



Mainlube Superior Maintenance Lubricants Pty Ltd

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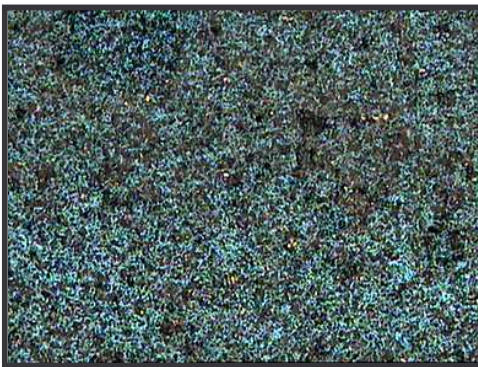
DATE 19/04/02

Wear Metal Analysis No 1860 Steve VXSS T56

Attention; Steve

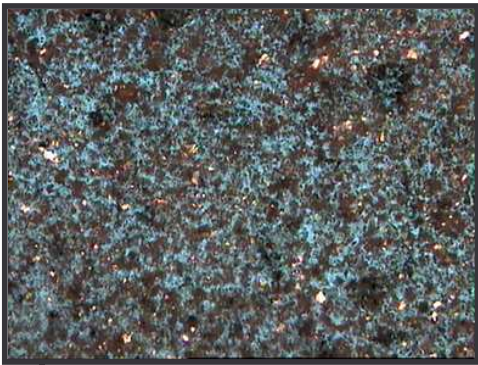
Objective. Check oil for Wear Metal Particles and any possible contamination, Information found used to establish machine condition and future maintenance requirements.

Method. Sample of approx 100 ml received from **VXSS T56 @ 20,000 klms, running on Mainlube 151 Synthetic E P Gear Oil SAE 75w140**,. Sample preparation in accordance with Mainlube standard laboratory practices. One sample processed 1 ml in volume; therefore the amount seen in the video pictures is the actual debris concentration per ml of oil.

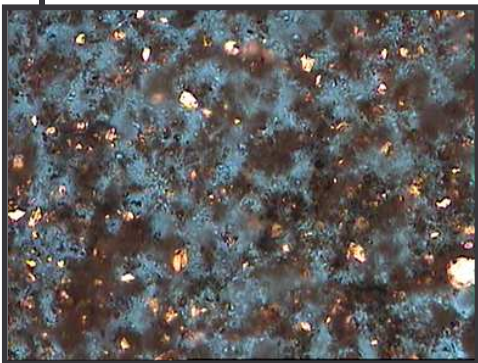


One mil. of the sample oil has been forced through a 13-mm diameter **0.3-micron membrane filter @ 150 P.S.I.** The membrane filter has caught any contaminates present, filters are glass slide mounted for examination. This image represents a 1-mm diameter circle focused on the top layer of the filter @ **100X**. The green/blue coloured background is the microscopes bottom light shinning up through the glass slide illustrating density level of dirt, metal chunks and debris particles.

This image demonstrates the average debris level for sample No. 1860
*To achieve an acceptable life from this application,
this image should be clear, no particles*



**Overview density of dirt,
Wear Metal Chunks and debris particles @ 200X.**



3 Body Fatigue Wear Particles 5- 15 Microns

3 Body Fatigue Chunks are wear metal particles that began when a foreign body was forced through the load zone creating a crack or dent.

Repetitive bruising in this area fractures the metals subsurface causing the area to eventually spall out. This creates the familiar scaring and light-pitting damage observed on load bearing surfaces.

These spalling metal particles are carried by the oil flow through other load zones, snowballing the effect and further damaging load-bearing surfaces.

Damage will continue to this machine until the contamination is completely removed

Recommendations

This sample is contaminated with 3 Body Fatigue Wear

This wear mode is being forced through the load zone by the lubricant flow causing further damage by generating more 3 Body Fatigue wear and finally rolled out flat to form Laminar Wear Metal particles

This contamination is causing damage to the machine and should be removed at the first opportunity.

Although this report shows many wear modes present, the amount of each mode is quite low indicating extensive damage has not yet happened. You can see this by the lack of metal in the background.

Mainlube recommends that the gearbox flushed with Mainlube 245 Flush to assist with the debris removal. If after flushing there is a possibility that wear debris still remains, then repeat the process until they are both clean.

Replace the lubricant with Mainlube 154 Synthetic Solid Boundary E P Gear Oil SAE 75w90, run for 10 minutes and take sample for benchmark.

Retest every 500 hours until trends are established.

These recommendations and suggestions serve merely as a guide and in no way imply liability.

Steve Simmonds ATCAE
Managing Director