

RADAR TRANSPONDER SEA TRIAL REPORT

SAFETY AT SEA SUBCOMMITTEE
US SAILING MEETING, TULSA, OK
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SUBMITTED BY
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Working under the assumption that bigger is better when it comes to a radar return signal, the US Naval Academy Sailing Program has made arrangements to test an active radar transponder. The unit electronically amplifies X and S band radar signals providing a return that is claimed to be 8 times stronger than that of a passive radar reflector.

The unit has been masthead mounted on American Promise, a USNA 60-foot sloop that will be involved in a transatlantic voyage this summer. Testing will include inshore and offshore communication with underway vessels, and a transponder on/off evaluation of the radar return signal. Distance, heading, relative bearing, angle of heel, weather and visibility will be recorded during each signal evaluation.

In addition, a more controlled evaluation process will also be done in the Chesapeake Bay, one that includes multiple types and sizes of radar units and antenna heights. This will be accomplished through a dual effort between midshipmen in the Sailing Program and those training aboard 110-foot Yard Patrol Boats. Actual radar screen photographs will depict the transponder on/off differential.

Results of the transponder testing will be reported to the [US SAILING](#) Safety at Sea Committee at the Fall Meeting.

10/23/98 RADAR TARGET ENHANCER

(This electronic device mounted on the mast, receives a radar signal, amplifies that signal and sends it back out, with the intention of making the sailboat's signal look larger on a ship's radar screen.)

In response to a suggestion from committee chairman John Bonds, I contacted a product representative at Pains Wessix, and arranged to field test their Ocean Sentry radar target enhancer. The initial part of the test was done aboard the Naval Academy Sloop *American Promise*. The extensive under way evaluations included inshore sailing, coastal passage making and a transatlantic crossing.

The vessel had been set up with two permanently mounted off-the-shelf radar reflectors attached port and starboard on the mid panel of the sloop's 85-foot triple spreader rig. The Ocean Sentry unit was masthead mounted with a cable run inside the spar for power and control functions. The unit's low 12VDC current draw (under 1/2 Amp per hour) was of little concern, however, the physical size (windage and weight) at the masthead may be an issue.

Performance was measured by making VHF contact with passing ships and requesting an on/off evaluation of the image we painted on their radar screens. In all twenty-three contacts it was reported that our image brightened when the unit was turned on. Seventeen of these responses rated the improvement as "much brighter," while the six others chose "brighter" as their subjective qualifier. In eight cases we asked vessels to call us when they lost radar contact with *American Promise*. In each situation, turning on the Ocean Sentry reestablished contact. It's also interesting to note that during the transatlantic, an alarming number of vessel's contacted to evaluate our radar return, responded willingly but said, "please wait while I turn on the radar!" On average, American Promise was seen approximately 6 miles with the radar reflectors and 14 miles with the Ocean Sentry turned on.

The second phase of this study will include mapping of the signal, measurement of the heeling influence and evaluation of the unit in a pedestal mount configuration. Testing will be concluded in the spring and a final report will be made available shortly thereafter.

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