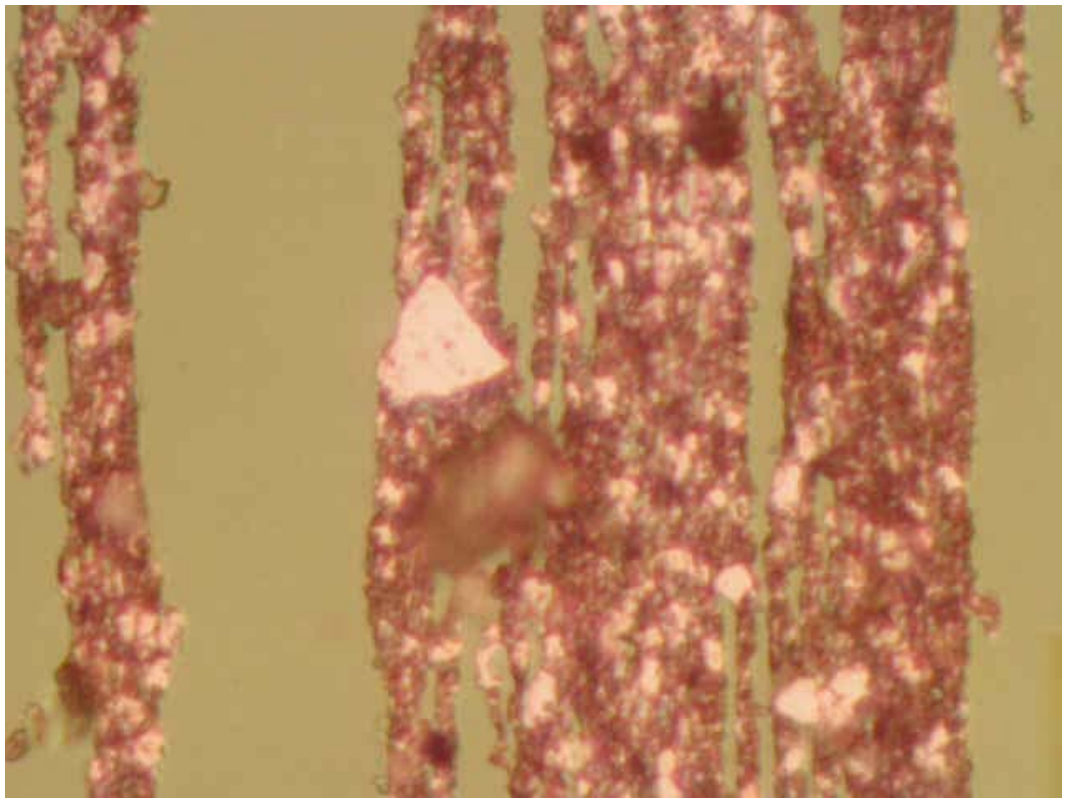
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/19/05	89999	800 hours	7754 miles plus 800 hours	500x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, and soot was noted. Two isolated ferrous spherical particles, with major diameters of 20 and 5 microns were noted. Please see attached images.							
Special Features	Rubbing wear							



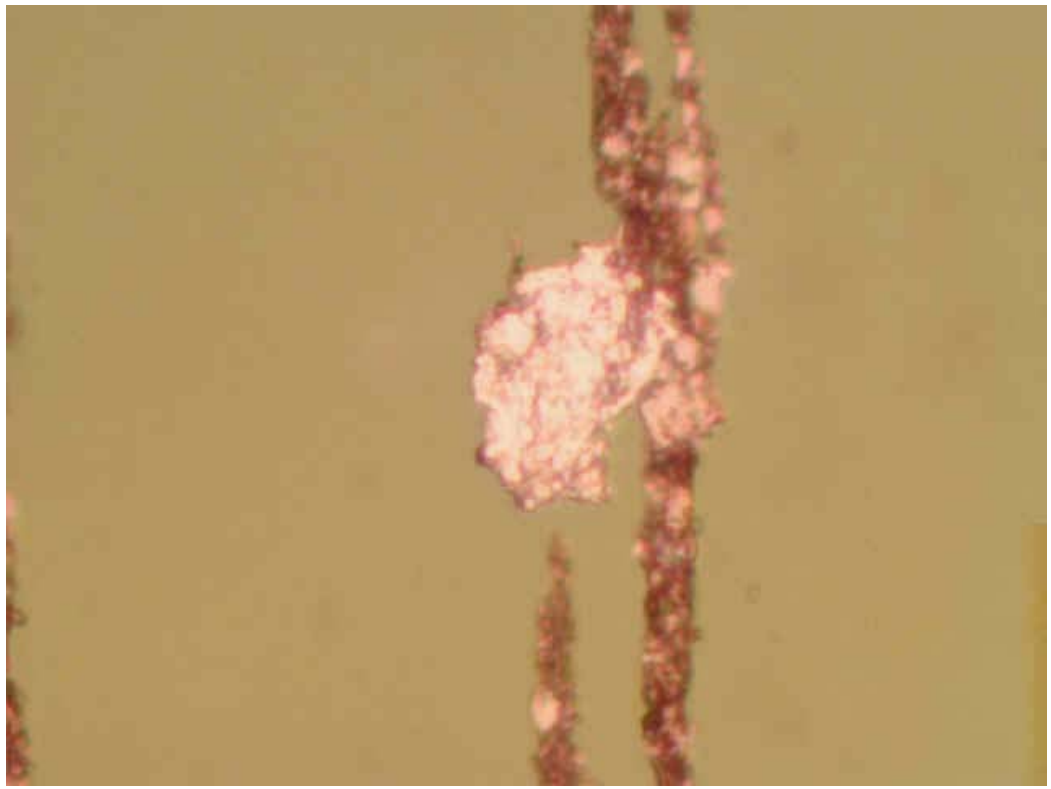
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Filter	6/19/05	90001	800 hours	7754 miles plus 800 hours	100x	73433 90001	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear and ferrous laminar and sliding particulate, with a major diameters up to 30 microns was noted. A moderate amount of dark metallo oxide, sand/dirt, and soot was observed. Please see attached images.							
Special Features	Rubbing wear with laminar and sand/dirt particulates							



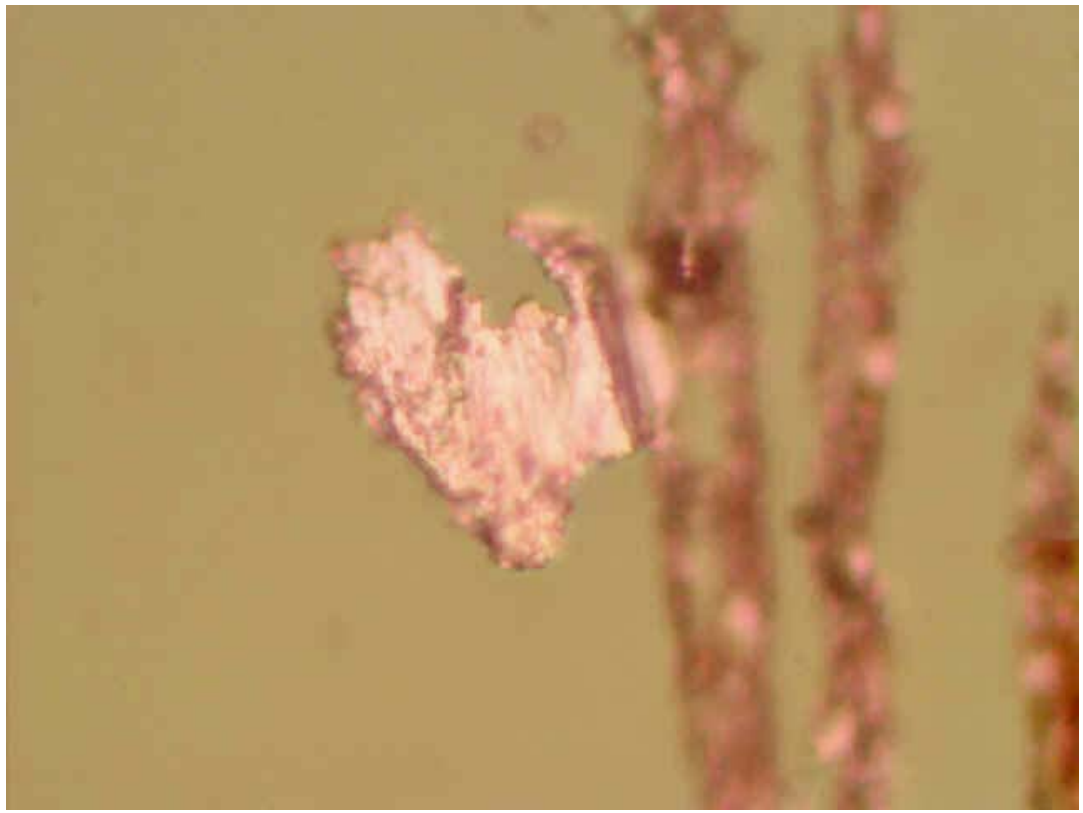
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Filter	6/19/05	90001	800 hours	7754 miles plus 800 hours	500x	73433 90001	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear and ferrous laminar and sliding particulate, with a major diameters up to 30 microns was noted. A moderate amount of dark metallo oxide, sand/dirt, and soot was observed. Please see attached images.							
Special Features	Laminar and sand/dirt particulates							



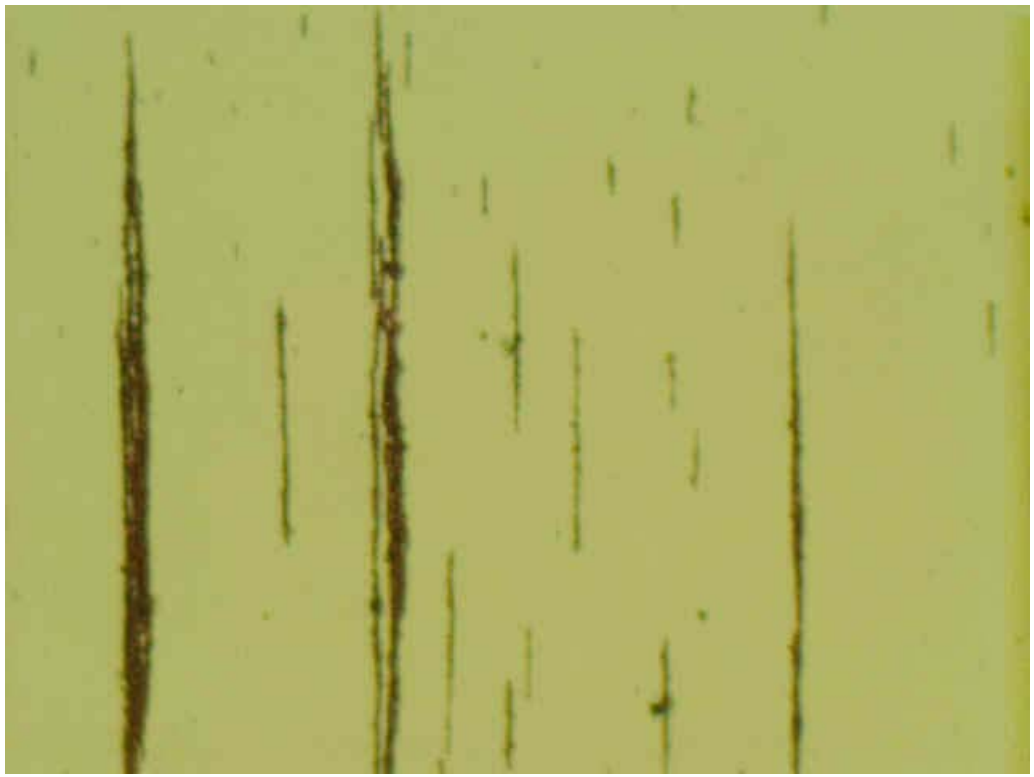
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Filter	6/19/05	90001	800 hours	7754 miles plus 800 hours	500x	73433 90001	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear and ferrous laminar and sliding particulate, with a major diameters up to 30 microns was noted. A moderate amount of dark metallo oxide, sand/dirt, and soot was observed. Please see attached images.							
Special Features	25 micron ferrous laminar particulate							



