

## SITUATIONAL AWARENESS - 1

### OBJECTIVES

To successfully complete this assignment, you must study the text and master the following objectives:

- State the actions required to maintain situational awareness.
- State the clues to loss of situational awareness.
- Define the five barriers to situational awareness.
- Describe the three levels of human error.

### DEFINITION

Situational Awareness is the ability to identify, process, and comprehend the critical elements of information about what is happening to the team with regards to the mission. More simply, it's *knowing what is going on around you*.

### CONSEQUENCES OF LOSS

When we lose the bubble (i.e., Situational Awareness) we increase the potential for human error mishaps. Coast Guard analysis of navigational mishaps for cutters and boats revealed that 40% were due to a loss of situational awareness.

### SITUATIONAL AWARENESS AND TEAM PERFORMANCE

Effective team situational awareness depends on team members developing *accurate expectations* for team performance by drawing on a common knowledge base. This concept, known as maintaining a "*Shared Mental Model*" allows team members to effectively:

- Anticipate the needs of other team members.
- Predict the needs of other team members.
- Adapt to task demands efficiently.

## SITUATIONAL AWARENESS - 2

### WHAT KNOWLEDGE NEEDS TO BE SHARED?

To ensure a Shared Mental Model of the situation, team members must share their knowledge relative to:

- The task and team goals.
- Their individual tasks.
- Team member roles and responsibilities.

To provide a solid base for building team situational awareness, team members need to have information that will help them develop relevant expectations about the entire team task.

### CLUES TO LOSS

The loss of Situational Awareness usually occurs over a period of time and will leave a trail of clues. Be alert for the following clues that will warn of lost or diminished Situational Awareness:

- Confusion or gut feeling.

- No one watching or looking for hazards.
- Use of improper procedures.
- Departure from regulations.
- Failure to meet planned targets.
- Unresolved discrepancies.
- Ambiguity.
- Fixation or preoccupation.

### **Confusion**

Disorder within the team or a gut feeling that things are not right. This clue is one of the most reliable because the body is able to detect stimulus long before we have consciously put it all together. Trust your feelings!

### **No one Watching or Looking for Hazards**

Vessel operations require more than just driving the bow of the cutter or boat. The proper assignment and performance of tasks, particularly supervisory and lookout ones, is essential to safe vessel operations.

## **SITUATIONAL AWARENESS - 3**

### **Use of Improper Procedures**

This puts the individual or team in a gray area where no one may be able to predict outcomes with any certainty.

### **Departure from Regulations**

In addition to violating procedures, we are operating in an unknown area where the consequences of our actions cannot be predicted with any degree of certainty.

### **Failure to Meet Planned Targets**

During each evolution, we set certain goals or targets to meet, such as speed of advance, way-points, and soundings. When they are not met, we must question why and systematically begin to evaluate our situation.

### **Unresolved Discrepancies**

When two or more pieces of information do not agree, we must continue to search for information until the discrepancy is resolved.

### **Ambiguity**

When information we need is confusing or unclear, we must clarify or to fill in the missing pieces before proceeding.

### **Fixation or Preoccupation**

When someone fixates on one task or becomes preoccupied with work or personal matters, they lose the ability to detect other important information. Early detection of both fixation and preoccupation is essential to safe vessel operations. The best way to identify these clues is by knowing the behavior of

your team members and being alert to change. Preoccupation with personal matters can often lead to subtle changes in performance.

## **SITUATIONAL AWARENESS - 4**

### **MAINTAINING AWARENESS**

Maintenance of situational awareness occurs through *effective communications* and a combination of the following actions.

- Recognize and make others aware when the team deviates from standard procedures.
- Monitor the performance of other team members.
- Provide information in advance.
- Identify potential or existing problems (i.e. equipment-related or operational).
- Demonstrate awareness of task performance.
- Communicate a course of action to follow as needed.
- Demonstrate ongoing awareness of mission status.
- Continually assess and reassess the situation in relation to the mission goal(s).
- Clarifying expectations of all team members eliminates doubt.

### **Comment on Deviations**

When deviations are noted, effective team members comment in specific, assertive terms.

### **Monitor Performance of Others**

Be alert for changes in the performance of other team members caused by work overload, stress, errors, etc. When changes are noted, take action by speaking up.

### **Provide Information**

Don't wait to be asked. When you have information critical to team performance, speak up!

### **Identify Problems**

All team members are tasked to identify problems before they affect mission accomplishment.

## **SITUATIONAL AWARENESS - 5**

### **Demonstrate your awareness of task performance**

Know how your job and those of other teams members contribute to overall mission accomplishment.

**EXAMPLE:** It may not be necessary to know the technical aspects of other team member's jobs, but you must be aware of what actions, information, etc. they need from you to do their jobs effectively.

### **Communicate a Course of Action**

*Effective communications may be the most important factor in achieving and maintaining situational awareness.* To ensure a Shared Mental Model, speak up and verbalize any intended action. Understand that the level of situational awareness achieved is related to the level and quality of communication observed in team members.

