U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: DISPATCH RESOURCE MANAGEMENT TRAINING	Date: 11/21/05	AC No: 121-32A
	Initiated By: AFS-220	Change:

1. PURPOSE.

a. This advisory circular (AC) presents guidelines for developing, implementing, reinforcing, and assessing Dispatch Resource Management (DRM) training programs for aircraft dispatchers. This AC complements guidance already developed for flight crewmembers. These programs are an integral part of training and operations. These guidelines are primarily for those operators subject to Title 14 of the Code of Federal Regulations (14 CFR) part 121. Regulations require domestic and flag operators to provide DRM training for aircraft dispatchers.

b. These guidelines are also for use by those 14 CFR part 121 supplemental operators electing to train in accordance with part 121 domestic and flag requirements. Certificate holders and individuals not operating under part 121 should also find these guidelines useful in addressing human performance issues. This AC presents one way, but not necessarily the only way, that operators may address DRM training. DRM training focuses on situational awareness, communication skills, teamwork, prioritizing, resource allocation, risk management, human factors, and decisionmaking skills within the framework of the regulations and the operator's policies and procedures.

2. CANCELLATION. This AC cancels AC 121-32, Dispatch Resource Management Training, dated February 7, 1995.

3. PRINCIPAL CHANGES. This revision:

a. Brings the AC up to date with today's techniques and philosophies on DRM training, including changes to:

(1) Current reading material relating to DRM.

(2) DRM background.

(3) Fundamentals of DRM training implementation.

(4) Components of DRM training.

(5) Assessment of DRM training programs.

(6) The critical role of supervisors and instructors.

(7) Evolving concepts of DRM.

b. Adds paragraph 12, Suggested Curriculum Topics, which addresses decisionmaking, communication, and workload management in many DRM programs (these topics should be tailored to each organization's culture and needs).

4. RELATED REGULATIONS.

a. Title 14 CFR part 65, Subpart C - Aircraft Dispatchers; Part 65, Appendix A - Aircraft Dispatcher Courses.

b. Part 121, sections 121.107, 121.395, 121.415, 121.418, 121.422, 121.427, 121.463, 121.465, 121.533-537, and Part 121 Subpart U - Dispatching and Flight Release Rules.

c. Special Federal Aviation Regulation (SFAR) 58, Advanced Qualification Program.

5. DEFINITIONS.

a. Human Factors. Human factors is a multidisciplinary field devoted to optimizing human performance and reducing human error. It incorporates the methods and principles of the behavioral and social sciences, engineering, and physiology. The human factors field is the applied science that studies people working together in concert with machines. It embraces variables that influence individual and team performance. Inadequate system design or inadequate operator training can contribute to individual human error, which leads to system performance degradation. Further, inadequate design and management of tasks can contribute to group errors, which lead to system performance degradation.

b. DRM Training. DRM training addresses the challenge of optimizing communication between diverse groups within an airline and the related interpersonal issues while using available resources. This includes effective teambuilding, conflict resolution, situational awareness, information transfer and dissemination, problem solving, decisionmaking, and dealing with automated systems. DRM has evolved because of the joint responsibility for the preflight planning, delay, and dispatch release of a flight between the pilot in command (PIC) and aircraft dispatcher. DRM training consists of three components: initial indoctrination/ awareness, recurrent practice and feedback, and continual reinforcement. DRM training should employ scenario-based training to the extent possible to emphasize effective use of the dispatcher's tools and resources.

c. Operational Control. With respect to a flight, the exercise of authority over initiating, conducting, or terminating a flight.

6. RELATED READING MATERIAL.

a. AC 120-35, Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation, current edition.

b. AC 120-48, Communication and Coordination Between Flight Crewmembers and Flight Attendants, current edition.

c. AC 120-51, Crew Resource Management [CRM] Training, current edition.

d. AC 120-54, Advanced Qualification Program, current edition.

