SHIPBOARD ALARMS   *Submitted by GSCS James Miller*

Operating a ship at sea is an inherently risky business. The Navy does not have the luxury of response from emergency services when things go awry. The fleet has developed effective systems and procedures to mitigate risk, yet in most instances, human factors play a more significant role. Of 42 surface ships assessed by the Naval Safety Center, a shocking 93 percent demonstrated a lackadaisical attitude toward active or faulty alarm indications. Sailors relieving the watch with numerous unexplained active alarms seems to have become standard practice. The culture of disregarding potentially critical shipboard alarms did not happen overnight.

The act of disregarding a flooding alarm as "erroneous" may seem like a rational decision to a Sailor. However, that one decision affects everyone on the ship. In addition to this act being a safety violation, onlookers witness a shipmate normalizing a culture of non-compliance. To put this into perspective, if you were away from home and received a notification that your house intruder alarm had activated, would you disregard it?

Instances like these are not isolated events. There are plenty of examples where non-compliance has led to mishaps and hazards. One can avoid these pitfalls by understanding that non-compliance costs — dollars, readiness, man-hours, and sometimes lives. Safety controls, such as alarms, have been implemented to mitigate risks. Good leaders understand proper risk management and give these safety controls the attention they deserve.

Here are a few examples from our database that outline where risk-mitigating controls were either not adequately implemented or ignored altogether:

•Approximately 70,000 gallons of water filled the Vertical Launch System (VLS) launcher after a failure of a solenoid operated pilot control valve and a check valve in the suction line. The installed flooding alarm sounded at 0558. This alarm went unnoticed by the Combat Systems Officer Of the Watch (CSOOW) on watch in the Combat Systems Maintenance Center because the audible alarms on the console were muted. The CSOOW was unaware of the flooding alarm until 0600 when the Engineer Officer Of the Watch reported it to him. It took approximately 15 minutes for the CSOOW to contact VLS technicians, who did not enter the space until 0630. Although the flooding was caused by a material deficiency, the lack of watchstanding formality was behind the delayed response. It was the responsibility of the CSOOW to test the audible alarms before taking the watch.

• While operating with foreign warships in the open ocean, a ship experienced a total loss of electrical power. The number 3 gas turbine generator (GTG) shut down due to a loss of fuel pressure. The fuel head tank ran out of fuel and the low-level alarm did not sound as designed. The number 1 gas turbine generator was online, but it had been operating with an active circuit breaker alarm for an undetermined amount of time. Watchstanders did not track or act on this alarm, so when the number 3 GTG failed, the ship went cold and dark. This casualty was 100 percent preventable. The watchstanders were not monitoring the number 3 generator's fuel head tank level, not acting on alarms for the number 1 generator, and no one demonstrated a questioning attitude.

• One morning while inport, the Officer of the Deck (OOD) and a working party supervisor discovered water spraying over the port side of the ship under the aircraft elevator and reported it to the Damage Control Central Watch Supervisor (DCWS) over the duty section radio. According to the report, the DCWS had acknowledged two of six high-level alarms on a trim tank immediately before the call and took no action to address it or notify others. The watch team had developed a perception that damage control console alarms were unreliable, so the DCWS assumed the alarms were false and failed to correlate these alarms to the rising tank level, the "open" indication on the console for the fire main fill valve, and the report of water shooting onto the pier. The resultant flooding damaged multiple spaces and resulted in a mishap. This mishap is another example of a lack of watchstanding formality and procedural compliance that caused undue risk to the ship. This risk could have been avoided if Sailors heeded the warning signals.

Key Takeaways / Lessons Learned

We have only described a handful of the many examples of what happens when alarms are not taken seriously. Complacency turns to organizational drift and then into a culture of non-compliance. Those alarms are telling you to take notice of a potential problem and to do something about it. It may be heretical to use an aviation example in a shipboard lesson, but there is a common saying in the aviation world to "trust your instruments." Even though instruments can malfunction, they are correct more often than the humans using them. Here are some things to remember when you are standing the watch:

1. Perform like you were trained. In all of the examples above, the watchstander failed to perform their duties by following approved procedures as they were trained to do. To qualify, you must demonstrate the required responses to alarms at your watch station, so do it when it's for real.

2. Alarm circuit material deficiencies must be taken seriously. An alarm could be the first line of defense against severe damage or worse. Not knowing if the alarm is working properly should cause the hair on your neck to stand up! If an alarm is faulty, mitigation measures (such as tagging the system out or using an approved temporary standing order) are a **MUST**, not a suggestion.

3. Don't be complacent, even for frequent alarms. Acknowledge all alarms and take action to correct the alarming condition. Report alarms to supervisory watchstanders. Log the alarm, the alarming condition, who was informed, what action was taken to clear the alarming condition, and the time the alarm cleared. If an alarm happens, consider it to be an out-of-specification condition and log it accordingly.

Reference: COMNAVSURFOR INSTRUCTION 3500.5

And remember, let's be careful out there...