DECISION-MAKING

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

- Describe the six strategies used to make decisions.

- State the steps in the Decide problem-solving model.

DECISION MAKING   Decision-making is an essential skill for operational team leaders. Applying a systematic method to solve problems is critical to team performance and the safety of operations. Team members share the responsibility for solving problems by contributing timely and valuable information to the team leader.

Observable Behavior In Making Sound Decisions   The following actions have been observed in effective decision-making.

- Gather information before making a decision.

- Cross check information sources for agreement.

- Identify alternatives/contingencies so that possible solutions may be explored.

- Discuss consequences of decisions in an effort to enhance the decision-making process.

- Provide the rationale for decisions.

DECISION-MAKING STRATEGIES   There are six decision strategies we use to make decisions. They are used either consciously or unconsciously. These strategies form the basis for how and 'if' we solve problems. We need to know how we make decisions and ensure we have good decision-making habits. The six strategies are:

| 1. Minimize | 3. Muddle | 5. Deny |
| 2. Moralize | 4. Scan | 6. Optimize |

Minimize   Select a course of action based on a minimum set of requirements. Once the minimum requirements are established the mind searches for and selects the first course of action that satisfies the minimum requirements set.

Example: The leader tells his team, "All we have to do is keep the vessel off the shoals! Just take a fix when we aren't sure where we are."

Disadvantage: Results in a superficial search for additional information.

Moralize   Make a decision based on a perceived moral obligation. Factors leading to this strategy often include requests by individuals in authority, direct orders, and perceived life and death situations where the team member feels he/she can make the difference.

Example: Many times we continue to make heroic attempts to save vessels that are on fire or sinking, when the situation is really a salvage operation. Another example would be GET-HOME-ITIS.

Disadvantage: Decisions are made without considering sufficient alternatives. Higher risks are taken than necessary, especially during SAR cases.

Muddle	Incremental decision making. The focus is on crisis management or "putting out fires", rather than selecting a superior course of action. This usually starts with minor safety shortcuts that continue until they reach the point where the team member makes serious mistakes.

The team member downplays the significance of change in a situation by engaging in superficial decision making. Risk management is not done.

Example: Several course corrections are ordered to correct for being off track without any information on the observed set and drift.

Disadvantage: Continued deviations will eventually lead to a mishap or accident.

Scan	Solve a problem by classifying information as either "important" or "unimportant". Scanning is then done on only those alternatives containing "important" information. All other alternatives are treated as superficial.

Example: Only relying on time to turn based on fix information, when turn bearings or ranges could have been used.

Disadvantage: Leads to a failure to properly assess potentially serious problems.

Deny

Eliminate the problem by denying it exists. This generally happens when stress is extremely high and one can't cope.

Example: The conn is having a hard time resolving the navigation picture, when he realizes that a close aboard situation with another ship is likely. He eliminates the possibility of a collision by insisting that the other ship will take timely appropriate action. No contingencies are considered.

Disadvantage: The problem is not solved and the decision-maker cuts off all additional information that could increase his/her stress.

**ARE THESE
5 STRATEGIES
EVER
EFFECTIVE?**

When we do not have much time, don't we do the minimum to get by? Don't we take shortcuts that do not have serious consequences? In emergencies, don't we separate important from unimportant information?

Do we *always* not have enough time, or is *everything* an emergency?

- *If the answer is yes*, we may be habitually using these decision strategies. This *unconscious* habit increases our risk of a mishap.

- *If the answer is no*, we have to determine how frequently and why we are faced with these crises. Making a *conscious* decision to solve a problem is good. When we do this, the questions asked earlier describe the ways we can prioritize alternatives, not a decision strategy.

Optimizing   The sixth and most effective decision strategy is Optimizing. It considers a wide range of choices and weighs each of the consequences.

Each of the other strategies limit decision making effectiveness, because they failed to fully examine and process <u>all</u> available data.

To ensure all available data are effectively used in making a decision, it is best to use a structured approach. The **DECIDE** Model in Figure 6-1 provides a 6-step process to make decisions.   The model has been used successfully in the aviation industry for some time and is described in DOT/FAA/PM-86/45, *Aeronautical Decision Making for Helicopter Pilots*.

