

1-08.7.1 ELEMENTS OF CRM (COUNTERMEASURES)

1. The five fundamental elements of CRM can be used as a means of self assessment of work habits and interpersonal relationships. Though self assessment is a valuable tool, the elements of CRM can, more importantly, be thought of as countermeasures to the threats and errors that exist in our working environment. Think in terms of the "error chain" that leads to an accident. The elements of CRM are countermeasures that can be used to break that chain. The recognition of threats and errors will help to prevent the first link in the "chain" from forming.
2. There are five fundamental elements of CRM;
 - a. Communication
 - b. Leadership
 - c. Resource Management
 - d. Decision Making
 - e. Situational Awareness
3. Each element of CRM can be further defined by a list of subelements or, in some cases, by the process that is used to achieve the end result.

1-08.7.2 COMMUNICATION:

- **Assertiveness** - Confidently express ones opinion, without being overbearing, regardless of the perceived popularity of it or the fear of being incorrect.
- **Advocaton** - Championing a course of action based on the most current knowledge and experience. Being a good advocate sometimes requires one to overlooking the fear of reprisal from a superior.
- **Inquiry** - Actively seeking information. All crewmembers and dispatchers may use inquiry out of sincere curiosity or as a method of fostering an environment of open communication.
- **Speaking clearly** - The ability to be understood. Speech, particularly during an emergency or abnormal situation, should be simply stated, clearly defined, and easy to understand.
- **Listening ability** - Communication is a two-way street. One must develop the ability to concentrate on important communication when it is received.
- **Crew climate** - All crewmembers play an active role in establishing a good crew climate. From the standpoint of safety and compliance a good crew climate exists when each crewmember feels free to communicate questions, concerns, or opinions with regard to the operation.

1-08.7.3 LEADERSHIP:

- **Command** - Is the exercise of duties associated with the position of Pilot-in-Command. Command resides with the Captain for the duration of the flight and jointly between the Captain and dispatcher on the ground. The PIC is the final authority and ultimate decision-maker and is responsible for the overall safe conduct of the flight. Command is the legally mandated and ethically required responsibility, authority, and accountability of Captains.
- **Authority and Responsibility** - Responsibility is a crewmembers or dispatchers mandated obligation to ensure that required actions are accomplished. Authority, unlike responsibility, can be delegated. It is the power granted to perform, direct, and supervise assigned tasks and responsibilities.
- **Team building** - The command crewmember has the power to encourage positive team synergy as well as the power to depress or suppress it. To be an effective leader one must learn how to develop and foster teamwork. This begins by recognizing the need for help. This is not admitting weakness but rather accepting that two (or more) heads are better than one.
- **Followership** - The command role carries important differences in responsibility from non-command roles. A good follower respects the PIC's authority with respect to decision making at all times. Every non-command crewmember is responsible for actively contributing to the team effort.
- **Mentoring** - The time-honored tradition of leaders influencing and educating other crewmembers about the values and skills of the aviation profession.
- **Professionalism** - Performing duties and responsibilities to the highest standards of the aviation profession and reflecting a commitment to excellence in all aspects of flight duties and crewmember performance.
- **Conflict management** - Recognizing and managing disagreements that may be based on information, personality, or opinion.

1-08.7.4 RESOURCE MANAGEMENT:

- **Task management** - In a normal operating environment crewmembers complete the tasks that are required by SOPs. In an abnormal or emergency situation crewmembers may have to prioritize tasks and complete only those that time allows. Good task management requires good teamwork, the ability to delegate, and the ability to recognize task saturation.
- **Time management** - Situations that challenge crewmembers CRM skills are often time compressed. Crewmembers must weigh their desire for more information (which is time consuming) against the potentially safer course of action of expediting an approach and landing.

- **Resource awareness** - The Pilot-in-Command is the end link in a chain of informational resources. In most cases the PIC's best and most convenient resource is the other flight crewmembers. For operational simplicity the majority of "outside" resources are funneled through dispatch.
- **Resource limitations** - Resources include any and all potential sources of pertinent information. Crewmembers in command positions must neither relinquish command to a resource nor look to their resources to make decisions for them.

