



SUMMARY OF MARINE PERFORMANCE TESTS

The following information is a summary of results, on testing conducted using Chornco's Fuel and Oil Conditioning Products.

The reports included cover a wide range of engine makes, hp and type of use. The tests were conducted and controlled by engineers and personnel working for the companies that were operating the equipment. Tight control was exercised at all times to endeavour to overcome the variables encountered.

The tests were conducted by comparing performance and maintenance records for periods prior to treatment of the fuel oil and lube oils with the Chornco products to periods after application of the conditioners.

Harbour Patrol Boat – Engine: Twin D.D. 6V-71

Test duration: 70 hours.
Fuel used: 618 Gallons.

RESULTS

Fuel saved **21.3%**.

Reduced metal wear rate.

Longer oil life.

Elimination of contamination in the fuel tank.

Rocker arms clean and free of sludge.

Harbour Tug – Engine: CAT model 343 and S.L. Lister for auxiliary power.

Test duration: 7 months (3461 hours)
Fuel used: 71,786 gallons

RESULTS

Fuel saved: **11.7%**

No oil analysis. Visual inspection showed engine and fuel tanks clean.

Harbour Tug – Engine: Norbeg, Model FMD 138, 1200hp – Auxiliary Cummings, Model HRS-GA and HR6M

Test duration: 10 Months.
Fuel recorded: 52,154 gallons

RESULTS

Fuel saved: **19.7%**

Rocker arms free from sludge (lube oil gauge clean and readable. It was necessary to clean the glass to read the oil level previously).

Zero-lashing intakes; ping eliminated.

Bacteria growth eliminated in fuel tanks – fuel filter life extended.

Extended oil and filter life.

Exhaust temperature reduction from 735° to 640° per cylinder.

Increased available horsepower and reduced smoke emissions.

Ocean Tug – Class A1 towing: Engine, twin 12 cylinder Fairbanks Morse, 2300 hp - Auxiliaries 3-DD671.

Test duration: 10 months (3800+ hours)
Fuel recorded: 961,666 gallons

RESULTS

Fuel saved **13.3%**
Exhaust temperature reduction 700° to 610° maximum.
Manifold carbon eliminated
RPM's increased from 700 maximum to 740 constant.
Speed – productivity increased 10.8%
Smoke emissions reduced from heavy.
Centrifuge use reduced, when transferring fuel from storage to day tank.

Bench Dyno – Engine: CAT D343 without ant accessories.

Test duration: 15 hours
Fuel recorded: N/A checked at 6 minute intervals

RESULTS

Fuel consumption related to h.p. and time and given in terms of hp/hr/gal

- a. Correction hp (full load) increased 38.3hp
- b. Hp/hr/gal increased to 17.91 hp from 16.22 hp, +10.42%
- c. Exhaust temperature (adjusted load factor to base period). Reduction from 760° to 720°.

Tuna seiner (2), 1100 Tons, Engines: (both Seiners) Also model 259F, 18 cylinder – 3600 hp@ 1000 rpm's, auxiliary – CAT D379 driving 500KWV generators.

Test duration: 6 months.
Fuel used (treated): 800,000 gallons

RESULTS

- a. Fuel saved. Vessels lacked fuel metering devices, so no accurate records were kept. Customer statement “We were convinced that an engine that is performing better would require less fuel to do the same job as before.”
- b. Lube oil filter life doubled.
- c. Lube oil drain intervals increased 25%
- d. Smoke emission reduced 50%
- e. No failure of either hp fuel pumps or injectors (this was a first for both vessels).

Freighter: 181 feet, 478 tons. Engines; Fairbanks Morse 6 cyc. Model 37F16, 1200 hp auxiliary DD671.

Test duration: 5 months
Fuel recorded: Approx. 50,000 gallons

RESULTS

Fuel saved: **19.29%**
Injector service: Reduced 90%
Exhaust temp. Reduced 15° average.
Motor-Gen sets: Increased hp (eliminating a near stalling condition they had been experiencing under load)
Boiler performance: Improved, removed the normal heavy black soot build-up.