DECIDE MODEL
Structured Decision Making

D **Detect change**

E **Estimate significance of change**

C **Choose outcome**

I **Identify options**

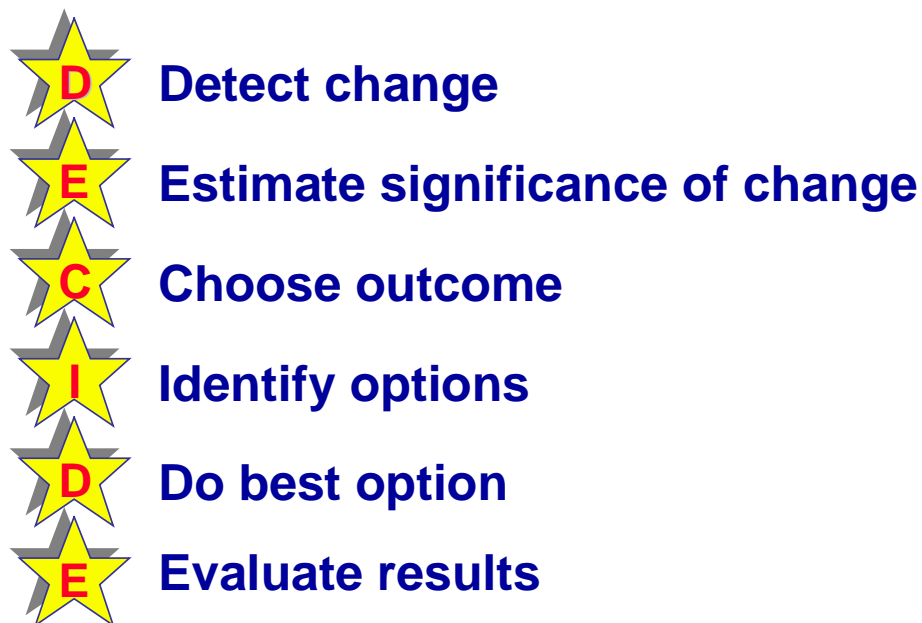**D** **Do best option**

E **Evaluate results**

Figure 6-1

D - **Detect Change**

You can't solve a problem unless you know it exists. Change exists when there is a difference between "what is happening" and "what is desired to happen."

E - **Estimate Its Affect On The Situation**

This requires that the team verify its information and the affect the information has on the situation. It also requires us to determine if we need to react to the change. Questions that help estimate the significance include:

- **Who** is affected; who is not?

- **What** situation is affected; what related things are not affected?

- **Where** is the problem?

- **When** did the problem occur?

- Do areas affected by the problem affect other areas? To what extent?

Pitfall: Too often, teams detect change and want to immediately take action without a thorough analysis.

> **Example**: Making continual course corrections for set and drift may not be the best course of action. What may be seen as an environmental force being exerted on the vessel may actually be an uncorrected error in navigation fixing.

C - **Choose An Objective**

An objective is not an alternative; it is the final measure of success. This could also be an intermediate objective that will get the team back on track with the mission plan, or an entirely new objective. *Objective selection may be the most important step in the process. The final solution will be driven by the objective that is selected.*

Pitfall: Select the wrong objective and you will probably arrive at an incomplete or incorrect solution. As a result, the team may become wrapped up in crisis management.

I - **Identify Alternatives**

The more choices available to decision-makers, the more likely an optimal solution can be found. Lessons learned from navigational mishap analysis point out that problems could have been detected early and that ample time existed to identify more than one alternative. Given that teams are composed of more than one person, the resources required to identify more than one alternative are usually available.

Pitfall: Too often, team members believe that they don't have the time to make suggestions, even when they see other alternatives. Usually the first course of action considered is the one taken. Conducting only a superficial search for alternatives results in less than optimum decisions.

D - Do The Best Alternative
The risk to safety of each alternative should be assessed along with its conformance to established standards (e.g. Rules of the Road). Effective teams routinely update contingencies during the mission so that the time it takes to affect this step is minimal. Act in accordance with the alternative that best satisfies mission and safety criteria.

