

## TECHNICAL MEMORANDUM

TO: Brad Giordani  
FROM: Alan Roth  
DATE: June 14, 2001  
SUBJECT: Report on MILITEC-1 in two prototype Caterpillar engines.

This report was compiled by Capt. Dave Wentling, owner of "The Instigator" charter fishing boat. Capt. Wentling has a Master's Degree in Oceanography from Duke University, class of '67, and has had 35 years of experience working with diesel engines. He has captained charter boats for 31 years and has developed a close working relationship with Caterpillar. As a result of the respect Caterpillar has for him, the company agreed to supply him with two prototype 3176B engines for his newly built, 54', Craig Blackwell charter boat, "The Instigator". In return, Capt. Wentling was to monitor the performance of the engines over a specified "Official" test period. The prototype engines were equipped with the latest state-of-the-art electronic monitoring package that included gauges for:

- Gallons per hour
- Percent load
- Oil pressure and temperature
- Transmission pressure and temperature

Capt. Wentling was awarded the prototype engines for testing and evaluation because of his strong technical background, mechanical ability, and sea experience. Twenty-nine other sets of engines also went out for field testing. Capt. Wentling put more hours on the engines than any other study participant.

The Caterpillar prototypes are six-cylinder, inline engines with aluminum spacer blocks between the main block and head. At the end of the official testing period of 1500 hours of onboard use over a period of 12 months, the engines were purchased by Capt. Wentling.

Upon completing the field testing, the engines and transmissions were treated with MILITEC-1. There was an immediate 8% decrease in fuel consumption that then became the norm. This was seen through the gauges supplied by Caterpillar, by the electronic histograms, and from data collected on actual fuel supplied on a daily basis.

The most profound observations were made at 3800 hours, at which time the engines had 2300 hours of operation with MILITEC-1, when an upgrade was done by Caterpillar. The engines were torn down to just the block and crank remaining in the boat. The heads, pistons, sleeves, and liners were removed along with the aluminum spacer blocks. The Caterpillar mechanic who was one of the first mechanics certified by Caterpillar for their new 3176B electronic-modulated engines, was greatly impressed by what he found. Quoting directly from the mechanics report, he saw "little or no wear on any of the frictional surfaces...The cross hatching was still present on the surface of the liners. There was no wear on the cam, rod, or main bearings." The mechanic stated, "Caterpillar was hoping to achieve a 10,000 hour motor with the advent of this new 3176B series. However, I feel that they will be every bit of a 15,000 hour motor or better. I have never seen so little wear on a 3800 hour motor in my life." The mechanic, who has been working on diesel engines for 12 years was unaware that the engines had been treated with MILITEC-1 and his observations and measurements were totally unbiased.

For those who would like to discuss these findings with Capt. Wentling, he welcomes inquiries at telephone number (252) 986-1000.