MASS TRANSIT ADMINISTRATION - MILITEC REPORT

JUNE 2, 2000

[Note: Phil George was project manager for this study of Militec-1 for his agency, a mass transit administration on the East Coast. He stipulated that the report not carry the name of the agency as it was intended for internal use. Contact information can be obtained from Militec, Inc.]

From: Phil George, Quality Assurance Specialist

Subject: Militec Report - Conclusion

1. ***The Product:***

Militec is added to oil but yet it is not an oil additive. The oil is used to carry the product through the equipment it is being used in. There are no particulates or resins within the product which can seriously damage engines and other equipment. Unlike products with Teflon coating that can peel off and clog filters, Militec treats the metals of the engine with a molecular bond that will not separate from the metal. It will remain effective up to 15,000 miles. It does not change the characteristics of the primary oil. The M.S.D.S. was submitted to our safety department and approved for use.

Operations personnel of a federal law enforcement agency (Agency name could not be used) found Militec provides for continued operation of their weapons in difficult environments and greatly reduces jamming. Militec is now their primary weapons lubricant.

Private companies and public operations (General Motors, Dupont, McDonnell Douglas, Alcoa, Allied Signal Aerospace, Amoco) have tested and evaluated Militec. Militec met the qualification requirements and is certified and approved for the United States Navy. Information and results are available upon request.

2. ***Testing & Evaluation:***

There have been two tests and evaluation now completed here at M.T.A. The first was in the fall of 1995. This was controlled and monitored by Quality Assurance. The first sampling after Militec was added indicated an overall drop of 63% in iron and an overall drop of 79% in copper. The second test indicated an overall drop of 13% in iron after the first sampling and a 28% drop in iron after the second sampling. Copper had an overall drop of 56.9% after the first sampling and a 79.8% drop after the second sampling.

The bus divisions completed the second, and larger test. It was still monitored by Quality Assurance. Overall there was a drop in iron and copper for the four bus divisions.

3. ***Concerns or Risks:***

There were some engine changes or semi overhauls after Militec was added to the engines. It was a concern if adding Militec could possibly be detrimental to engines, or cause premature failures. After reviewing the overall numbers of engine changes and semi overhauls, it is my opinion the adding of Militec was not detrimental to engine life. There is, however, the strong possibility that adding Militec to the engine could very well have saved some engines from failure.

There were six groups of buses which had a minimum of twenty percent (20%) or more that had the Militec product added. The total amount of buses in this population is 302.

The population has two separate groups. The group with the Militec has ninety four (94) buses. The other group (control group) has two hundred eight (208) buses in it.

Calculations on engine changes and semi-overhauls were completed by separating the test period into two years. The first period was August 1998 to July 1999. The second period was August 1999 to July 2000.

First Test Period;

During the first test period, the Militec buses had 12 (12.7%) of the engines changed, and the control group (non Militec) had 42 (20.1%) of their engines changed. During the first test period, the Militec buses had 5 (5.3%) semi overhauls, and the control group (non Militec) had 18 (8.6%) semi overhauls.

Second Test Period:

During the second test period, the Militec buses had 13 (13.8%) of the engines changed, and the control group had 53 (25.4%) of their engines changed. During the second test period, the Militec buses had 2 (2.1%) semi overhauls, and the control group had 1 (0.4%) semi overhauls.

From the information and statistics gathered, it would appear there would not be a risk in using the Militec product. In fact, Militec does show it reduces wear in engines.

4. *Recommendation:*

It is my recommendation MTA should use this product in their engines per the suggested application of the product manufacturer. The suggestion or recommendation by Militec is to add the product every 15,000 miles. Since MTA is changing their engine oil at the consumption of 2,500 gallons of fuel instead of mileage calculations, it is estimated that every second oil change should have Militec added. This is probably equal to l4,000 to 15,000 miles.

Ideally, the most proficient way to treat the engine would be adding into the maintenance program an indicator on the computer print out informing the supervisors and mechanics the need to add Militec.