> **NOTE: These ACs may be downloaded free of charge from the following Federal Aviation Administration (FAA) public Web site: www.faa.gov/avr/afs. Scroll down to Regulations and Guidance or Information Advisories.**

e. Guidelines for Situation Awareness Training, NAWCTSD/FAA/UCF Partnership for Aviation Team Training. This document may be viewed, downloaded, or printed at the following Web site: http://www.faa.gov/avr/afs/train.htm.

f. International Civil Aviation Organization (ICAO) Annex 13 on Human Factors. This document may be obtained from ICAO Document Sales Unit, Montreal, Quebec, Canada, 514-954-8022.

g. For detailed information on the recommendations made in this AC, we encourage the reader to review:

(1) Crew Resource Management: An Introductory Handbook, published by the FAA (Document No. DOT/FAA/RD-92/26).

(2) Cockpit Resource Management Training: Proceedings of a NASA [National Aeronautics and Space Administration]/MAC Workshop, 1987, which also provides additional background material. The NASA Conference Proceedings (CP) number is 2455.

> **NOTE: The National Plan for Aviation Human Factors defines research issues related to crew coordination and training. Copies of the preceding publications may be purchased from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. The telephone numbers for National Technical Information Service are: (800) 553-6847 and (703) 605-6000; fax (703) 605-6900.**

h. For more detail on certain evolving concepts of CRM:

(1) Advanced CRM, see: "Developing Advanced Crew Resource Management (ACRM) Training: A Training Manual," Seamster, Boehm-Davis, Holt, Schultz, 8-1-98 (http://www.hf.faa.gov/products/daCRMt/daDRMt.html).

(2) Situation awareness, see: "Cockpit Distractions and Interruptions," Dismukes, Young, Sumwalt, December, 1998 (http://asrs.arc.nasa.gov/directline_issues/dl10_distract.htm).

i. National Transportation Safety Board (NTSB) AAR-91-04, final report of the Commission of Inquiry into the Air Ontario Accident at Dryden, Ontario, March 10, 1989.

7. BACKGROUND. The NTSB and the Transportation Safety Board of Canada have both found that inadequate operational control and inadequate collaborative decisionmaking have been contributing factors in air carrier accidents. Effective management of available resources by aircraft dispatchers is one essential deterrent to such accidents. In exercising dispatcher duties, the aircraft dispatcher coordinates with flight crewmembers, air traffic controllers, and other members of a vast team in order to meet the requirements of daily flight operations. This AC encourages the aircraft dispatcher to be knowledgeable of the functions of the other participants encountered throughout the operating environment.

a. Two expected benefits of DRM training to the aircraft dispatcher are: (1) better management of information that has a direct impact on safe flight operations; and (2) a better interface with each PIC, consistent with the joint responsibility concept outlined in part 121.

b. Many problems encountered by flightcrews and aircraft dispatchers have very little to do with the technical aspects of flight operations. Instead, most problems are associated with poor group decisionmaking, ineffective communication, inadequate leadership, and poor task or resource management. Historically, aircraft dispatcher training programs focused almost exclusively on the "how to" aspects of dispatching and on an individual dispatcher's performance; these programs did not effectively address resource management issues fundamental to safe flight.

c. The NTSB, the FAA, and many other parties have found that failing to adhere to standard operating procedures (SOP) is a persistent element in these problems, which sometimes have led to accidents. SOPs define the shared model upon which safe and efficient airline performance depends. Too often, pilots, aircraft dispatchers, flight attendants, and others have unconsciously ignored well-established SOPs; in other cases they have been consciously ignored. In still other cases, the operator has inadequately developed SOPs for use by its pilots, flight attendants, and aircraft dispatchers. Many times, significant SOPs have been omitted from an operator's training program. The Commercial Aviation Safety Team (CAST), a coalition of industry and government organizations, including the FAA, chartered by the White House in 1997, has undertaken to reduce the air carrier accident rate by 80 percent by the year 2007. Initiatives to improve SOPs and adherence to those SOPs are among the top priority safety initiatives now being implemented by CAST.

8. THE MISSION OF DRM TRAINING. DRM training has been conceived to prevent aviation accidents by improving interaction between the aircraft dispatcher, PIC, mechanic, and other personnel.