Pitfall: Too often, teams take shortcuts in choosing the best alternative by willfully not complying with known practices of prudent mariners and/or ignoring effective risk management principles.

E - Evaluate The Decision
Evaluation provides team members with feedback on the effects of their decisions. This in turn provides information regarding the need to adjust to additional change. If the alternative selected does not meet the objective, the problem solving process starts again.

AFFECT OF STRESS ON DECISION-MAKING
When an individual is faced with a decision in a high stress or crisis situation two factors must be considered: To make a good decision; and to reduce the level of stress.

There is usually an attempt on the part of the decision-maker to select a decision that will not only solve the problem but also reduce the stress. The higher the stress the more important it becomes to reduce it.

Figure 6-2 demonstrates how stress affects our selection of decision strategies. As the figure shows, the potential for error and lesser effective decision strategies increases, when stress is not well managed.
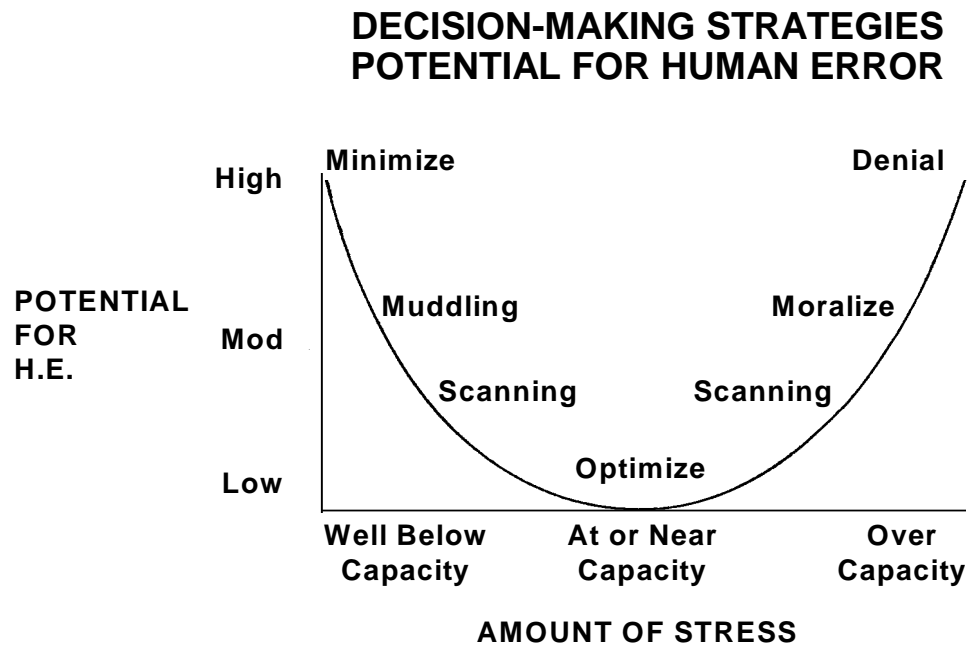
DECISION-MAKING STRATEGIES
POTENTIAL FOR HUMAN ERROR

Figure 6-2

COPING WITH STRESS	There are five ways we make decisions under stress. The five ways we cope are:

- Ignore The Problem.

- Minor Protective Action.

- Avoid The Problem.

- Panic or Confusion.

- Vigilance.

Ignore The Problem

When faced with a decision under stress the easiest thing to do is nothing. Individuals who ignore the problem are actually saying **"The risks are not serious if I don't take any corrective action."**

Consequences: This causes the initial stress from the situation to subside and little or no stress will be caused by the problem. There ability to achieve a low level of stress can lead to complacency, lowered performance, and ignoring a serious safety risk.

Decision Strategy Used: They may *minimize* problems, settling for shortcuts and deviations from established practices.

Minor Protective Action

If the individual feels the risks are to high to ignore the problem the next easiest thing to do is the absolute minimum. Individuals who use minor protective actions are actually saying **"I can't ignore the problem but the risks seem low if I select the most available alternative or protective action."**

Consequences: This causes the stress to subside substantially.   Something they failed to consider usually catches them by surprise.