Precise or exact timing for adding Militec is not particularly necessary, but it is the most economical and beneficial. If the product is late being added or missed completely at the time of an oil change, there is not going to be a catastrophic failure, but there will be an increase in metal wear on untreated surfaces. If for some reason, there should be extra Militec added prior to or during the scheduled oil change, it will be a slight waste of the product. There would be no harm to the engine.

5. *Pricing-Cost:*

Militec will treat all metal surfaces it comes in contact with. Militec will only bond to unprotected surfaces. Therefore in low wear areas, Militec will not be needed as much, so the dosage can be lowered after the initial amount has been added. A liberal estimate of three oil changes for the first year for the fleet in material would cost $20,065.50. Three oil changes the second year, using current price would cost $l8,522.00. This is basically the price of one engine in parts and labor.

ADDENDUM – TEST PROTOCOL AND HISTORY
JUNE 14, 2000

From: Phil George - Quality Assurance Specialist

Subject: Militec Report

To my knowledge there was not a pass/fail criteria for this test other than to determine if wear metal would be reduced if Militec were added to the engine oil.

The evaluation of wear metals was completed only using information from buses that had Militec added. A separate group of buses as control groups were not utilized to evaluate wear metals through normal engine oil changes.

Originally 200 buses were selected for test and evaluation. Only 108 actually had Mi1itec added to engines. Out of the 108 engines treated with Militec, only 53 met the criteria for evaluation.

Criteria:

The Militec product was pre-measured into individual bottles and distributed to the four bus divisions. The bus divisions were to add the Militec to fifty pre-determined buses at the time of their next oil change. Militec is not an oil additive. The engine oil is only used as a vessel to circulate the product through the engine. Most of the Militec added occurred in June, July, & August 1998.

It was determined by Quality Assurance to evaluate this product from six oil samples taken; three before Militec, which would include the oil sample drained at the time Militec was added, and three samples after Militec was added. It was Quality Assurance's intention to test two hundred (200) buses. Iron and copper are the only metals being monitored for wear.

The following information is a result of the data collected:

Bush Division:

From the fifty samples and the list of buses requested to have the Militec added, only twelve buses had Militec added. This is twenty four percent for test and evaluation. Three buses were disqualified. One bus had the engine changed after the Militec was added and six oil change samples could not be obtained. Two oil samples were not taken and sent to the laboratory at the time Militec was added. This leaves nine buses from the original fifty for evaluation (18%).

Eastern Division:

From the fifty samples and the list of buses requested to have the Militec added, only nineteen buses had Militec added. This is thirty eight percent for test and evaluation. Four buses were disqualified. There were two engine changes after the Militec was added and six oil changes could not be obtained. One oil sample was not taken and sent to the laboratory at the time Militec was added. One bus was retired. This leaves fifteen buses from the original fifty for evaluation (30%).

Kirk Division:

From the fifty samples and the list of buses to have Militec added, forty buses had Militec added. This is eighty percent for test and evaluation. Fourteen buses were disqualified. There were six buses with engine changes or engine semi overhauls where six samples could not be obtained. There were eight buses disqualified because of poor sampling. This leaves twenty six buses from the original fifty for evaluation (52%).

***Northwest Division*:**

From the fifty samples and the list of buses to have Militec added, thirty seven buses had Militec added. This is seventy four percent for test and evaluation. Twenty one buses have not had an oil sample taken or sent to the laboratory after Militec was added. Thirteen were disqualified because oil samples were not taken or sent to the laboratory when the Militec was added. Twenty one buses have had engine changes or engine semi overhauls. A total of thirty four buses were disqualified because of poor sampling or engine repairs. This leaves three buses from the original fifty for evaluation (6%).

Mass Transit Administration changed their oil change intervals from 9,000 miles to the amounts of fuel being used per bus. It was determined to change oil at the time 2,500 gallons of fuel was used by the bus. It was calculated to be between 7,000 to 7,500 miles.