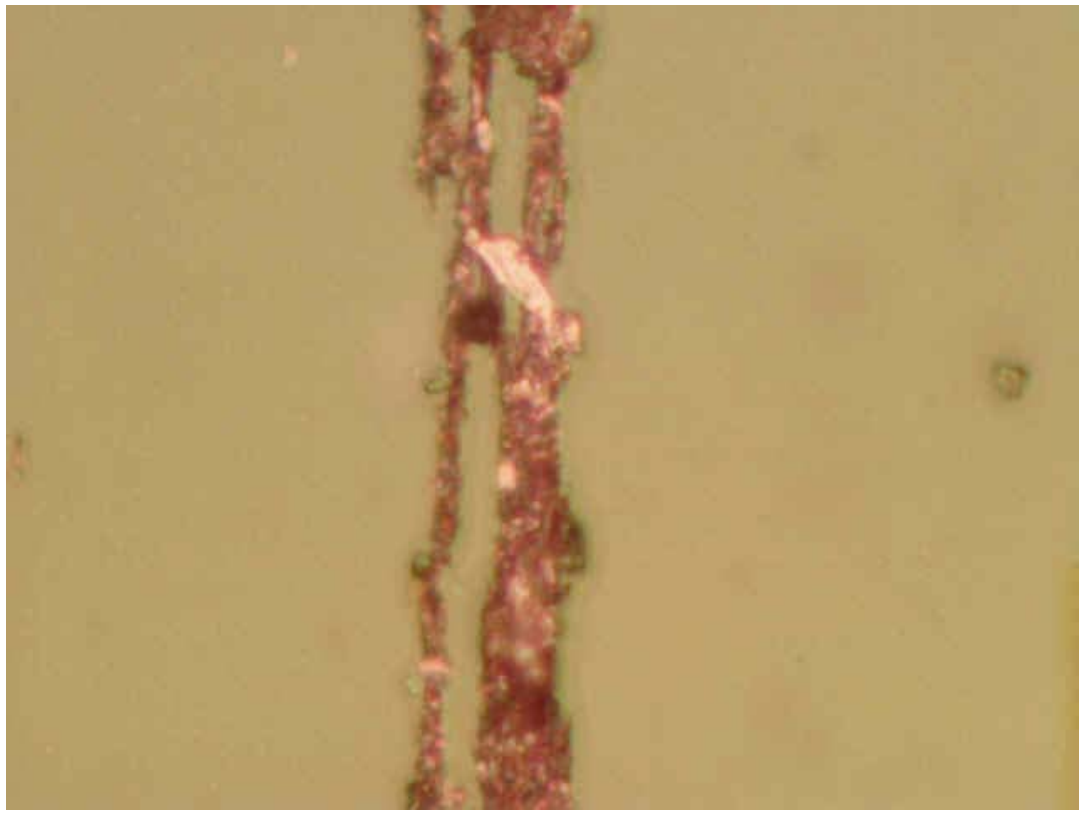
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Filter	6/19/05	90001	800 hours	7754 miles plus 800 hours	500x	73433 90001	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear and ferrous laminar and sliding particulate, with a major diameters up to 30 microns was noted. A moderate amount of dark metallo oxide, sand/dirt, and soot was observed. Please see attached images.							
Special Features	A 30 microns ferrous laminar particulate							



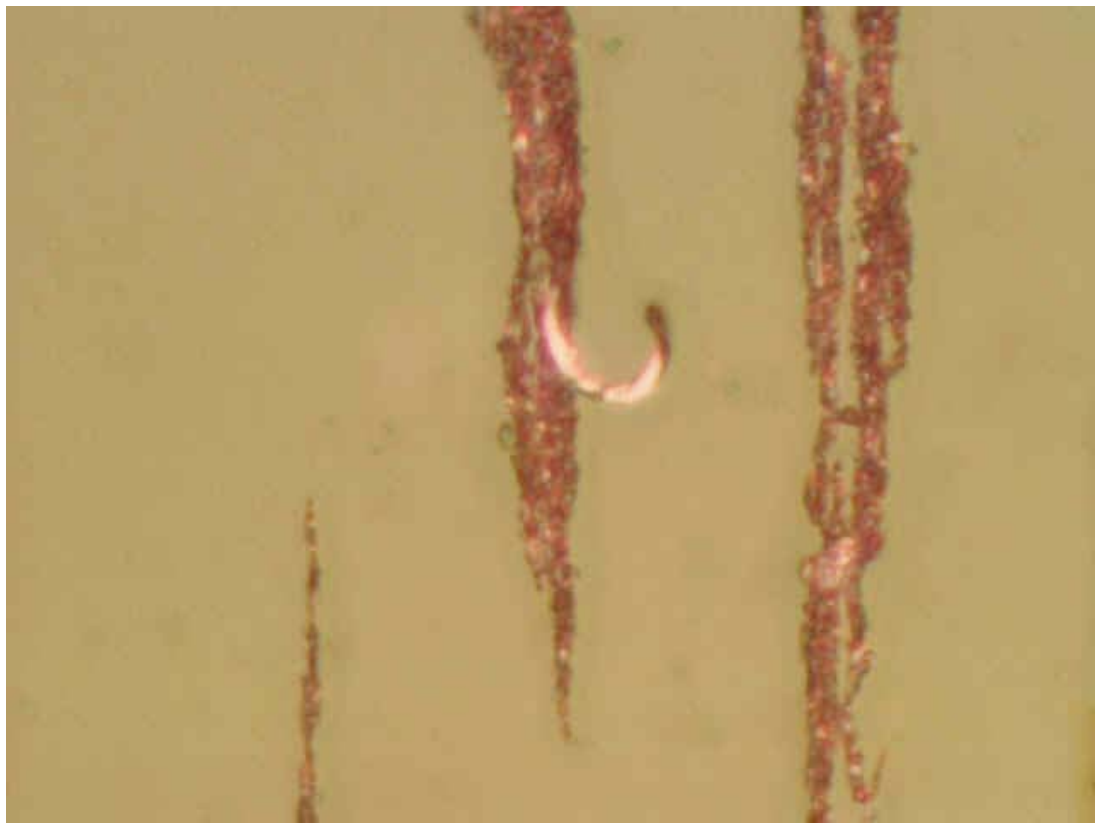
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass residual	6/19/05	90000	800 hours	7754 miles plus 800 hours	100x	73433 90000	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot and and ferrous laminar and sliding particulate, with a major diameters up to 38 microns was noted. Please see attached images.							
Special Features	Rubbing wear							



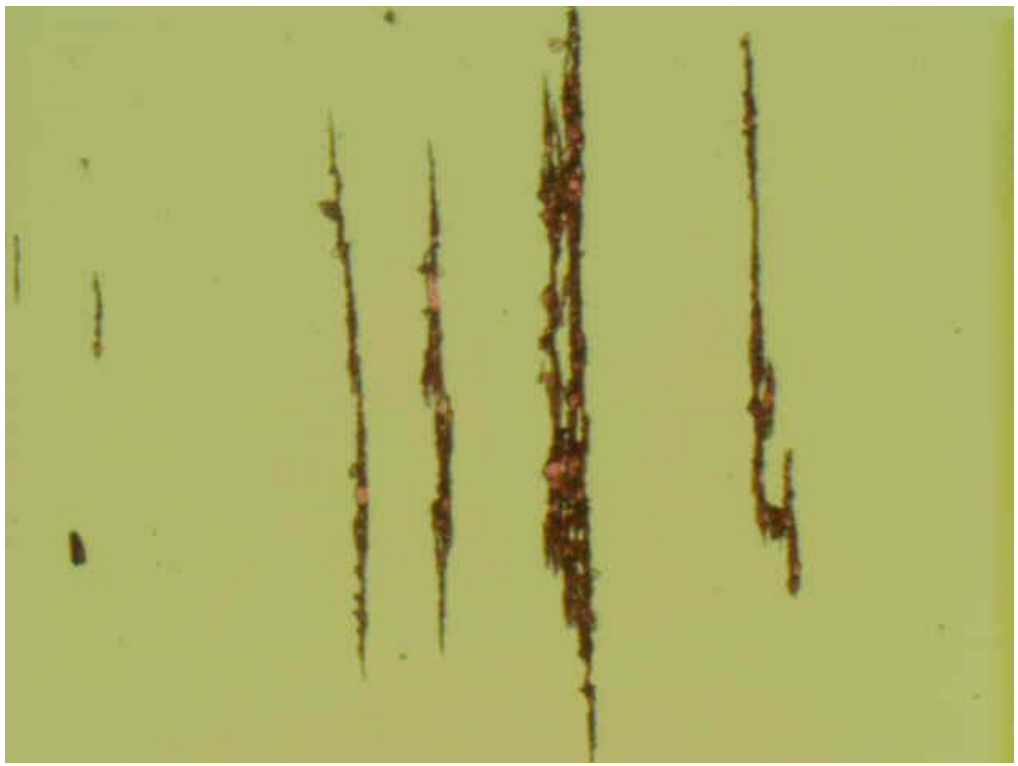
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	6/19/05	89999	800 hours	7754 miles plus 800 hours	500x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot and ferrous laminar and sliding particulate, with a major diameters up to 38 microns was noted. Please see attached images.							
Special Features	Laminar particulate and dark metallo oxide							



