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Volunteers Saving Lives at Sea

Operations Memorandum

Date: June 26, 2002

To: Unit Leaders

CC: Board of Directors
Alison Keighan, JRCC Rescue Officer
Jim Lindsay, Oceatec Services

From: Ryan Woodward, Director of SAR/Operations

Subject: Powerhead failures due to detonation

As you may be aware, recent months have seen an alarming increase in the number of outboard engine powerhead failures due to detonation. In an attempt to try to reduce the number of these types of failures, all CCGA-P SAR vessels using outboard power are requested to consider the following.

According to the insurance adjuster assigned to some of the recent failures, many of the recent claims have been associated with top piston failure. It is his professional opinion that this is directly related to loading on the outboard. (there are other factors that can contribute to detonation related failures, however they are not believed to have been major contributors in these cases)

To reduce the loading on the outboards in service with CCGA-P vessels (primarily DRV's) Units are requested to reduce the pitch on the propellers in use to bring the rpm at wide open throttle to the upper end of the manufacturers' specification. Units running heavy vessels and/or Units that frequently engage in towing operations are requested to consider reducing pitch beyond that point, and accordingly limiting engine rpm. It is believed that the benefits to be gained in increased engine life, throttle response and control will by far outweigh the costs in terms of a slight decrease in top speed.

Units that operate vessels equipped with multiple fuel tanks that frequently engage in towing operations, or engage in towing large and/or heavy vessels are further requested to consider designating the smallest tank a "towing fuel" tank and making it up with 100:1 fuel/oil mixture for use during towing operations.

Units are also reminded that CCGA-P vessels are reimbursed on an hourly basis based on dock-to-dock times, and as such there is no incentive to try to complete the tow quickly (which can cause undue stress on the engines). Units are requested to consider the long term effects of trying to tow vessels too quickly, and to reduce towing speeds accordingly. Additionally, Units are reminded that on many outboard engines the fuel/oil ratio is fixed, and is dependent on rpm, NOT load. Running an outboard with heavy load at moderate rpm may result in inadequate oil supply and premature engine failure.

An additional contributing factor to premature powerhead failure which has also been identified is related to fuel system vacuum. Some engines are susceptible to engine damage if run with fuel system vacuum in excess of 4.5". A well maintained fuel system operating correctly can generate as much as 3.5" (Racor filters and anti-siphon valves are major contributors) of vacuum on an outboard motor operated at 4000-5000 rpm. Extra caution must be exercised to ensure that the fuel systems are in good condition (Racors checked for water frequently, Racor elements changed regularly, fuel tank vents checked and cleaned regularly, fuel tank pickups checked and cleaned regularly, fuel lines inspected regularly etc).

If you have any comments or questions regarding this memorandum, please do not hesitate to contact Ryan Woodward at home at 604-214-8206 on cellular/pager at 604-961-8206 or by email at ryan.woodward@ccga-p.ca. Nothing in this memorandum is intended to supercede recommendations made by your engine manufacturer. Please check your owner's manuals, and consult your marine service supplier.