



MARYLAND DEPARTMENT OF TRANSPORTATION

MASS TRANSIT ADMINISTRATION

1515 Washington Boulevard - Baltimore, Maryland 21230

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MILITEC REPORT

**Summary:**

The MTA has tested an internal engine metal treatment product called "MILITEC-1". The product appears to reduce wear by 63%. The annual cost of application is \$22,400.00, less than the cost of two replacement engines.

**Background:**

In February, 1995 the MTA was made aware of a product called MILITEC-1, which claimed to treat the metal surfaces inside an engine. This treatment results in reduced wear and increased engine life. The information included names and phone numbers of users and some oil analysis results. Several users were contacted and supported MILITEC's claims. Therefore the MTA conducted a small test.

The product is added to the oil as a method of application to the interior metal surfaces. It is not an oil additive. According to the supplier it affects the metal surface and reduces the rate of wear. This is measured by the wear metal levels in the oil analysis. As the treated surfaces wear the un-treated metal is exposed and the level of metal wear increases. That is the time to redope the engines. This was estimated as every 15,000 miles.

Exact timing of the application is not necessary. If the treated surface wears away before reapplication the engine is as it is now, i.e. there is no negative result. If an engine is retreated a few thousand miles before needed there is a slight waste of material but no harm to the engine.

The MTA doped 8 buses at the Bush Division, 8810, 8812, 9063, 9067, 9071, 9072, 9243 and 9431 June, 1995. Bus number 9067 was removed from the test fleet for mechanical problems in November 1995.

**Results:**

Attachment "A" shows there was a reduction in-wear metals- in all engines. The level of wear metals increased as the treated surface wore and reduced again when the buses were redoped. The field tests confirmed MILITEC's claims.

## **MILITEC Report continued**

The annual cost is \$22,400.00 as shown in attachment "B". This is less than the cost of two replacement engines. If 63% reduction in wear translated into 63% reduction in engine failures that would save 180 engines per year. In reality many engines are lost to causes other than gradual wear. If a six year life is assumed, 72 engines wear out each year. Accordingly 63% of 72 is 45 engines. Only 2 of these need to be saved by the use of MILITEC to recover the cost.

### **Recommendation:**

The Quality Assurance Department recommends that MILITEC be used in the fleet system-wide.

Also, test in other applications, such as facility air compressors and chillers.

militecreport

Attachment A

MILITEC TEST

OIL ANALYSIS

BUS #	TREATMENT	IRON	TIN	COPPER
8810	Before	90ppm	50ppm	58ppm
	After	40ppm	5ppm	8ppm
8812	Before	206ppm	24ppm	71ppm
	After	90ppm	11ppm	17ppm
9063	Before	98ppm	24ppm	52ppm
	After	38ppm	7ppm	11ppm
9071	Before	81ppm	14ppm	70ppm
	After	40ppm	3ppm	8ppm
9072	Before	74ppm	10ppm	45ppm
	After	33ppm	4ppm	4ppm
9423	Before	48ppm	7ppm	11ppm
	After	9ppm	2ppm	3ppm
9431	Before	90ppm	16ppm	12ppm
	After	16ppm	5ppm	6ppm

PERCENT OF REDUCTION

BUS #	IRON	TIN	COPPER
8810	56%	90%	86%
8812	56%	54%	76%
9063	61%	70%	88%
9071	51%	79%	89%
9072	55%	60%	91%
9423	81%	71%	73%
9431	82%	69%	50%

AVERAGE PERCENT OF REDUCTION OF TEST FLEET

63%                      70%                      79%

MILITEC TEST

**COST TO TREAT FLEET**

The MTA will have 814 buses in revenue service as of February, 1997. The cost to treat the engines with MILITEC including the time to dispense and add the product will be \$27.52 per bus for a cost of \$22,400.00 annually.

Each engine will be treated with 2 ounces of MILITEC for every liter of engine displacement for an average of 22 ounces per bus or 140 gallons for the first fleet treatment. Every subsequent 15,000 miles each engine will be treated with 1 ounce of MILITEC for every liter of engine displacement for an average of 11 ounces per bus or 70 gallons for each fleet treatment. For the first 30,000 miles anticipated in the first year, the cost will be \$18,900.00 for product plus the cost of labor at 206 hours per year adding \$3,500.00 for a total of \$22,400.00.