Decision Strategies Used: Individuals may continue to employ the first alternative that appears to solve the problem, without looking at all the alternatives (*muddle*).   They may often consider only the minimum requirements (*minimize*). They also may look (*scan)* for just those things they think are important.

Avoid The Problem

Avoidance happens when the individual realizes they can't ignore the problem and that the most available alternative may cause problems also. The individual knows that a better alternative is available, but chooses to avoid the problem to reduce stress. **"There may be a better way, but it is not realistic to hope that I will find it!" or "I may not want to know the answer".**

Consequences: Avoiding the problem reduces the stress but does nothing to solve the problem.

Decision Strategies Used: Any thing that stimulates anxiety or other painful feelings is avoided. The individual *denies* the problem exists. To reduce the stress further individuals may *moralize*, blaming others, and "passing the buck" for their predicament.

Panic or Confusion

If an individual can see that real danger is rapidly approaching and can see no route of escape, it is easy to assume that **"There does not appear to be sufficient time to solve the problem."**

Consequences: Stress becomes so high the individual is unable to process information effectively. This may be evidenced by confusion, even with simple tasks, and panic in some situations.

Decision Strategy Used: The individual *denies* the problem can be solved.

ARE THESE 4 WAYS OF COPING EVER GOOD?

What about when...

- We are busy and must ignore a problem?
- Doing the minimum lets us handle more important problems?
- Avoiding some problems lets us get on with more important things?

Making a *conscious* decision to solve a problem is good. When we do this, the questions asked above describe ways we can prioritize alternatives, not ways we cope.

Coping generally works at the *unconscious* level. We don't think about it. That's what makes these four ways risky. Unconsciously we are trying to reduce the stress and not solve the problem.

AVOIDING INEFFECTIVE COPING

To avoid these ineffective ways of coping make decisions a *conscious* process. When faced with a problem keep the following in mind:

- Don't ignore any problem.
- Selecting a course of action that meets the minimum requirements may work but can lead to bigger problems.
- Regardless of how bad the situation looks there is always something you can do.
- No matter how close the danger is, there is always time to do something.

This is often easier said than done. Following the guidance for breaking poor judgment chains is prudent. This guidance is in Chapter 5. It requires team members to be assertive and share the responsibility for overall team performance.

Vigilance

Vigilance is a *conscious* mental process that is alert to potential problems. It gives you the time and information needed to *optimize* decisions (the DECIDE model). Individuals who are vigilant have:

- A constant belief that sufficient time exists to solve the problem.

- High confidence in ability to find a solution to the problem

- A number of alternatives to decide from based on careful search and appraisal.

SUMMARY

Table 6-1 shows the relationship between human error potential, decision strategies, and the ways we cope. Team members who remain vigilant and use the optimizing strategy have the lowest potential for mishaps.

**DECISION-MAKING UNDER STRESS
AND ITS POTENTIAL FOR ERROR**

COPING PATTERN	DECISION STRATEGIES	ERROR POTENTIAL
Ignore	Minimize	High
Minor Protective Action	Muddle	Moderate-High
	Scan or Minimize	Moderate-Low
Avoidance	Deny	High
	Moralize	Moderate-High
Panic or Confusion	Deny	High
Vigilance	Optimize	Low

Table 6-1

SELF-QUIZ #5

1. What are the six strategies people use to make decisions?

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

    f. _____

2. What are the five ways we make decisions under stress?

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

3. What are the steps in the Decide Model?

    a. _____

    b. _____

    c. _____

    d. _____

    e. _____

    f. _____

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ANSWERS TO SELF-QUIZ #5

Question	Answer	Reference
1.	a. Minimize.	6-2
	b. Moralize.	
	c. Muddle.	
	d. Scan	
	e. Deny.	
	f. Optimize.	
2.	a. Ignore the problem.	6-9
	b. Minor protective action.	
	c. Avoid the problem.	
	d. Panic or confusion.	
	e. Vigilance.	
3.	a. Detect Change.	6-5
	b. Estimate the significance of the change.	
	c. Choose an outcome.	
	d. Identify options.	
	e. Do best option.	
	f. Evaluate.	

Student Notes

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