9. BASIC CONCEPT OF DRM TRAINING.

a. DRM training is based on the awareness that the aircraft dispatcher is an integral part of flight operations and can positively influence safety. Good training for routine operations can have a strong, positive effect on how well individuals function during times of high workload or high stress. More importantly, during emergency situations, the aircraft dispatcher should instinctively fall back upon his or her DRM training. Practice of desirable behaviors during times of low stress increases the likelihood that the dispatcher will handle emergencies effectively.

b. There are various methods used in DRM training today, but certain essential concepts are universal:

(1) Training should reinforce the importance of communication and provide instruction to develop and refine each individual's communication skills.

(2) Training should emphasize situational awareness.

(3) Training should focus on developing sound decisionmaking skills.

(4) Training should stress effective management of workload through prioritization of tasks.

(5) Interpersonal skills training concentrates on aircraft dispatcher's attitudes and behaviors and the effects they have on others.

(6) Training should apply human factors concepts to improve aircraft dispatcher proficiency.

(7) DRM training ideally should include all operational personnel to improve teamwork.

(8) Aircraft dispatchers must review large quantities of real-time information and decide pertinent information for each flight under their operational control. Training should provide the aircraft dispatcher with the skills necessary to manage information flow effectively.

(9) Training should instruct aircraft dispatchers on how to cope with abnormal or emergency situations.

(10) Having aircraft dispatchers participate in line oriented flight training (LOFT) sessions provides an extremely effective means of practicing DRM skills and receiving reinforcement.

(11) Aircraft dispatchers may also participate in role-playing exercises. Such exercises permit practice in developing strategies for dealing with operational events and enable analysis of aircraft dispatcher decisions while dealing with these events.

(12) Trainees need awareness, practice, feedback, continuing reinforcement, and time to learn attitudes and behaviors that will endure. To be effective, DRM concepts must be permanently integrated into all aspects of training and operations.

10. FUNDAMENTALS OF DRM TRAINING IMPLEMENTATION. Research programs and airline operational experience suggest that the greatest benefits are achieved by adhering to the following practices:

a. Assess the Status of the Organization Before Implementation. Before designing specific training, program designees should determine how well dispatchers already know and practice DRM concepts. Surveys of aircraft dispatchers, management, training, and standards personnel, observation of aircraft dispatchers, and analysis of incident/accident reports can provide essential data for program designers.

b. Get Commitment from All Managers, Starting with Senior Managers. Aircraft dispatch personnel will receive DRM programs more positively when senior managers, aircraft dispatch managers, air transportation supervisors (ATS), and the training department conspicuously support DRM concepts and provide the necessary resources for training. Dispatch and/or flight operations manuals and training manuals should embrace DRM concepts by providing aircraft dispatchers with necessary policy and procedures guidance. Communication is a central DRM concept. It is essential that every level of management support a safety culture in which communication is promoted by encouraging appropriate questioning.

c. Customize the Training to Reflect the Nature and Needs of the Organization. Using knowledge of the state of the organization, priorities should be established for topics to be covered, including special issues. This approach increases the relevance of training for aircraft dispatchers.

d. Define the Scope of the Program and an Implementation Plan. Institute special DRM training for key personnel including ATSs and instructors. It is highly beneficial to provide training for these groups before beginning training for aircraft dispatchers. DRM training may be expanded to combine pilots and maintenance personnel. It may also be expanded to include flight attendants and other company team members, as appropriate. It is also helpful to develop a long-term strategy for program implementation.

e. Communicate the Nature and Scope of the Program Before Startup. Training departments should provide aircraft dispatchers, managers, training, and standards personnel with a preview of what the training will involve together with plans for initial and continuing training. These steps can prevent misunderstandings about the focus of the training or any aspect of its implementation.

f. Institute Quality Control Procedures. It has proved helpful to monitor the delivery of training and determine areas where training can be strengthened. Monitoring can be initiated by providing special training to program instructors (often called facilitators) and using surveys to collect systematic feedback from participants in the training.

11. COMPONENTS OF DRM TRAINING. The topics outlined below have been identified as critical components of effective DRM training. They do not represent a fixed sequence of phases, each with a beginning and an end. Ideally, each component is continually renewed at every stage of training.

a. Initial Training.