#### **Demonstrate Awareness of Mission/Task**

Ensure that your performance reflects an understanding and awareness of the mission or task being performed.

**EXAMPLE:** Effective team leaders plan ahead and communicate the plan to team members. This ensures that everyone is aware of the plan and builds a Shared Mental Model of the situation.

#### **Continually Assess the Situation**

In the dynamic world of Coast Guard operations plan on change and continually assess and reassess the situation to determine if the team is on track to safely and effectively accomplish the mission goal.

#### **Clarify Expectations**

Understand that clear expectations lead to a Shared Mental Model of the situation and ensures high levels of situational awareness by all team members.

## **SITUATIONAL AWARENESS - 6**

### **TWO CHALLENGE RULE**

The Two-Challenge Rule has been used effectively in aviation to detect fixation in a team member. If a team member fails to adequately respond to two or more challenges regarding omissions or questionable actions, the individual is assumed to have lost situational awareness and some action is required. Apply this rule in daily operations.

### **BARRIERS TO SITUATIONAL AWARENESS**

The following barriers reduce our ability to understand the situation. Recognizing these barriers and taking corrective action is the responsibility of all team members.

- Perception based on faulty information processing.
- Excessive motivation.
- Complacency.
- Overload.
- Fatigue.
- Poor communications.

### **Perception**

Perception is our mental picture of reality. The amount and quality of information available limit all pictures of our current operational state. Insufficient information makes it difficult to ensure that our mental picture is always aligned with reality. Our mental picture is affected by:

- *Past Experiences:* We act on information based on our knowledge. When something looks similar to what we are familiar with, we may react as if it were the same.
- *Expectations:* We interpret information in such a way that it affirms the planned action. We may rationalize that the ship is being set by a current that was incorrectly computed, when in reality no one

has compensated for bearing errors in the instruments.

- *Filters*: We are provided with information, but we don't use it. We don't pay attention to information that doesn't match our mental picture.

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### **Excessive Motivation**

This behavior imposes expectations and filters that affect our ability to fully assess the situation and any safety risks. It includes, but is not limited to, "GET HOME" and an overriding sense of mission importance (e.g. "you have to go out. . ."). Performing the 7-step Risk Management Process, using an effective decision-making strategy and seeking feedback on judgments can reduce the potential for unsafe acts.

### **Complacency**

Assuming everything is under control affects vigilance. When things are slow, tasks are routine, and/or when the vessel's employment objectives have been achieved, complacency can occur. *Challenging yourself and/or the team to be prepared for contingencies (e.g. planning or training) can deter complacency.*

### **Overload**

Overload causes distraction; fixation; increased errors, and high stress. *Prioritizing and delegating tasks and minimizing job distractions can improve safety in conditions of overload.*

### **Fatigue**

Fatigue affects vigilance. Adjusting work routine and imposing sleep discipline to prevent wake cycles longer than 18 hours and permit at least 5 and preferably 8 hours/day of sound sleep can minimize sleep deprivation. This includes enforcing lights out, permitting late sleepers, and as needed having stand-downs.

### **Poor Communications**

The level of situational awareness achieved is related to the level and quality of communications observed in the team.

## SITUATIONAL AWARENESS - 8

### **HUMAN ERROR**

The large amount of information processed by teams and the many necessary interactions within and between teams provides the opportunity for human error. Chains of human error are normal and should be expected. There are three levels of human error.

- Slips.
- Mistakes.
- Errors.

### **Slips**

Slips are the incorrect sending of information or miscommunication. Often well-formed habits take over and we make a slip. Slips often occur in giving rudder or engine commands, or in responding on the radio. These slips may be humorous or seem insignificant, but they are a visual or auditory form of

human error. They may indicate that the individual making the slip is under added stress. Unfortunately, the individual may not recognize the slip.

**Example:** An example is a verbal rudder order for left rudder when the direction of the hand was toward the right. The wrong call sign that is used to respond to another vessel is another example of a slip.

#### **Corrective Action**

Inform the individual of the slip, regardless of differences in rank.

#### **Mistakes**

Mistakes are failures in planning. Mistakes almost always have to do with the selection of objectives and the time required to achieve them.

**Example:** This may be a wrong track line chosen because of improper reading of the compass rose. In the engine room it may be the timing for engine maintenance that conflicts with a planned, though poorly promulgated, restricted maneuvering event.

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#### **Corrective Action:**

Questioning the plan during the brief and performing thorough double checks, can reduce the probability of these mistakes.

#### **Errors**

Errors are flawed execution; incorrect actions based on either correct or incorrect information. Errors, because they are defined as actions, are *the most serious form of human error*.

**Example:** The helmsman applying rudder in accordance with the conning officer's slip is an error; likewise, the helmsman applying the opposite rudder to that which was correctly ordered creates a similar error.