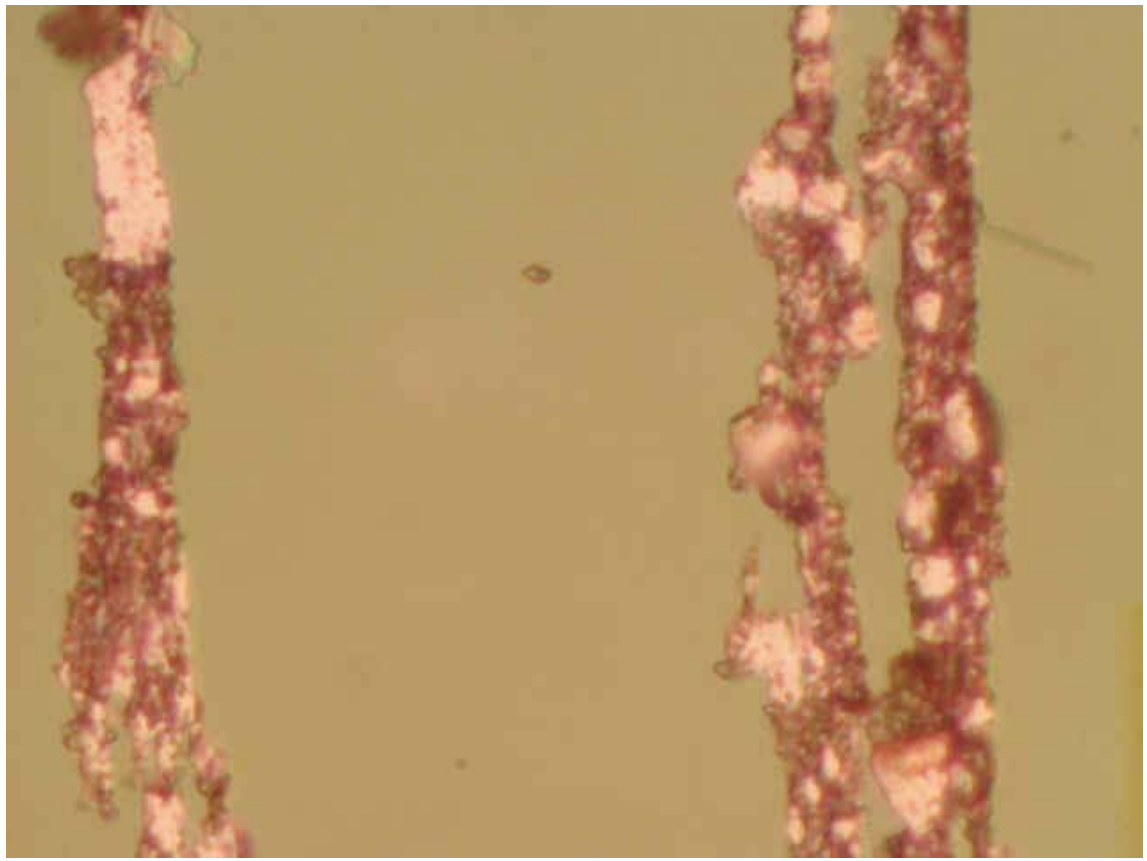
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	6/19/05	89999	800 hours	7754 miles plus 800 hours	500x	73433 89999	Entry
Comments	Ferrographic analysis indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot and ferrous laminar and sliding particulate, with a major diameters up to 38 microns was noted. Please see attached images.							
Special Features	Cutting wear							



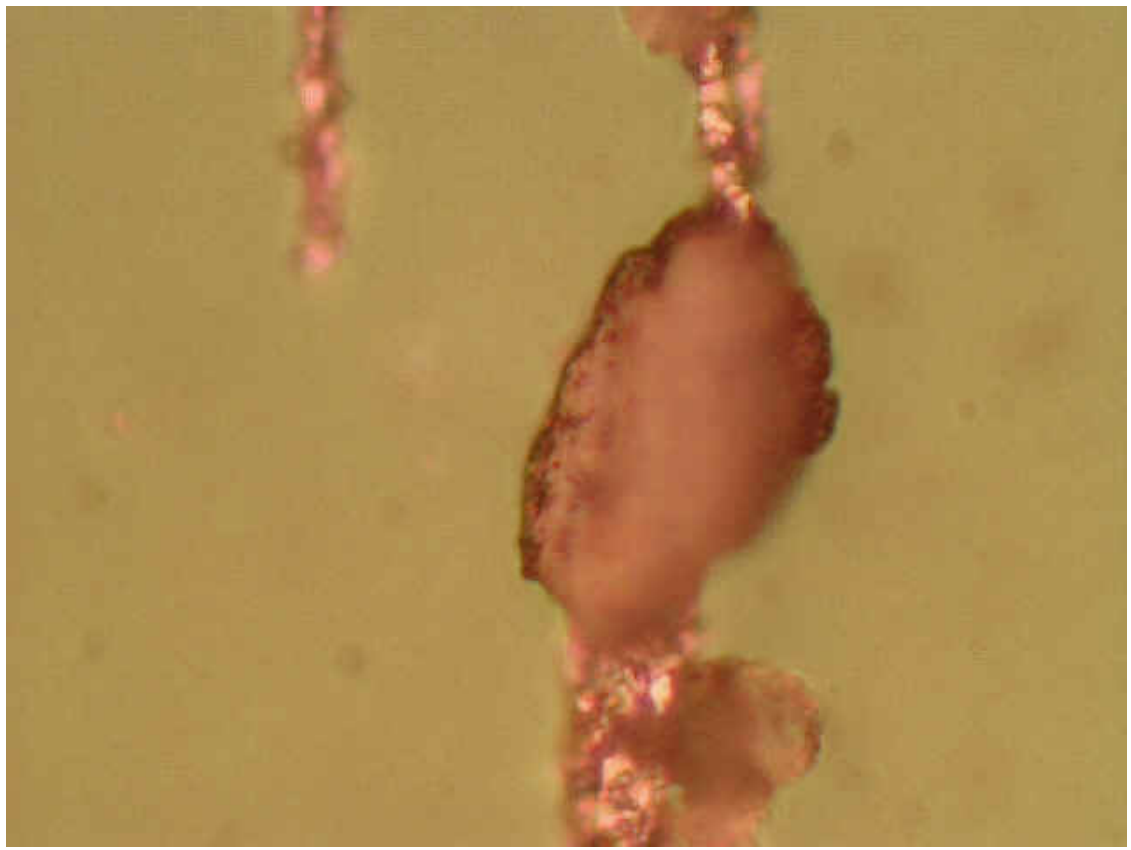
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	6/19/05	90002	800 hours	7754 miles plus 800 hours	100x	73433 90002	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot, and ferrous laminar particulate, with major diameters up to 26 microns was noted. Please see attached images.							
Special Features	Rubbing wear with red oxides							



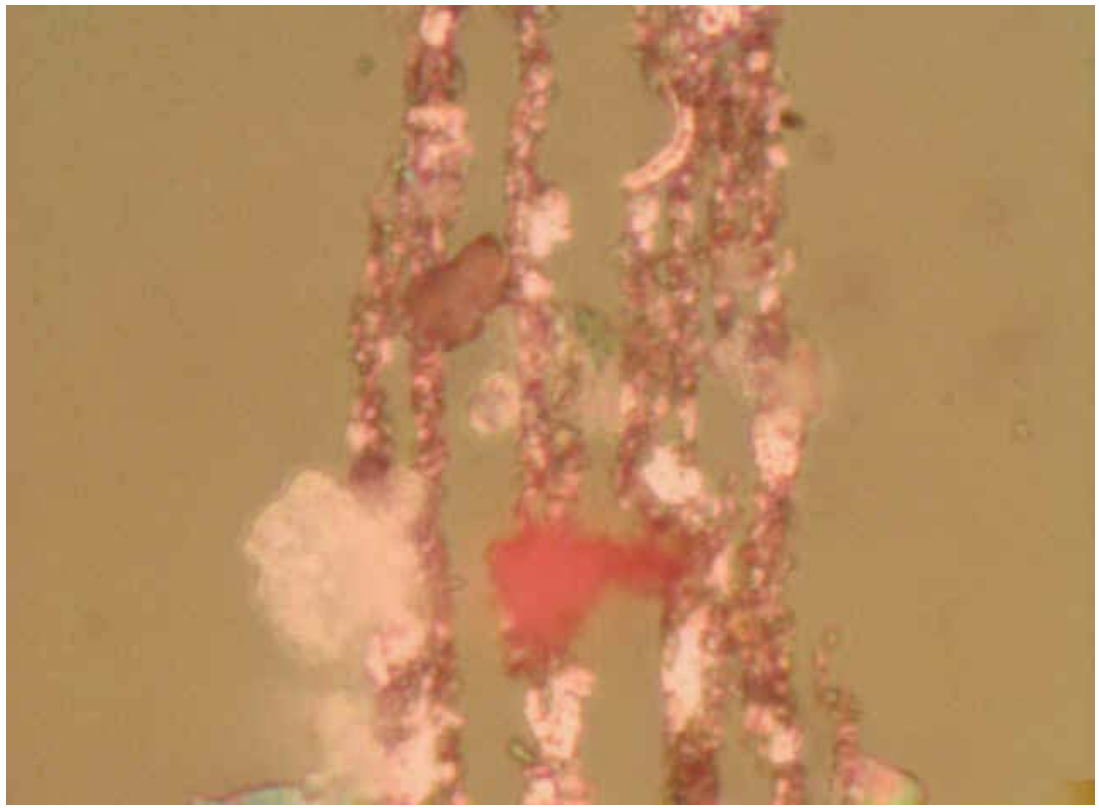
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	6/19/05	90002	800 hours	7754 miles plus 800 hours	500x	73433 90002	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot, and ferrous laminar particulate, with major diameters up to 26 microns was noted. Please see attached images.							
Special Features	Rubbing wear							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	6/19/05	90002	800 hours	7754 miles plus 800 hours	500x	73433 90002	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot, and ferrous laminar particulate, with major diameters up to 26 microns was noted. Please see attached images.							
Special Features	26 micron ferrous laminar particulate noted.							

