

Report of The Month

This Austro AE300 diesel engine saw a dramatic spike in lead in December. Can you guess what happened?

To learn more about where the elements are from, [click here](#).

| ELEMENTS IN PARTS PER MILLION | MI/HR on Oil | 107 | UNIT / LOCATION AVERAGES | 87 | 84 | UNIVERSAL AVERAGES |
|-------------------------------|-------------------|-------------|--------------------------|-----------|----------|--------------------|
| | MI/HR on Unit | 278 | | 170 | 84 | |
| | Sample Date | 12/1/2018 | | 7/10/2018 | 3/6/2018 | |
| | Make Up Oil Added | 1 qt | | 2 qts | 1 qt | |
| | ALUMINUM | 4 | 3 | 3 | 4 | 3 |
| | CHROMIUM | 4 | 3 | 3 | 4 | 3 |
| | IRON | 53 | 54 | 57 | 93 | 66 |
| | COPPER | 6 | 4 | 4 | 6 | 3 |
| | LEAD | 2543 | 637 | 2 | 1 | 3 |
| | TIN | 0 | 0 | 0 | 1 | 0 |
| MOLYBDENUM | 1 | | | | | |
| NICKEL | 4 | | | | | |
| MANGANESE | 1 | | | | | |
| SILVER | 0 | | | | | |
| TITANIUM | 29 | | | | | |
| POTASSIUM | 2 | | | | | |
| BORON | 35 | | | | | |
| SILICON | 6 | | | | | |
| SODIUM | 3 | | | | | |
| CALCIUM | 1539 | | | | | |
| MAGNESIUM | 9 | | | | | |
| PHOSPHORUS | 861 | | | | | |
| ZINC | 604 | | | | | |
| BARIUM | 0 | | | | | |

| | | MI/HR on Oil | 25 | | |
|------------|--|-------------------|------------|------------|------|
| | | MI/HR on Unit | 303 | | |
| | | Sample Date | 12/20/2018 | 12/20/2018 | |
| | | Make Up Oil Added | 0 qts | | |
| ALUMINUM | | 2 | 0 | | 0 |
| CHROMIUM | | 1 | 0 | | 10 |
| IRON | | 14 | 0 | | |
| COPPER | | 0 | 0 | | 2 |
| LEAD | | 0 | 0 | | 68 |
| TIN | | 0 | 0 | | |
| MOLYBDENUM | | 0 | 0 | | 10 |
| NICKEL | | 0 | 0 | | 3 |
| MANGANESE | | 1 | 0 | | |
| SILVER | | 0 | 0 | | 2769 |
| TITANIUM | | 49 | 0 | | 15 |
| POTASSIUM | | 2 | 0 | | |
| BORON | | 67 | 1 | | 933 |
| SILICON | | 3 | 0 | | 1064 |
| SODIUM | | 2 | 0 | | |
| CALCIUM | | 2647 | 0 | | 0 |
| MAGNESIUM | | 9 | 0 | | |
| PHOSPHORUS | | 949 | 0 | | |
| ZINC | | 1056 | 0 | | |
| BARIUM | | 0 | 0 | | |

The follow-up samples.

Most piston aircraft engines run 100LL and fuel blow-by causes lead to read at several hundred (or thousand) ppm. But Jet A doesn't have any lead in it, so lead should read very low in this engine's report. Upon seeing this high lead reading, we cautioned the owner that some 100LL may have been used. He immediately grounded the aircraft. Before draining the fuel and flushing the fuel system, he took samples from both the engine oil and the fuel tanks to determine the extent of lingering contamination. Both of those samples came back without any lead whatsoever, which led us to consider another alternative: sample contamination. As it turns out, his sample was contaminated by his mechanic before it was sent. This report stands as a good reminder to check the trends before proceeding with costly repairs, and to always make sure you get a clean sample.