#### **Corrective Action:**

*Effective teams are alert to errors and use assertive communications to alert others to the problem.*

#### **ERROR TRAPPING;**

##### **When To Do It And Who Should Do It**

*Trapping slips, mistakes, and errors, (or breaking an error chain), is a key mechanism to avoiding mishaps.* Human error can occur at anytime. The earlier human error enters the process and/or the longer it goes undetected, the less effective the team will be and the greater the potential for mishaps. Regulations are implemented to control some of the known errors, but regulations and standard operating procedures are not fail-safe mechanisms.

**Team members must be able to identify all levels of human error and be empowered to take corrective action!**

## **DEFINING JUDGMENT AND JUDGMENT CHAINS**

Judgment is a process that produces a thoughtful, considered decision. In other words, it is the ability to perceive a situation and make a decision. Good decisions equal good judgment; poor decisions equal poor judgment. Judgment determines team actions in a given situation and depends on information that team members have about themselves, their unit, and the environment. In performing the mission, many judgments are made. This series of judgments is called a judgment chain.

## **SITUATIONAL AWARENESS - 10**

### **How Poor Judgments Are Formed**

Poor judgments may be the outcome of applying erroneous information or using an ineffective decision-strategy. If an 'up stream' judgment is flawed, it can affect the other ones 'down stream'.  
"Garbage In = Garbage Out."

### **Recognizing Poor Judgment Chains**

When individuals exercise poor judgment and are not aware of it:

- **Reality Is Distorted.**

They are lulled into a misconception of reality. They rationalize why things are happening using this reality as fact.

- **False Information is Perpetuated.**

They often create false information that they use to make future judgments. The probability is high that these judgments will be flawed.

- **Fewer Alternatives Seem Acceptable.**

As more poor judgments or false information is added to the chain, the seemingly available alternatives for solving problems narrow.

### **Example:**

If a cutter decides to transit unfamiliar waters without proper charts, the lack of knowledge limits its ability to deal with navigational hazards.

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### **BREAKING POOR JUDGMENT CHAINS**

A structured approach to decision-making is important to prevent a poor judgment chain from either forming or growing. This approach includes a step to *evaluate* judgments. To be effective this step has three parts.

1. Seek feedback and point out errors.
2. Assess stress level within team.
3. Manage resulting risk.

For any poor judgment chain to be broken, team leaders and members must recognize that they are

human. *Be open to the possibility that you can make poor judgments. Be willing to admit and correct errors.*

### **Seek Feedback & Point Out Errors**

To recognize a poor judgment get feedback. Feedback can come from two sources: your senses (e.g. clues to loss of situational awareness) or from an observer. Generally, the best feedback comes from others. Although senior team members are expected to use their knowledge and experience to critique their judgments, don't hesitate to get a double-check/a second opinion.

### **Assess Stress Level Within Team**

Too much or too little stress can reduce our ability to exercise good judgment. Assess the stress and attempt to obtain an optimal level before continuing.

### **Manage Resulting Risk**

Apply the 7 steps of Risk Management to correct any hazardous situations resulting from poor judgment.

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### **SUMMARY**

Situational awareness is dynamic, hard to maintain, and easy to lose. Knowing what is going on all the time is very difficult for any one person, especially during complex high stress operations. Therefore it is important that we know what behavior is effective in keeping us situationally aware. The following actions can help a team retain or regain situational awareness.

- Be alert for deviations from standard procedures.
- Watch for changes in the performance of other team members.
- Be proactive, provide information in advance.
- Identify problems in a timely manner.
- Show you are aware of what's going on around you.
- Communicate effectively.
- Keep abreast of the mission status.
- Continually assess and reassess the situation.
- Ensure that all expectations are shared for complete awareness by the whole team.



## SITUATIONAL AWARENESS - 13

### SELF QUIZ #4

1. What actions are observed in teams which are situationally aware?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_

2. What are the clues to loss of situational awareness?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_

3. What is the Two-Challenge Rule?

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4. What are the six barriers to situational awareness?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_

5. List the three levels of human error

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

6. Define Error Trapping.

7. What are the steps used to prevent Poor Judgment Chains from growing?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

## **SITUATIONAL AWARENESS - 14**

### **ANSWERS TO SELF-QUIZ #4**

#### Question Answer Reference

1. a. Anticipate the needs of other team members.  
b. Predict the needs of other team members.  
c. Adapt to task demands efficiently.
2. a. Confusion.  
b. No one watching or looking for hazards.  
c. Use of improper procedures.  
d. Departure from regulations.  
e. Failure to meet planned targets.  
f. Unresolved discrepancies.  
g. Ambiguity.  
h. Fixation or Preoccupation.
3. If a team member fails to adequately respond to two or more challenges regarding omissions or questionable actions. The individual is assumed to have lost situational awareness.
4. a. Perception.  
b. Excessive Motivation.  
c. Complacency.  
d. Overload.  
e. Fatigue.  
f. Poor Communications.
5. a. Slips.  
b. Mistakes.  
c. Errors.
6. Trapping slips, mistakes, and errors (or breaking an error chain).
7. a. Seek feedback and point out errors.  
b. Assess stress level within the team.  
c. Manage resulting risk.