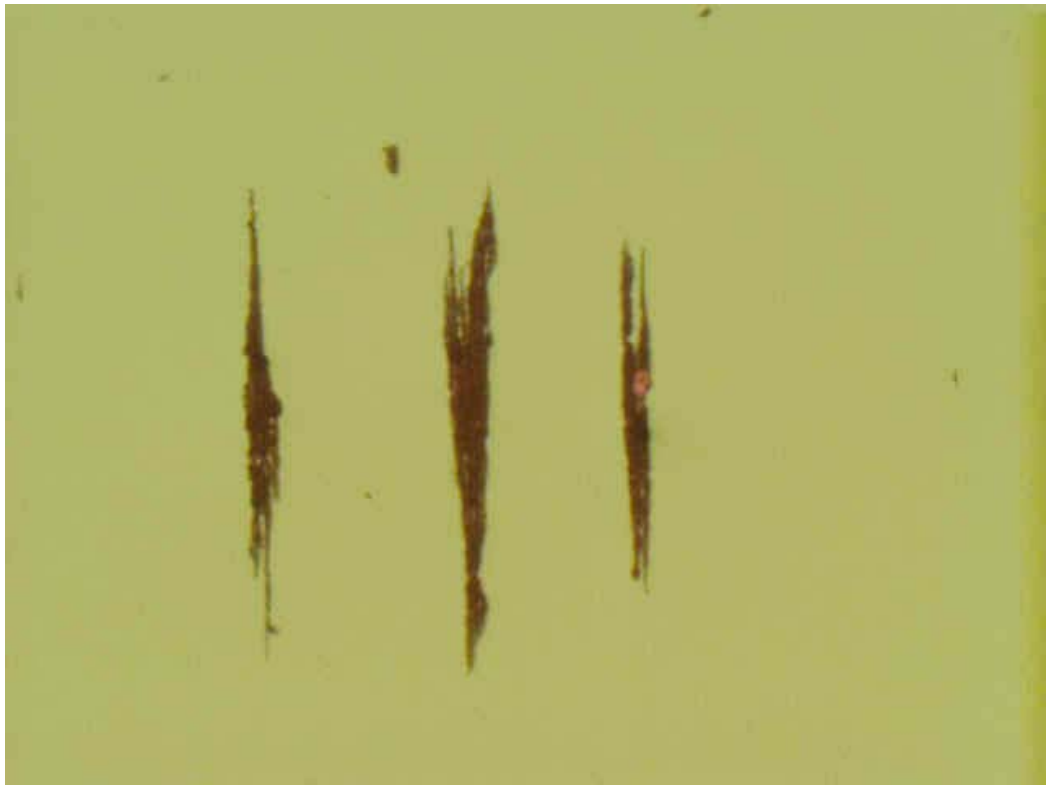


Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow Residual	6/19/05	90002	800 hours	7754 miles plus 800 hours	100x	73433 90002	Entry
Comments	Ferrographic analysis indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous cutting wear, dark metallo oxide, sand/dirt, soot, and ferrous laminar particulate, with major diameters up to 26 microns was noted. Please see attached images.							
Special Features	Sand, laminar, and ferrous cutting wear particles.							

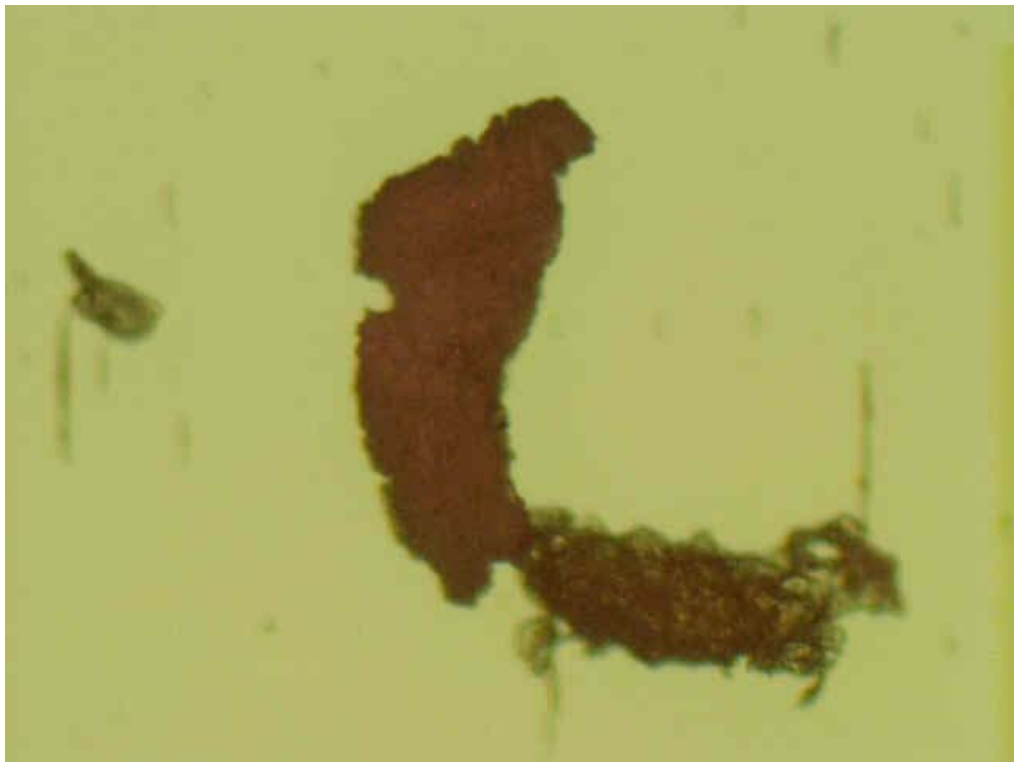


Appendix K-8. Ferrograms – 1,000 hours Bus 73433

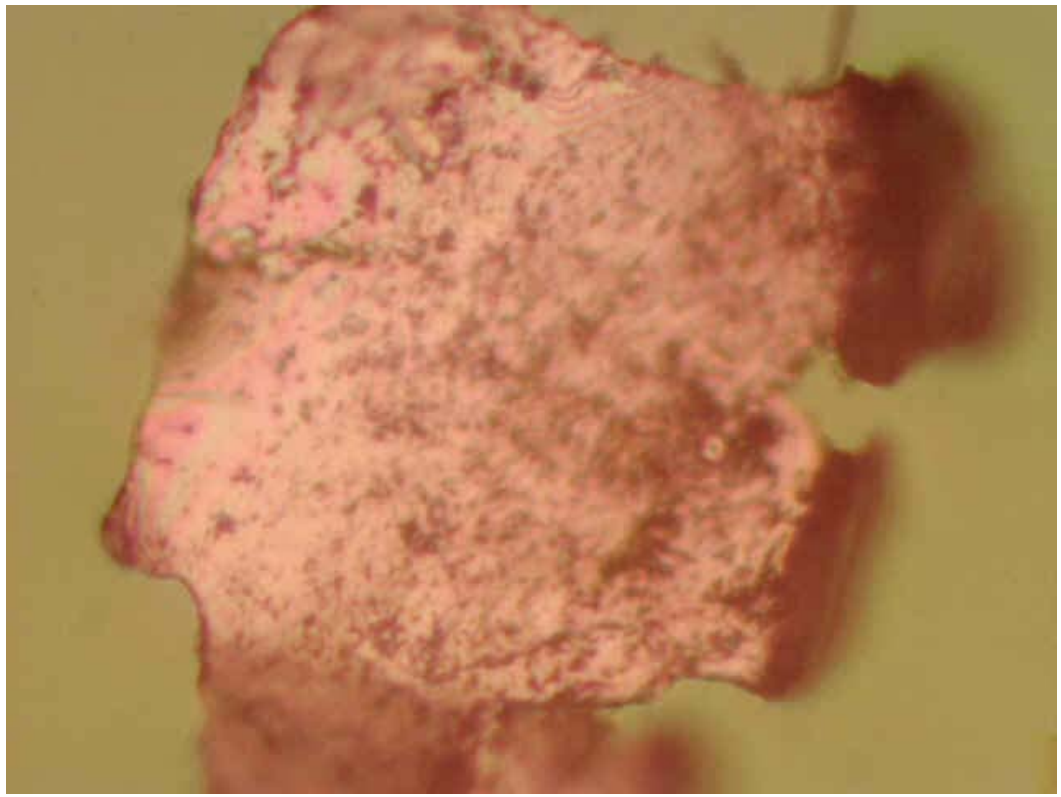
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil	6/28/05	90150	1000 hours	6858 miles plus 1000 hours	100x	73433 90150	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, white crystalline debris, fibers, filter media, soot, and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	A light amount of fine ferrous particulate, typical of normal rubbing wear.							



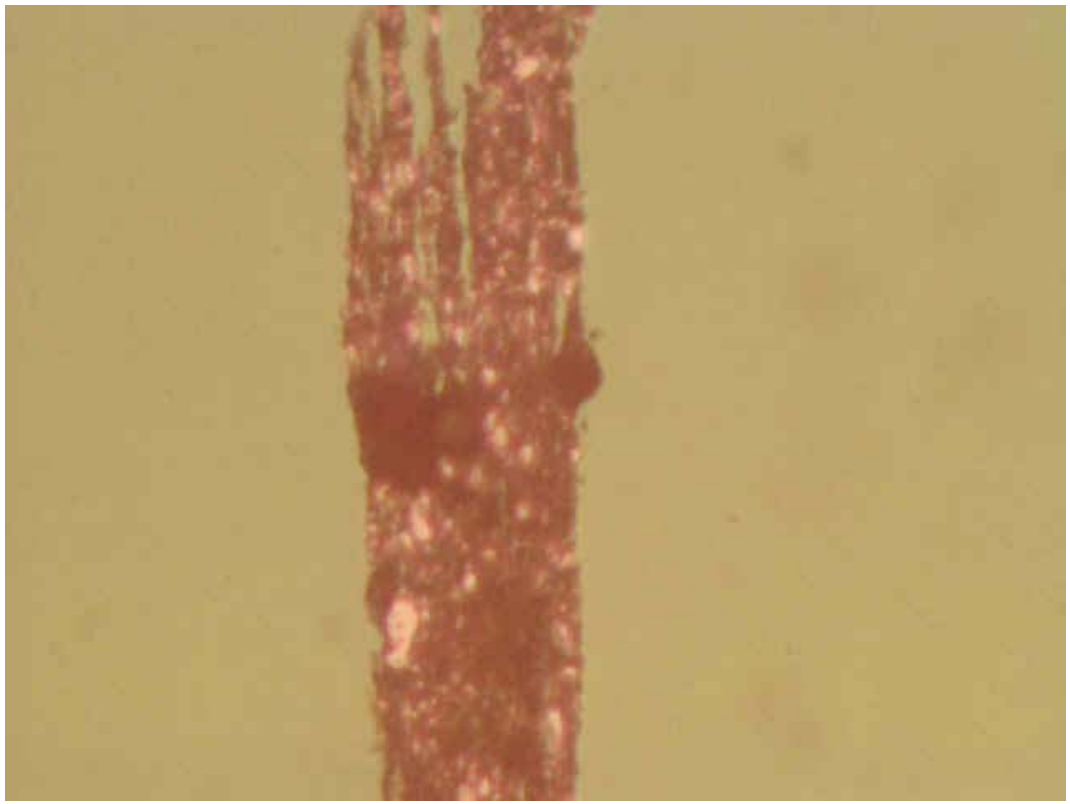
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil	6/28/05	90150	1000 hours	6858 miles plus 1000 hours	100x	73433 90150	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, white crystalline debris, fibers, filter media, soot, and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	Filter media and crystalline debris							



