



CASE STUDY: TERMINAL – PHILADELPHIA, PA, USA / SUMMER, 2015

CLIENT: McAllister Towing & Transportation (“McAllister”) www.mcallistertowing.com
McAllister operates a fleet of over 75 tugboats, crew boats and barges in 17 locations along the U.S. East Coast from Portland, ME to San Juan, PR.

BACKGROUND: Fuel Ox, LLC Corporate HQ approached McAllister to participate in field testing its product, The Fuel Ox™ on a number of its vessels to demonstrate efficacy of the additive and its projected economic benefits to McAllister in fuel savings, maintenance cycle reduction, and related reduction in biological growth in its vessels holding tanks.

THE PROTOCOL: Fuel Ox personnel and McAllister representatives chose to run a two engine test on the *Alex McAllister* tug to gauge the efficacy of the combustion catalyst on fuel efficiency. The *Alex McAllister* is a 2012 twin engine, 4000 horsepower Z-Drive Tractor Tug, ABS Classed, A1 Towing vessel.

The test was designed to prove baseline equivalent performance and fuel efficiency from each of the port and starboard engines. The engines were both run concurrently at all times during the 6 week test period. After initial baseline performance was confirmed, personnel began dosing only the starboard tank with the Fuel Ox™. The protocol was designed such that, given the almost 100% identical loads placed on each engine, that any discernible difference in fuel efficiency results could logically be attributed to the performance of the additive. A very minor adjustment needed to be made in the final calculations to allow for additional fuel that was used by the starboard engine to run generators and winches in excess of the hours used to run those accessories by the port engine.

The results are compelling: Running under virtually identical loads and for the identical number of hours, the starboard engine consumed an adjusted 516 fewer gallons of fuel, resulting in a 6% +/- savings in fuel consumption.

A complete accounting of this test, which used over 17,000 gallons of fuel oil, follows this introduction.

Alex McAllister

Week of July 1-7 Untreated fuel, generators run equal hours:

Fuel used Port	Fuel used Stbd.	Hours	GPH Port	GPH Stbd.
1117 gal	1125 gal	41	27.24	27.44

Week of July 8-14 Starboard day tank treated with The Fuel Ox™:

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen.	Hours, Stbd. Gen.	GPH Port	GPH Stbd.
1154	1069	47	36.5	18.5	24.55	22.74

July 15 Light boat Philadelphia to Red Hook, Starboard tank treated:

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen.	Hours, Stbd. Gen.	GPH Port	GPH Stbd.
2098	1924	22	18	6	95.36	87.45

July 16 Towing light barge, Red Hook to Philadelphia, fuel untreated:

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen.	Hours, Stbd. Gen.	GPH Port	GPH Stbd.
1403	1519	24	0	24	58.46	63.29

July 19 Towing loaded barge, Philadelphia to Red Hook, Starboard tank treated:

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen.	Hours, Stbd. Gen.	GPH Port	GPH Stbd.
2195	2002	24	23	1*	91.46	83.42

*Winch engine, 6-71 was run 11 hours from this tank.

July 20 Light boat, return to Philadelphia, Starboard tank treated:

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen.	Hours, Stbd. Gen.	GPH Port	GPH Stbd.
1596	1579	23	0	23	69.39	68.65

Week of July 22-29 Boat not in operation

Week of July 29-Aug. 4 Harbor Operations

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen	Hours, Stbd Gen.	GPH Port	GPH Stbd
965	1019	40	20.5	25.5	24.13	25.47

Week of Aug. 5-Aug. 11 Harbor Operations

Fuel used, Port	Fuel used, Stbd.	Hours, BME	Hours, Port Gen	Hours, Stbd Gen.	GPH Port	GPH Stbd
787	770	37	17.5	25.5	21.27	20.81

Combined total since treating with The Fuel Ox™:

8795	8363	193	115.5	123.5	45.57	43.33
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Without adjustment for generator and winch:

Results: $45.57 - 43.33 = 2.24$, $2.24 / 45.57 = +4.9\%$ using The Fuel Ox™

Adjusted for 8 hours of generator at 6 g/h* (48) and 11 hours of winch at 4* g/h (44)= 92 gal

8795 8271* 193 115.5 123.5 45.57 42.85

Results: $45.57 - 42.85 = 2.72$, $2.72 / 45.57 = +5.97\%$ using The Fuel Ox™

***Engineer's low estimate of 6-11 g/h for generator and 4-5 g/h for winch**