

CREW COORDINATION CHECKLIST

REFERENCE: TC 1-3.04-11, Aircrew Training Program.

1. GENERAL. The intent of this appendix is to provide investigators with a tool to evaluate crew coordination.

2. APPLICABILITY. The qualities of effective aircrew coordination apply to aviation and ground systems. They apply equally to any vehicle or piece of equipment that is operated by more than one person. While no equivalent ground manuals address crew coordination in the manner of the ATP/ATMs, ground investigators should also use this checklist to evaluate effectiveness of crew coordination.

3. CREW COORDINATION DEFINED. Crew coordination is the interaction between crewmembers necessary for the safe, efficient and effective performance of tasks. It involves the effective utilization of all available resources: hardware, software, and live-ware.

- Crew coordination is a set of principles, attitudes, procedures, and techniques that transforms individuals into an effective crew. It is a vital part of the unit-training program. DA directives mandate that all air-crewmembers become crew-coordination qualified.
- Aviation units will conduct initial aircrew coordination qualification training according to TC 1-3.04-11 and the USAAVNC Aircrew Coordination Exportable Training Package.
- Other definitions include:
 - Individual actions - these actions are the portion of a task that an individual crewmember must do.
 - Crew-coordinated actions - these actions require crewmembers to communicate appropriately with each other and to perform their individual actions in the proper sequence and at the proper time to ensure safe and efficient task execution.

4. QUALITIES OF EFFECTIVE CREW COORDINATION. Investigators should examine these qualities to determine if effective crew coordination existed or if poor crew coordination contributed to the accident (see TC 1-3.04-11 for a detailed explanation of each category):

_____(1) **Flight/vehicle team leadership and crew climate are established and maintained.** This quality addresses the relationships among the crew and the overall climate of the flight deck. Aircrews are teams with a designated leader and clear lines of authority and responsibility. The PC sets the tone for the crew and maintains the working environment. Effective leaders use their authority but do not operate without the participation of other crewmembers. When crewmembers disagree on a course of action, they must be effective in resolving the disagreement.

_____(2) **Pre-mission planning and rehearsal are accomplished.** Pre-mission planning includes all preparatory tasks associated with planning the mission. These tasks include planning for VFR, IFR, and terrain flight. They also include assigning crewmember responsibilities and conducting all required briefings and brief-backs. Pre-mission rehearsal involves the crew's collective visualization and

discussion of expected and potential unexpected events for the entire mission. Through this process, all crewmembers think through contingencies and actions for difficult segments or unusual events associated with the mission and develop strategies to cope with contingencies.

____(3) **Appropriate decision-making techniques are applied.** Decision making is the act of rendering a solution to a problem and defining a plan of action. It must involve composite risk assessment. The quality of decision making and problem solving throughout the planning and execution phases of the mission depends on the information available, time constraints, and level of involvement and information exchange among crewmembers. The crew's ability to apply appropriate decision-making techniques based on these criteria has a major impact on the choice and quality of their resultant actions. Although the entire crew should be involved in the decision-making and problem solving process, the PC is the key decision maker.

____(4) **Actions are prioritized and workload is equitably distributed.** This quality addresses the effectiveness of time and workload management. It assesses the extent to which the crew, as a team, avoids distractions from essential activities, distributes and manages workload, and avoids individual task overload.

____(5) **Unexpected events are managed effectively.** This quality addresses the crew's performance under unusual circumstances that may involve high levels of stress. Both the technical and managerial aspects of coping with the situation are important.

____(6) **Statements and directives are clear, timely, relevant, complete, and verified.** This quality refers to the completeness, timeliness, and quality of information transfer. It includes the crew's use of standard terminology and feedback techniques to verify information transfer. Emphasis is on the quality of instructions and statements associated with navigation, obstacle clearance, and instrument readouts.

____(7) **Mission situational awareness is maintained.** This quality considers the extent to which crewmembers keep each other informed about the status of the aircraft and the mission. Information reporting helps the aircrew maintain a high level of situational awareness. The information reported includes aircraft position and orientation, equipment and personnel status, environmental and battlefield conditions, and changes to mission objectives. Awareness of the situation by the entire crew is essential to safe flight and effective crew performance.

____(8) **Decisions and actions are communicated and acknowledged.** This quality addresses the extent to which crewmembers are kept informed of decisions made and actions taken by another crewmember. Crewmembers should respond verbally or by appropriately adjusting their behaviors, actions, or control inputs to clearly indicate that they understand when a decision has been made and what it is. Failure to do so may confuse crews and lead to uncoordinated operations.

____(9) **Supporting information and actions are sought from the crew.** This quality addresses the extent to which supporting information and actions are sought from the crew by another crewmember, usually the PC. Crewmembers should feel free to raise questions during the flight regarding plans, revisions to plans, actions to be taken, and the status of key mission information.

____(10) **Crewmember actions are mutually cross-monitored.** This quality addresses the extent to which a crew uses cross-monitoring as a mechanism for breaking error chains that lead to accidents or degraded mission performance. Crewmembers must be capable of detecting each other's errors. Such redundancy is particularly important when crews are tired or overly focused on critical task elements and thus more prone to make errors.

***NOTE:** The two-challenge rule allows one crewmember to automatically assume the duties of another crewmember who fails to respond to two consecutive challenges. For example, the P* becomes fixated, confused, task overloaded, or otherwise allows the aircraft to enter an unsafe position or attitude. The P first asks the P* if he is aware of the aircraft position or attitude. If the P* does not acknowledge this challenge, the P issues a second challenge. If the P* fails to acknowledge the second challenge, the P assumes control of the aircraft.*

____(11) **Supporting information and actions are offered by the crew.** This quality addresses the extent to which crewmembers anticipate and offer supporting information and actions to the decision maker--usually the PC--when apparently a decision must be made or an action taken.

____(12) **Advocacy and assertion are practiced.** This quality concerns the extent to which crewmembers are proactive in advocating a course of action they consider best, even when others may disagree.

____(13) **Crew-level after-action reviews are conducted.** This quality addresses the extent to which crewmembers review and critique their actions during or after a mission segment, during periods of low workload, or during the mission debriefing.

5. Historical crew coordination errors identified by the USACRC/ARI Aviation Accident Analysis.

- Failure of the pilot on the controls (P*) to properly direct assistance from other crewmembers.
- Failure of a crewmember to announce a decision or action that affected the ability of other crewmembers to properly perform their duties.
- Failure of a crewmember to communicate positively (verbally and non-verbally).
- Failure of Pilot in Command (PC) to assign crew responsibilities properly before and during the mission.
- Failure of the P or other crewmembers to offer assistance or information that was needed or had been requested previously by the P*.
- Failure of the P* to execute flight actions in the proper sequence with the actions of the other crewmembers.