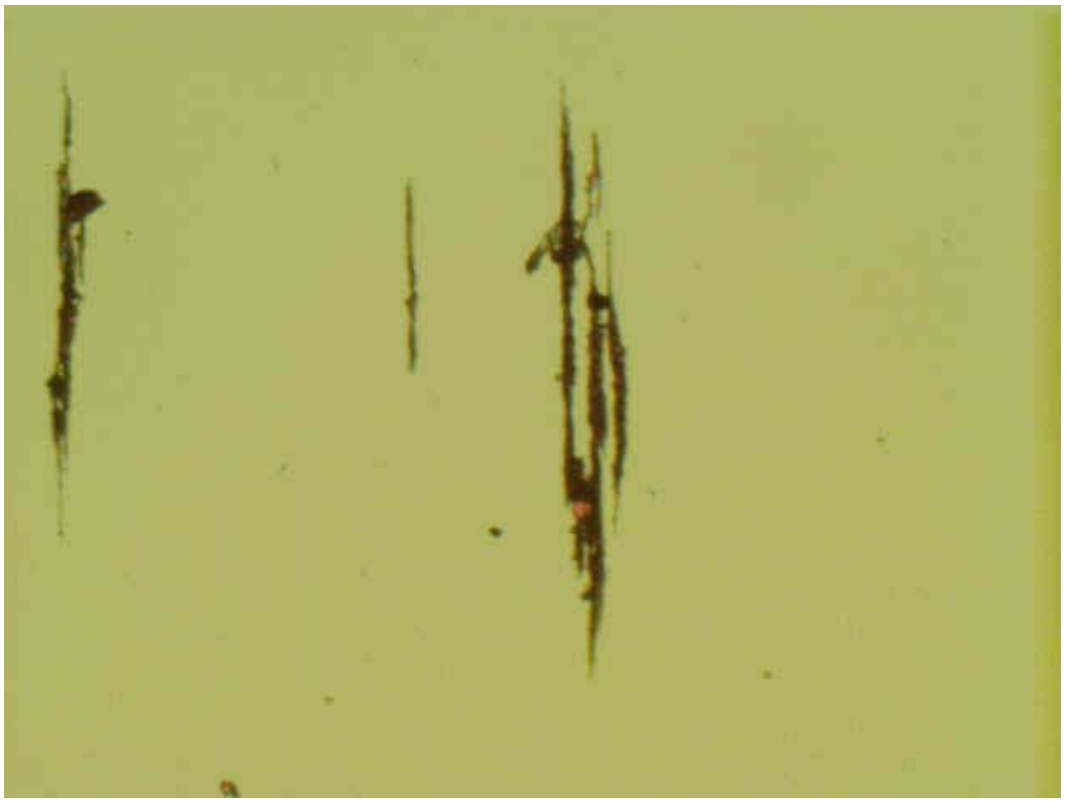
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil	6/28/05	90150	1000 hours	6858 miles plus 1000 hours	500x	73433 90150	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, white crystalline debris, fibers, filter media, soot, and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	~60 microns ferrous laminar particulate.							



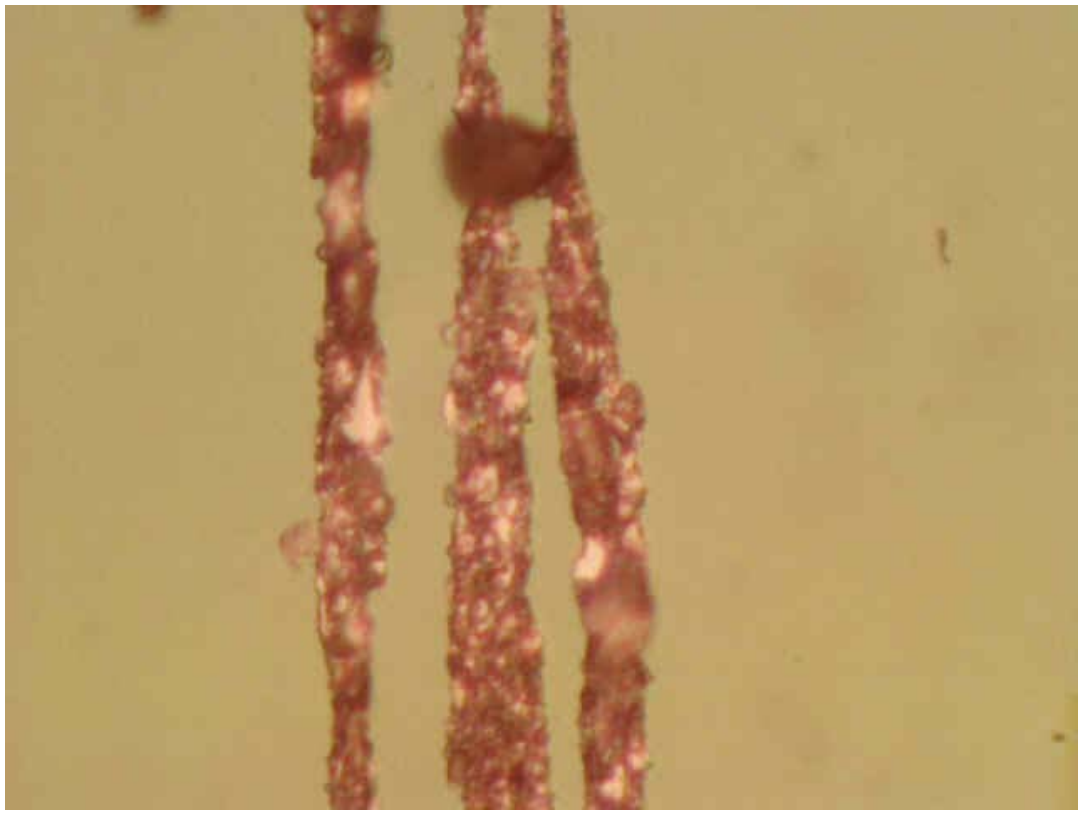
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Used Oil	6/28/05	90150	1000 hours	6858 miles plus 1000 hours	500x	73433 90150	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, white crystalline debris, fibers, filter media, soot, and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	Rubbing wear with dark metallo oxides							



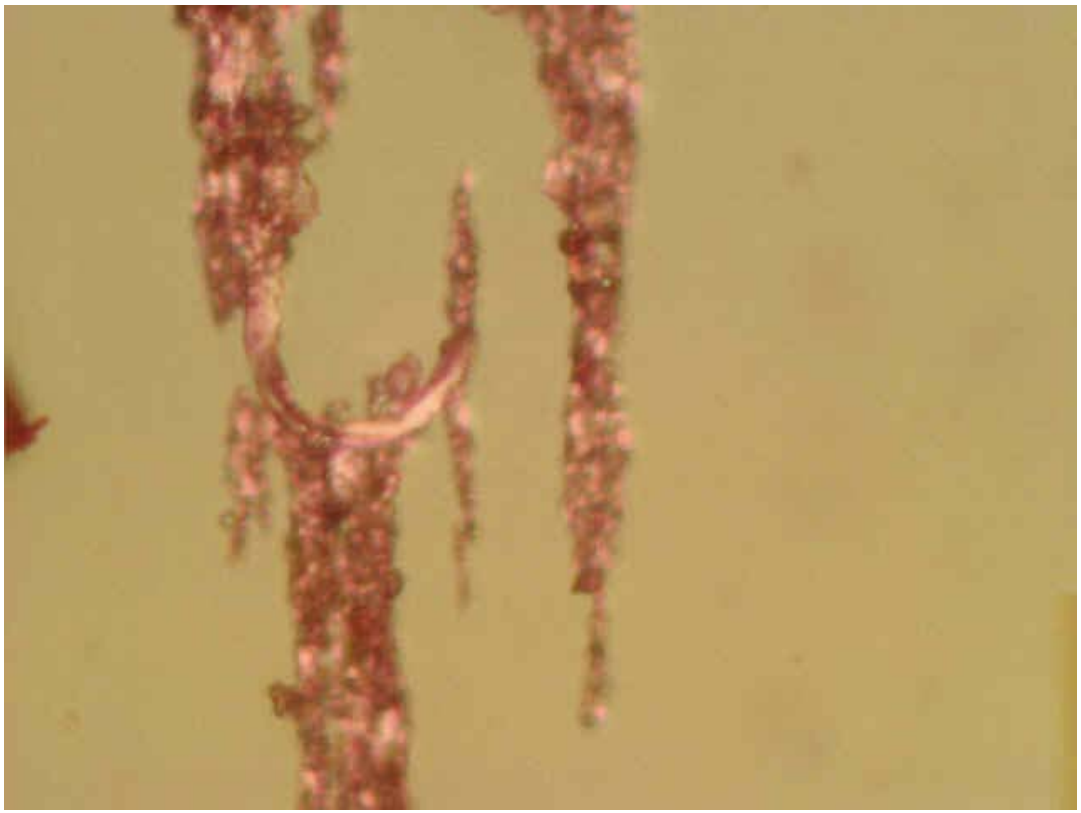
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/28/05	90150	1000 hours	6858 miles plus 1000 hours	100x	73433 90150	Entry
Comments	Ferrographic analysis of lube oil sample, taken from the crankcase, indicates a light amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of dark metallo oxide, sand/dirt, white crystalline debris, fibers, filter media, soot, and ferrous laminar particulate (~60 microns) was noted. Please see attached images.							
Special Features	A moderate amount of fine ferrous particulate, typical of normal rubbing wear with sand/dirt and laminar particulates							



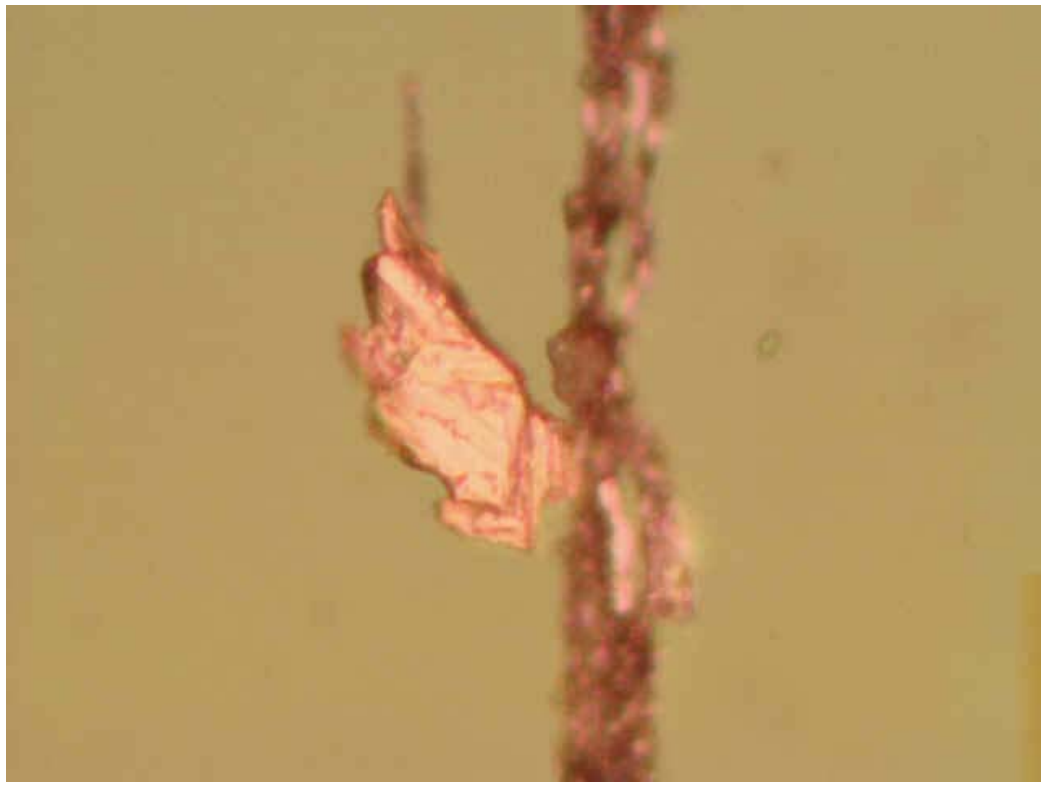
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/28/05	90151	1000 hours	6858 miles plus 1000 hours	500x	73433 90151	Entry
Comments	Ferrographic analysis of the cross section of the bypass filter indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous and non-ferrous laminar particulate (~30 microns), ferrous cutting wear, soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	~60 microns ferrous laminar particulate.							