1-08.7.5 DECISION MAKING

1. The decision making process is shaped by the type of problem, the degree of risk, the time available, and the resources available. All crewmembers and, at time, dispatchers participate in the decision making process. The PIC has the final responsibility and authority for the decision.
2. Rather than having individual sub-elements, decision making is a process of determining and implementing a course of action and evaluating the outcome:
 - a. Define the problem
 - b. Generate choices
 - c. Evaluate choices
 - d. Select a choice
 - e. Implement the choice selected
 - f. Critique

1-08.7.6 SITUATIONAL AWARENESS

1. Knowing the location and status of the airplane and crewmembers, and understanding the potential impact of flight conditions on present and future operations. SA is an ongoing process of attentiveness and surveillance and includes understanding current conditions, and anticipating potential outcomes of those factors. To maintain SA crewmembers must exercise vigilance during normal, abnormal, and emergency operations. Avoid distractions such as ATC communications, schedule demands, stress, fatigue, and complacency.
2. Much like an instrument scan, situational awareness requires a mental scan of the following;
 - a. Review
 - b. Monitor
 - c. Predict

1-08.8 THREAT AND ERROR RECOGNITION

1. As mentioned previously, we use threat and error recognition to attempt to prevent the error chain from forming. By knowing when we are entering “shark infested waters” we can take appropriate action to keep from being eaten.

1-08.8.1 THREATS

1. Threats are defined as a possible source of danger. Situations, behaviors, feelings, words, or phrases can alert crewmembers to possible problems or unsafe situations. Threats originate outside the pilot's/dispatcher's influence but require active management to prevent them from affecting safety. According to research generated by our Safety Department, the four most frequently observed threats are:
 - Adverse weather
 - Air Traffic Control communications
 - Airplane malfunctions
 - Operational pressures
2. Other threats can be more difficult to recognize, such as:
 - Stress and fatigue •Proficiency •Personal issues
 - Airport considerations •Distractions •Dispatch event
 - Terrain •Cabin event •Passenger misconduct
 - Ground crew event •Maintenance event •Nav. management

1-08.8.2 ERRORS

1. Errors caused by crewmembers or dispatchers are actions or inactions that lead to a deviation from intentions or expectations. Errors are inevitable in a complex work environment. Errors can be broken down into three types:
 - **Operational Decision Error** - Discretionary decisions, not covered by procedures, that unnecessarily increase threats (e.g., navigation into adverse weather, unnecessary low maneuver on approach, inappropriate reliance on automated navigation systems).
 - **Communication Error** - Misinterpretation of, or missing, information (e.g., incorrect read back to ATC, missed ATC calls, wrong course communicated between pilots).
 - **Procedural Error** - Errors committed when SOPs are not followed. There are three types of procedural errors:
 - (1) **Procedural Execution** - Procedures are followed but not executed properly (e.g., lever and switch settings, wrong altitude setting, incorrect flap setting for takeoff or landing).

- (2) **Intentional Noncompliance** - Violations of or intentional deviation from SOPs (e.g., omitting required briefings, performing checklists from memory, failing to cross-check settings).
- (3) **Proficiency** - Lack of knowledge (e.g., procedural or regulatory deficiencies, stick and rudder deficiencies).

1-08.8.3 THREAT AND ERROR MANAGEMENT

1. Threats and errors can be managed in one of three ways:
 - **Avoid** - Use layers of protection (GOM, AOM, SOP, pilots, dispatch, maintenance, etc.) to avoid errors and threats.
 - **Trap** - Detect and manage the error or threat before it becomes consequential.
 - **Mitigate** - Lessen the effects of threats and errors by evaluating present course of action and altering the course as needed. Two negative reactions may occur when attempting to mitigate an error:
 - (1) **Exacerbate** - The error is detected, but the crew's action or inaction become consequential (leads to an undesired airplane state).
 - (2) **Fails to Respond** - Lack of response to a threat or error (undetected or ignored) results in the error being inconsequential or consequential.
2. To avoid, trap, or mitigate errors:
 - Communicate with other crewmembers.
 - Inquire and advocate.
 - Use SOP.
 - Brief and debrief.
 - Stay informed of the current situation.
 - Cross-check and monitor systems and actions.
 - Verify navigation.