Refrigerated cargo vessel: 176 feet (former Army FS) Engines; CAT D348, (725 hp continuous 900 hp intermittent aux. D.D 8V71.

Test duration: 4 voyages.
Fuel recorded: approx. 400,000 gallons
RESULTS
Fuel saved: 14.2%
Oil bath areas: Medium to heavy sludge reduced to no sludge, extremely clean and well lubricated.
Manifold carbon: Reduced from heavy to clean.
Smoke emission: Eliminated.
Exhaust temp: Reduced from 680° to 620°.
RPM's: Safely increased by 10%
Ignition time lag: Reduced. Quick starts, less air required, engine run quieter and smoother.
Filters: Fuel and oil filter life extended.
Centrifuge: Usage reduced.
Oil life: Extended – “Add on” oil reduced.
Fuel tanks: Clean and completely free from all slime and bacterial growth.

Tuna Seiner: 1200 ton 220feet, engines: 20cyl EMD model #L20-645-E5, 3600 hp. Aux's CAT 353.

Test duration: 2 voyages.
Fuel recorded: 500,000 gallons
RESULTS
Fuel savings: 16.6%

Note:- This vessel has been using the conditioners since the first trip. The fuel comparison was made when the chief switched over to fuel in the stabilizer, which was not treated with the conditioner because the tanks were too full at treatment time. The fuel consumption increased from 4,000 gallons per day on treated fuel to 4,800 gallons per day on untreated fuel, and when they went back to treated fuel the consumption returned to 4,000 gallons per day.

Reduced the governor rod setting from standard of 1” to 1.04”

Tuna Seiner, 650 ton, 168 feet. Engines 16 cyl. EMD 2850 hp aux's CAT and 2 CAT 333.

Test duration: 87 days
Fuel recorded: 146,880 gallons
RESULTS
Fuel saved: 14.75%
Exhaust temp: Reduced by 30° average

Ocean Tug - Twin Fairbanks Morse.

Test duration: 10 months
Fuel recorded: 165,000 gallons
RESULTS

- a. Savings: The benefits in engine performance have resulted in definite savings that exceed the cost of the product.
- b. No detrimental effects to the engine.
- c. Engine performance improved.
- d. Fuel injector performance improved
- e. Lube oil contamination reduced
- f. Fuel combustion improved. Elimination of soot accumulation.

Fisheries Protection Vessel; - “Lochin 38”.

A government department who do not wish to be used to endorse products it runs in this vessel.

Client reason for use: To try to resolve heavy fuel contamination.

Engines: Two Volvo-Penta TAMD17A Engines.

Trial Duration: 3 months.

Chornco Products: #2082 / #4055

Results: Tanks and filters clean and free from contamination.
Improved all around performance with a noticeable reduction in turbo-lag
Engine oil cleaner, rocker arms clear of sludge
Estimated fuel saving over the trial period 8-12%

“This trial was considered a success and the fuel and oil products are now being used on a regular basis”
Senior Sea Fisheries Officer



Tanzania Harbours Authority; Tug Boat “Chui”

Client reason for use: Fuel cost saving.

Engines: 2 x 1185Kw Deutz Main Engines (5799 Hrs)
2 x 70Hp Lister Petter Generators (Gen 1–13281 Hrs. Gen 2-20972 Hrs)
2 x 320Hp Cummings Fire Pumps
1 x Lister Petter Harbour Generator (3155 Hrs)

Filters: 3 Separators – 1 Primary
2 Strainers (Washable)

Fuel Tank Capacity: 12 Tons

Chornco Products #5000 Concentrate / #2082

Results:

Base line Data: 60 days – Consumption average 232.16 Litres/Hr.

Operational Data: 90 days – Consumption average 187.43 Litres/Hr.

Fuel Reduction: 19.2%

Observations: Less Black smoke at start-up.
Smother engine performance.

“The product is now used on the other 3 x Tug Boats and 2 x Pilot Boats as part of the future fuelling regime.”
Chief Port Engineer.