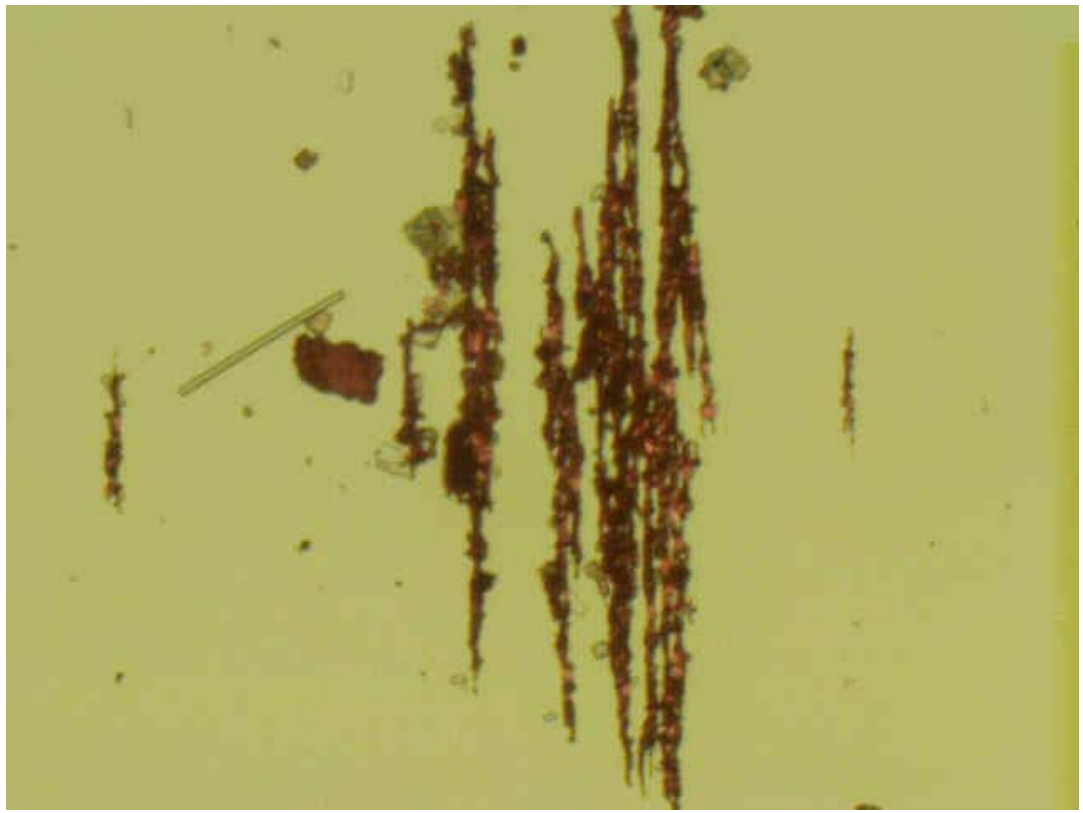
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/28/05	90151	1000 hours	6858 miles plus 1000 hours	800x	73433 90151	Entry
Comments	Ferrographic analysis of the cross section of the bypass filter indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous and non-ferrous laminar particulate (~30 microns), ferrous cutting wear, soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	ferrous cutting wear							



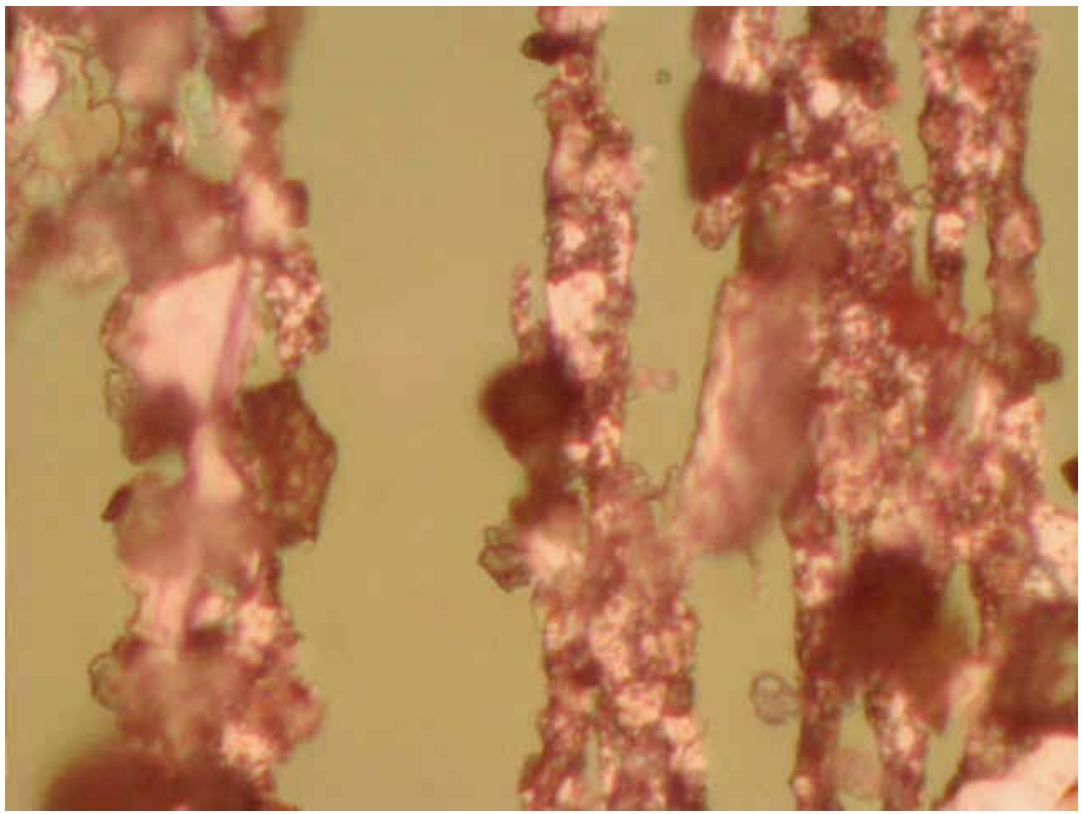
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Filter	6/28/05	90151	1000 hours	6858 miles plus 1000 hours	800x	73433 90151	Entry
Comments	Ferrographic analysis of the cross section of the bypass filter indicates a moderate amount of fine ferrous particulate, typical of normal rubbing wear. A light amount of ferrous and non-ferrous laminar particulate (~30 microns), ferrous cutting wear, soot particles, sand/dirt, and dark metallo oxide was noted. Please see attached images.							
Special Features	~30 micron laminar particulate							



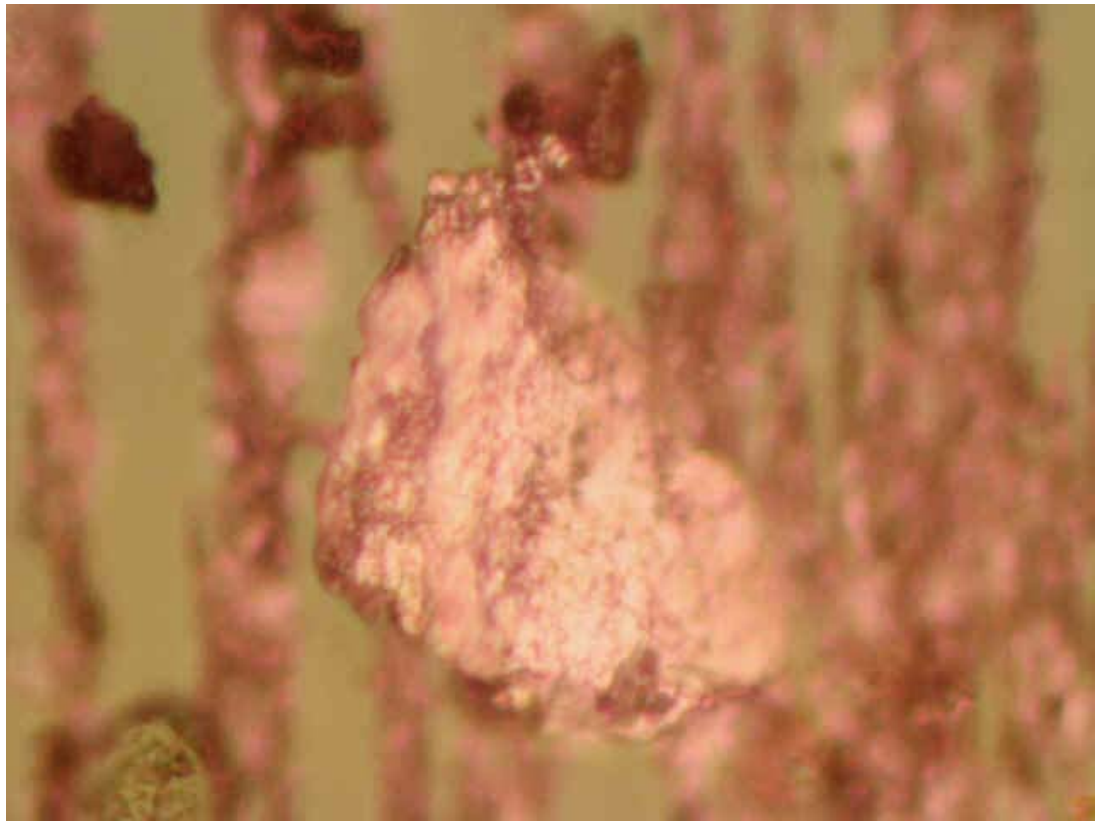
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	6/28/05	90153	1000 hours	6858 miles plus 1000 hours	100x	73433 90153	Entry
Comments	Ferrogram shows a moderate amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear. A lighter amount of dark oxide/soot is present as is a discrete fatigue particle measuring 52 µm. Please see attached images.							
Special Features	A moderate amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear with filter debris, sand/dirt, and fatigue particle.							



