



Diesel Emissions and EPA Region 10’s Dive Boat the “Monitor”

The 28-ft cuddy cabin aluminum boat is used to support the EPA Region 10 dive team’s mission. The existing 1997, 4.2 liter, 6-cylinder turbocharged 300 hp stern drive Yanmar 6LP-STZE “pre-controlled” diesel engine is due to be replaced this winter. The engine is proposed to be replaced by a 2007 Volvo Penta D6-310a 5.5 liter 6-cylinder turbocharged 310 hp “tier 2” engine. This engine is substantially cleaner than the existing engine. It utilizes a common rail fuel injection system, double overhead camshafts, 4 valves per cylinder, turbocharger and aftercooler. The table below compares the emissions for these two engines. Neither engine employs aftertreatment.

Exhaust aftertreatment technologies (i.e. diesel oxidation catalyst) are not feasible for these marine applications. Using clean fuels like ULSD and biodiesel are the best options for further reducing emissions in the new engine.



2007 Volvo Penta



1997 Yanmar

Pollutant	2007 Volvo Penta (Tier 2 emissions)	vs.	1997 Yanmar (pre-controlled)	Pounds/Year Reduced i *
	% Reduction of emissions *			
PM		77.8		10.5
NOx		39.0		93.5
CO		43.8		16.9
HC		22.0		2.0

* Emission reductions are estimates based on Tier 2 standards and emission factor calculations for pre-controlled marine engines. Wayne Elson, September 2007