

U. S. Coast Guard 110' Island Class Patrol Boat Anchoring Job Aid Report

During a recent performance analysis conducted on the anchoring evolutions on U. S. Coast Guard 110' patrol boats, it was discovered that out of five current and former Commanding Officers (COs), four (80%) had bent their stainless steel anchor during an anchoring evolution. There were a few different factors (barriers) that came to light during the performance analysis:

Skills/Knowledge:

- COs did not realize that by replacing the stainless steel anchor with a steel one, the strength of the anchor would greatly improve for the evolution.
- Weather conditions such as winds over 30 knots and currents one knot or greater most likely will cause the anchor to drag and possibly be damaged beyond repair.

Environmental/Incentive:

- COs knew that their supervisors viewed a cutter with no running rust on its hull as a sign of a "squared away" CO (clean, well kept cutter means outstanding CO).

Motivation/Value:

- COs saw changing the stainless steel anchor for a steel one as causing extra work for their crews to keep the hull clean and therefore not good practice.

Analysis Techniques:

The performance analysis showed problems with COs both using the "wrong" anchor (stainless steel) to conduct an anchoring evolution and not recognizing when to take appropriate action while at anchor to avoid bending their anchors due to environmental conditions (sea state, worsening weather, etc). A goal analysis and task analysis were briefly conducted to figure out how to get the desired outcome of no more damaged anchors. After having gone over the steps both to anchor and while at anchor, and also developing the goal of COs no longer bending their anchors, the following objectives were created:

- Given a job aid, the Commanding Officer of the cutter will replace the stainless steel anchor with a steel one prior to getting underway each time when a known anchoring evolution is scheduled to take place.
- Given a weather and sea state decision matrix job aid, the Commanding Officer will get the cutter underway from anchorage due to bad weather or sea conditions prior to damaging the anchor.

Job Aid Media and Design:

Each 110' cutter has computers onboard, and many COs like to be given briefs using Microsoft PowerPoint. However, every cutter has an Officer of the Deck (OOD) evolution and emergency checklist binder on the bridge, with checklists (job aids) for various evolutions in print form. Print format was chosen as it can be added to each cutter's existing checklist binder, directly available to all personnel on the bridge. The job aid created defines the steps to take prior to getting underway (swapping out the anchor) and steps to take while at anchor (setting up swing circle, drag, circle, keeping an eye on the weather, etc). Each CO's cutter already has a checklist for the steps to take to actually conduct the anchoring, so that part was left out of the job aid design completely. The original job aid was a printed sheet that first instructed the changing out of the anchor prior to getting the cutter underway. From there, the job aid went straight into what to do after the cutter was anchored. Steps such as setting up the swing and drag circle were illustrated to further instruct how to plot these correctly. Finally, the job aid went over what to do while the cutter is at anchor, and also identified conditions that would warrant the cutter getting underway from anchorage.

Pilot Test and Revisions:

The completed job aid was emailed to the Commanding Officer and Executive Officer (XO) of one of the U. S. Coast Guard 110' patrol boats. Both were asked to evaluate the content of the job aid and provide feedback for improvements. Both the CO and XO liked the original job aid, and indicated that they would include it into their OOD checklist binder. However, the CO stated that a possible addition to the original job aid would be the inclusion of a flow chart that would assist with decision making of whether to stay at anchor or not. From this piece of feedback, another job aid was created using Inspiration 8 software. A flow chart was created to visualize the steps in a different way. For example, if winds got to 30 knots or greater, the flow chart would head to the step of getting the cutter underway from anchorage. Basically, all possible solutions (to stay at anchorage or get underway) to changing conditions were thought about, with solutions presented in a flow chart template. Once completed, this format was scanned and sent as a PDF file (the end-users do not have access to Inspiration 8 software, and would not be able to open it up in that format). Further revisions included importing the flowchart into the Microsoft Word document. The CO liked the flowchart, and it was included it as a second page of the original job aid.

Solution System:

The job aid created for this project was only part of the solution. It addressed only the skills/knowledge barriers, although hopefully would also address the motivation/value barrier. In the future, it would be ideal if COs saw the value of not bending their anchor, even though it may cause the crew some extra work keeping the cutter's hull clean. Below is a chart of the barriers encountered during this project, as well as suggested solutions. It also describes the implications associated with those solutions.

Driver	Suggested Solution	Implication
Skills/Knowledge	Job Aid	This job aid lists the steps to take to ensure the safest, most effective anchoring evolution can be completed while ensuring both the safety of the cutter and the integrity of the anchor.
Environmental	Supervisors not placing as much emphasis on running rust on the cutter's hull as a measure of the COs performance.	This solution is currently not feasible in the Coast Guard afloat community's culture. There is a saying in the Coast Guard that "perception is reality", and changing people's attitudes about running rust on a white cutter is not possible at this time.
Value	COs taught to recognize the value of saving an anchor despite extra cleanup of the hull.	Most COs are very aware of how their supervisors view them, but by saving an anchor as well as keeping the hull clean, the CO will truly be "squared-away".
Incentive	Positively reward COs for keeping their equipment from being damaged beyond repair.	Accidents happen from time to time, and what the men and women of the Coast Guard do on a daily basis is inherently dangerous, but by rewarding excellent stewardship of equipment, including the cutter's anchor, more COs will be mindful of how to prevent mishaps in the future.