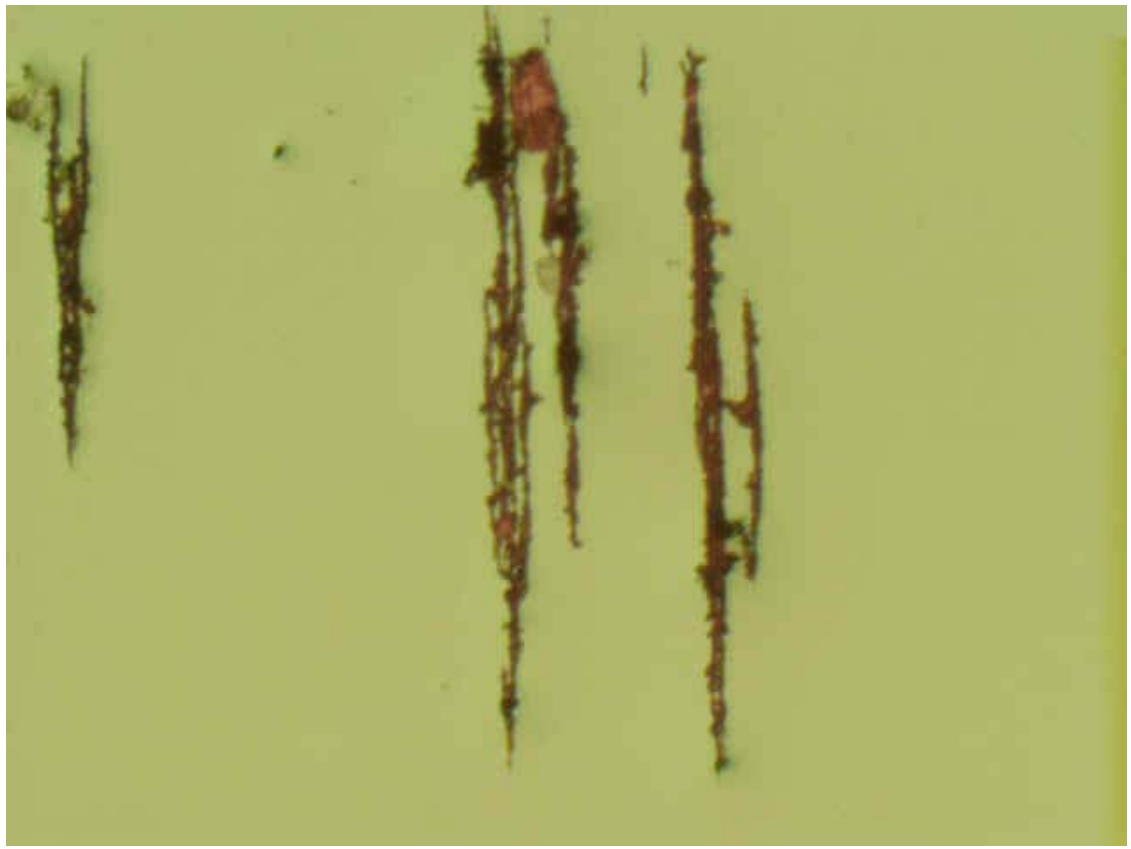
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	6/28/05	90153	1000 hours	6858 miles plus 1000 hours	500x	73433 90153	Entry
Comments	Ferrogram shows a moderate amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear. A lighter amount of dark oxide/soot is present as is a discrete fatigue particle measuring 52 µm. Please see attached images.							
Special Features	Sand/dirt with dark oxides and rubbing wear							



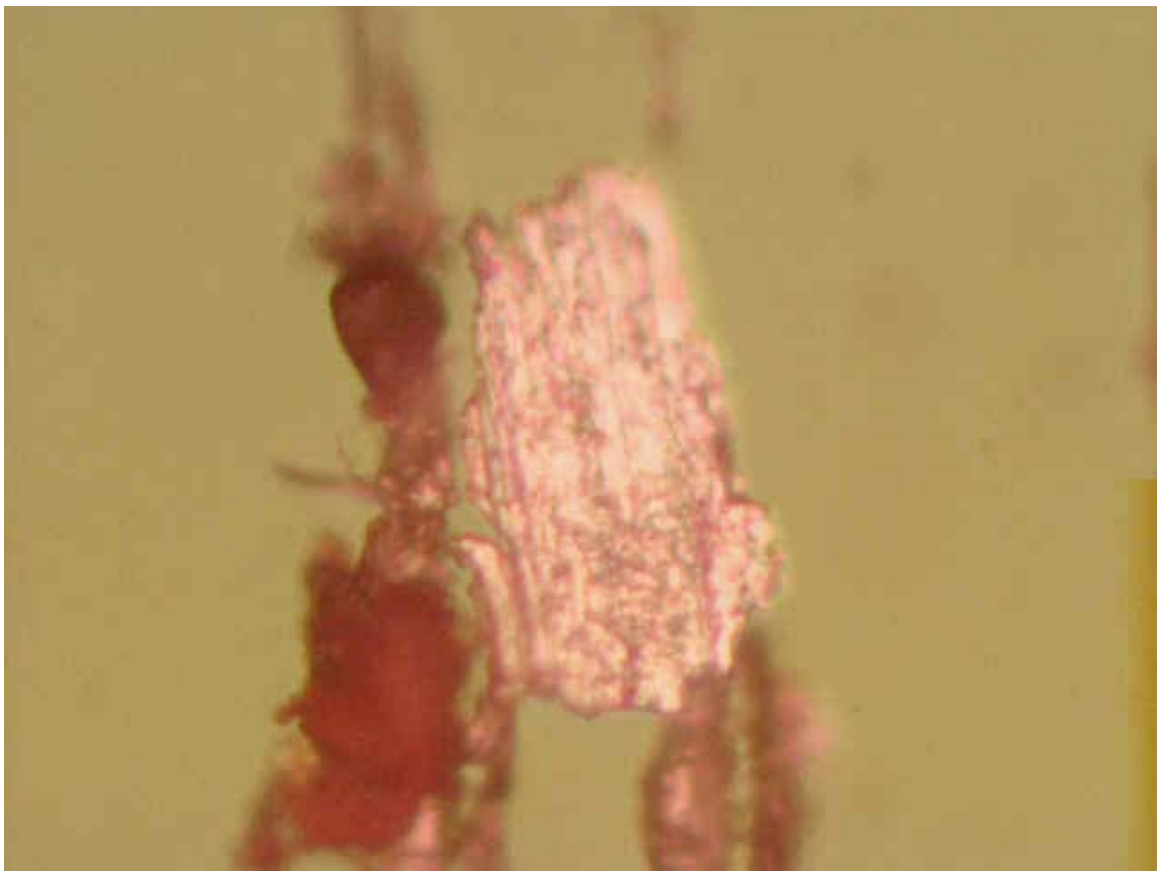
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Full Flow	6/28/05	90153	1000 hours	6858 miles plus 1000 hours	500x	73433 90153	Entry
Comments	Ferrogram shows a moderate amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear. A lighter amount of dark oxide/soot is present as is a discrete fatigue particle measuring 52 µm. Please see attached images..							
Special Features	52 micron discrete fatigue and soot particles.							



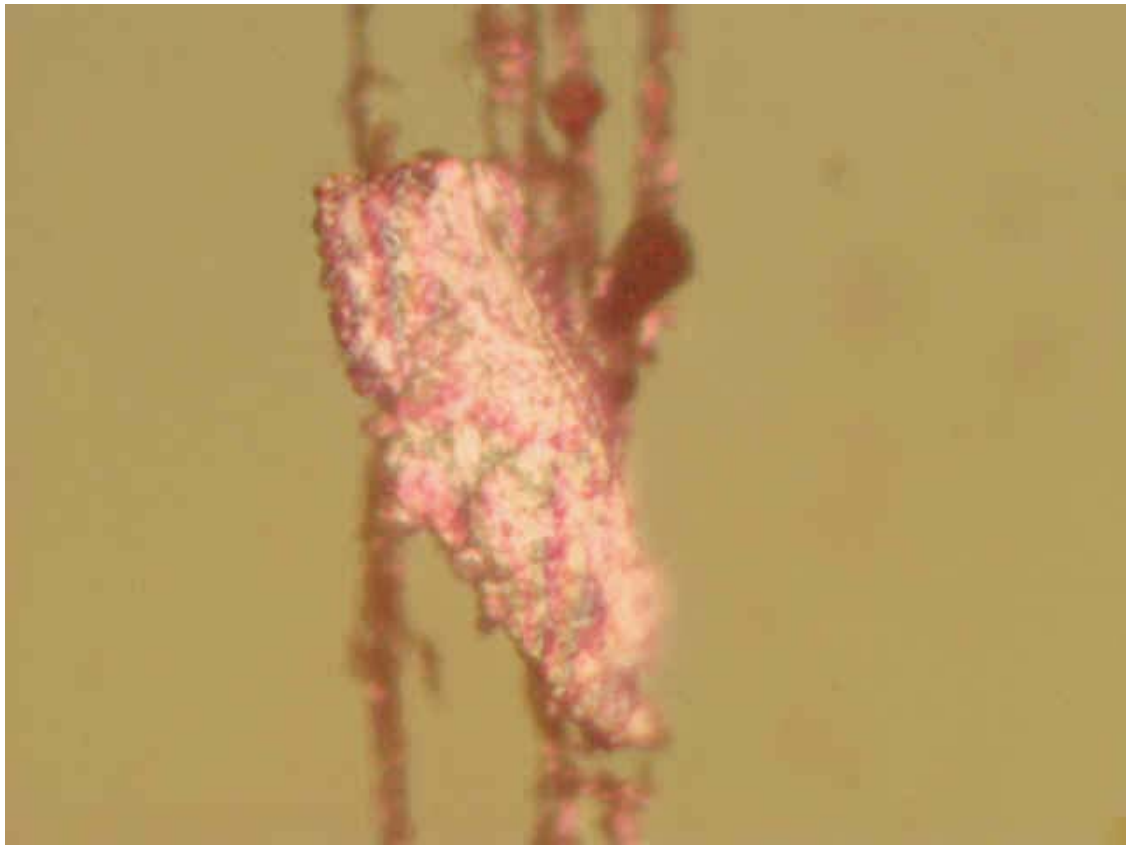
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	6/28/05	90152	1000 hours	6858 miles plus 1000 hours	100x	73433 90152	Entry
Comments	Ferrogram shows a light amount of fine (<10µm) ferrous particulate, typical of normal rubbing wear. Two discrete laminar particles, measuring 42 and 50 µm, are noted but are not considered problematic at this time. Please see attached images.							
Special Features	A light amount of fine (<10µm) ferrous particulate, typical of normal rubbing wear with large laminar particle							



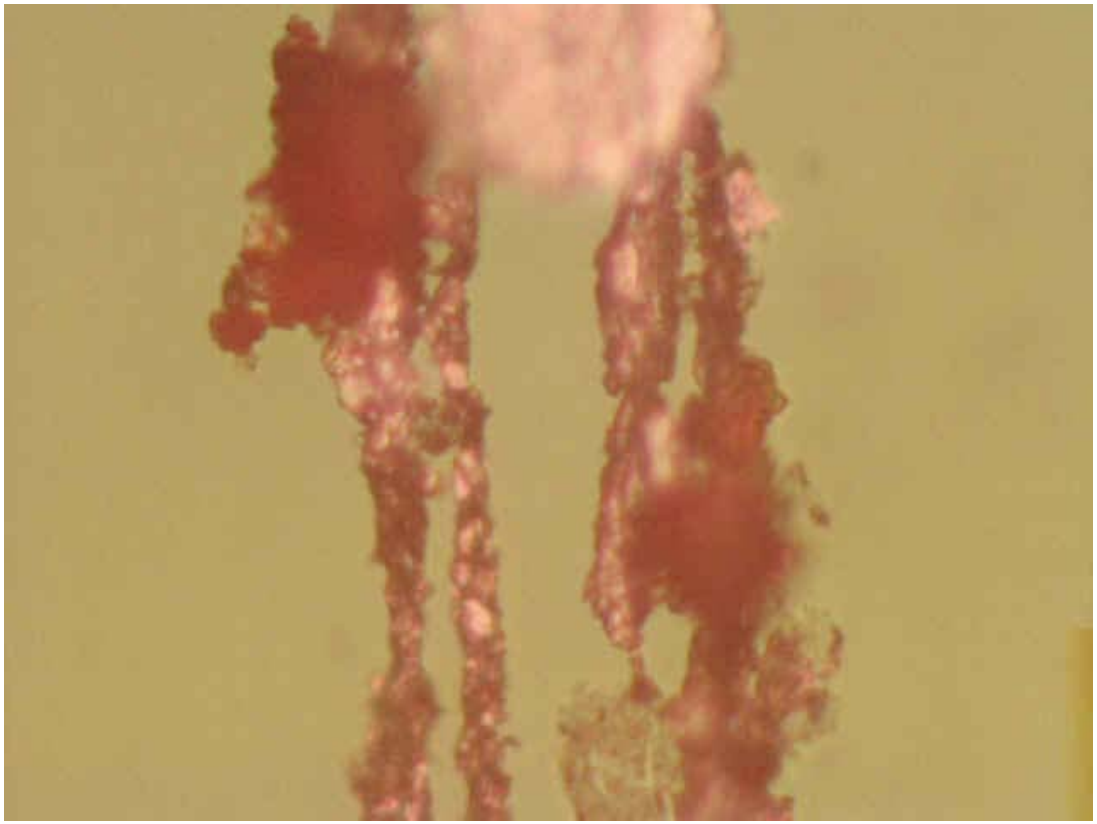
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	6/28/05	90152	1000 hours	6858 miles plus 1000 hours	500x	73433 90152	Entry
Comments	Ferrogram shows a light amount of fine (<10µm) ferrous particulate, typical of normal rubbing wear. Two discrete laminar particles, measuring 42 and 50 µm, are noted but are not considered problematic at this time. Please see attached images.							
Special Features	42 micron ferrous laminar particle.							



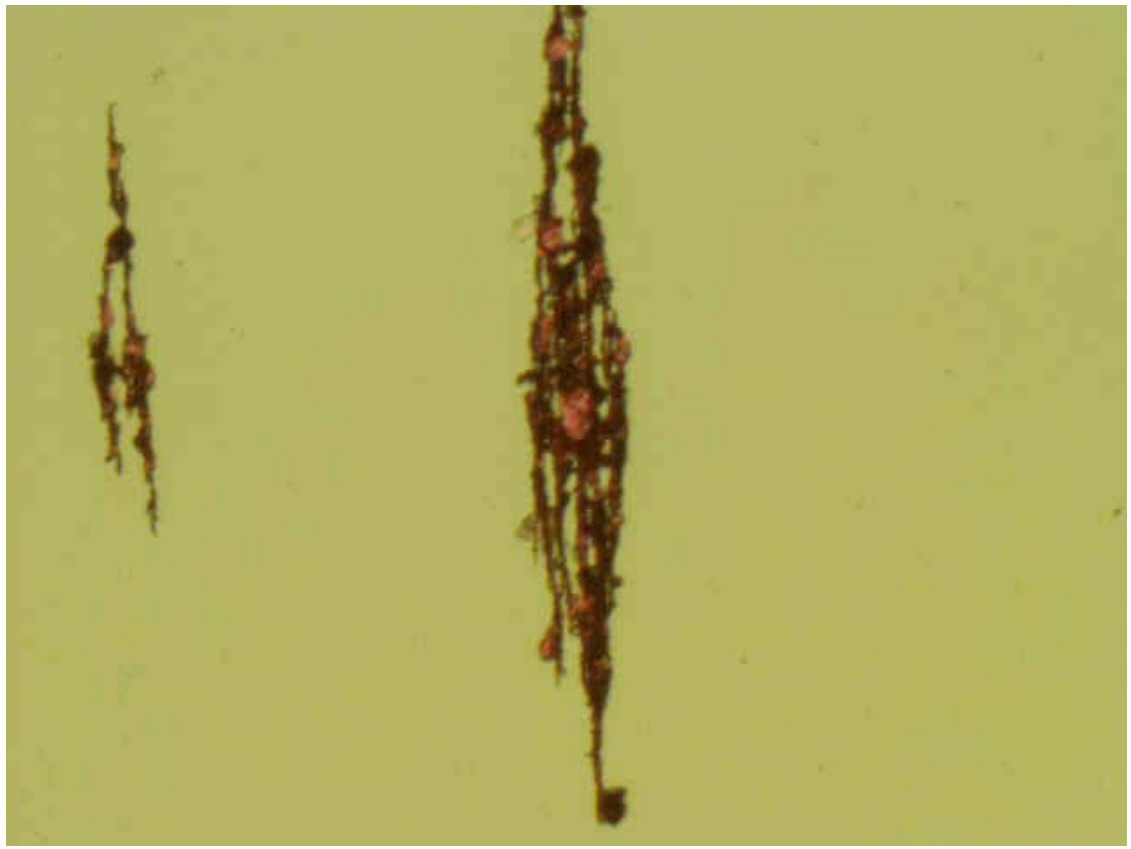
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	6/28/05	90152	1000 hours	6858 miles plus 1000 hours	500x	73433 90152	Entry
Comments	Ferrogram shows a light amount of fine (<10µm) ferrous particulate, typical of normal rubbing wear. Two discrete laminar particles, measuring 42 and 50 µm, are noted but are not considered problematic at this time. Please see attached images.							
Special Features	50 micron ferrous laminar particle.							



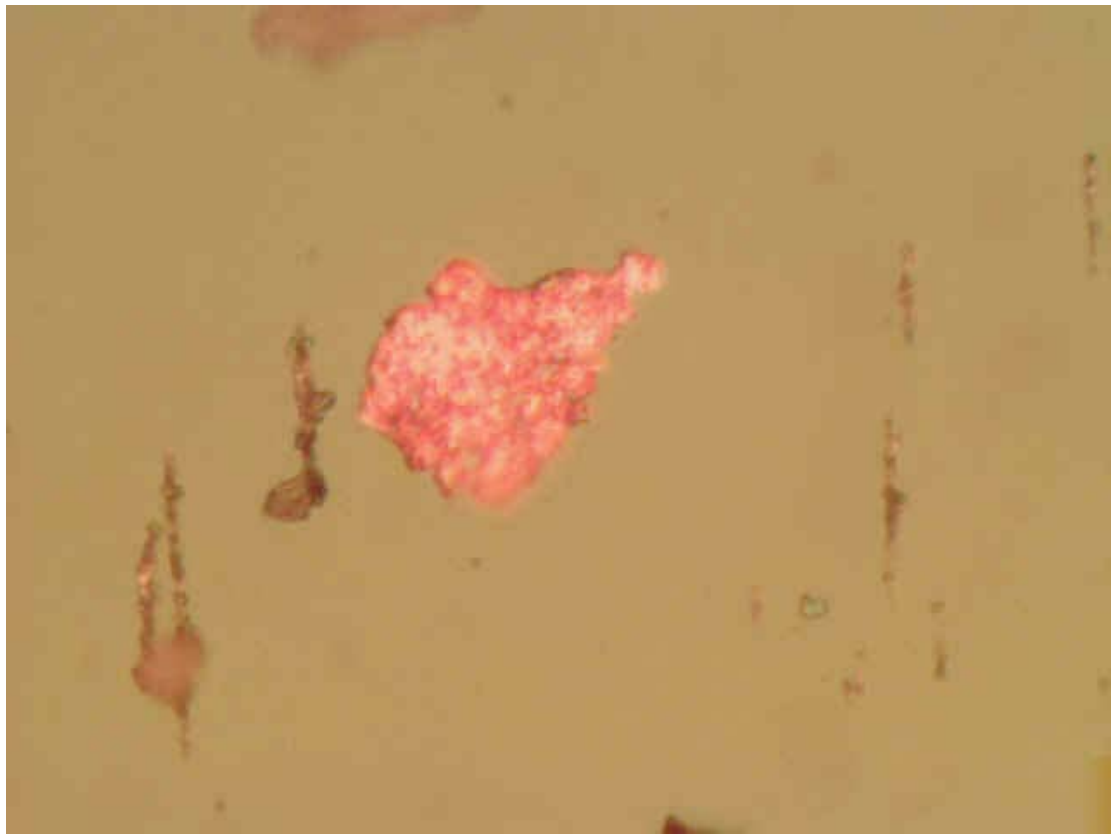
Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	Bypass Residual	6/28/05	90152	1000 hours	6858 miles plus 1000 hours	800x	73433 90152	Entry
Comments	Ferrogram shows a light amount of fine (<10µm) ferrous particulate, typical of normal rubbing wear. Two discrete laminar particles, measuring 42 and 50 µm, are noted but are not considered problematic at this time. Please see attached images.							
Special Features	~30 micron laminar particulate with rubbing wear, sand particle and oxides							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	full flow residual	6/28/05	90154	1000 hours	6858 miles plus 1000 hours	100x	73433 90154	Entry
Comments	Ferrogram shows a light amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear. A discrete laminar copper particle, 28 µm in size, is noted but is not considered problematic at this time. Continue to monitor. Please see attached images.							
Special Features	A light amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear with red oxides.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	full flow residual	6/28/05	90154	1000 hours	6858 miles plus 1000 hours	500x	73433 90154	Entry
Comments	Ferrogram shows a light amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear. A discrete laminar copper particle, 28 µm in size, is noted but is not considered problematic at this time. Continue to monitor. Please see attached images.							
Special Features	28 µm discrete laminar copper particle.							



Idle Test Ferrograms								
Bus Number	**Oil Source**	**Sample Date**	**NTS Sample Number**	**Test Stage**	**Total Miles and Hours on the Oil**	**Magnification**	**Photograph Number**	**Region of Slide**
73433	full flow residual	6/28/05	90154	1000 hours	6858 miles plus 1000 hours	500x	73433 90154	Entry
Comments	Ferrogram shows a light amount of fine (<10 µm) ferrous particulate, typical of normal rubbing wear. A discrete laminar copper particle, 28 µm in size, is noted but is not considered problematic at this time. Continue to monitor. Please see attached images.							
Special Features	Rubbing wear with dark metallo oxides and sand/dirt debris