(1) DRM is a required component during initial and transition ground training. It consists of classroom presentations and focuses on communications and decisionmaking, interpersonal relations, team coordination, leadership, and situational awareness, among others. In this component of DRM training, the concepts are developed, defined, and related to safety of flight operations. This component also provides a common conceptual framework and a common vocabulary for identifying team coordination problems.

(2) Lectures, audiovisual presentations, discussion groups, role-playing exercises, computer-based instruction, and videotaped examples of good and poor team behavior are commonly used methods for initial training.

(3) Initial training requires the development of a curriculum that addresses DRM skills that influence aircraft dispatcher proficiency. To be most effective, the curriculum should define the concepts involved and relate them directly to operational issues that aircraft dispatchers encounter. Many organizations have found it useful to survey aircraft dispatchers. Survey data has helped identify embedded attitudes regarding pilot/aircraft dispatcher coordination and resource management. The data has also helped to identify operational problems and to prioritize training issues.

(4) Effective initial training increases understanding of DRM concepts. That understanding, in turn, often influences individual attitudes favorably regarding human factors issues. Often, the training suggests more effective communication practices.

(5) It is important to recognize that classroom instruction alone does not fundamentally alter aircraft dispatcher attitudes over the long term. The initial training is a necessary first step towards effective DRM training.

b. Recurrent Practice and Feedback.

(1) DRM training must be included as a regular part of the recurrent training requirement. Recurrent DRM training should include classroom or briefing room refresher training to review and amplify DRM components, followed by practice and feedback exercises such as role-playing in-flight scenarios or LOFT. These recurrent DRM exercises, if possible, should take place with a full crew, each member operating in his or her normal crew position.

(2) Recurrent training with performance feedback allows participants to practice newly developed DRM skills and to receive feedback on their effectiveness.

(3) Feedback has its greatest impact when it comes from self-critique and from peers, together with guidance from a facilitator with special training in assessment and debriefing techniques. The most effective feedback refers to the coordination concepts identified in indoctrination/awareness training or in recurrent training. Effective feedback relates to specific behaviors. Practice and feedback are best accomplished through the use of simulators or training devices and videotape. Taped feedback, with the guidance of a facilitator, is particularly effective because it allows participants to view themselves from a third person perspective. This approach is especially compelling in that video captures and displays strengths and weaknesses vividly. Participants can easily see behavioral patterns and individual work styles. As a result, appropriate adjustments are often self-evident.

c. Continuing Reinforcement.

(1) No matter the effectiveness of each curriculum segment (classroom, role-playing exercises, LOFT, or feedback), one-time exposures are simply not sufficient. The attitudes and norms that contribute to ineffective team coordination may have developed over an aircraft dispatcher's lifetime. It is unrealistic to expect a short training program to reverse years of habits. To be maximally effective, a program should embed DRM in every stage of training, and day-to-day aircraft dispatch operations should stress DRM concepts as well.

(2) DRM should become an integral part of the organization's culture.

(3) There is a common tendency of personnel in training departments in the aviation industry to think of DRM as training only for aircraft dispatchers. This notion misses the essence of the DRM training mission: the prevention of accidents through better overall operational coordination. DRM training works best in the context of the entire airline team. Training exercises are most effective if all team members work and learn together.

(4) A training program can work reinforcement into many areas. Joint training with aircraft dispatchers, pilots, maintenance personnel, flight attendants, and operational/gate agents can also reinforce DRM concepts.

12. SUGGESTED CURRICULUM TOPICS. The topics outlined below have been included in many current DRM programs. The specific content of training and organization of topics should reflect an organization's unique culture and specific needs.

a. Decisionmaking. The aircraft dispatcher assumes a leadership role within the operational environment; therefore, DRM training should teach effective decisionmaking skills through use of inquiry, advocacy, and assertion. Training should focus on effective techniques of seeking and evaluating information, showing the influence of biases and other factors that impact decision quality. There are benefits in providing aircraft dispatchers with operational models of

the decision process. Aircraft dispatchers may refer to these models to make good choices in situations when information is incomplete or contradictory.

(1) Training in decisionmaking skills should be scenario-based and include the following:

(a) Assessing the competing needs that must be considered when choosing among alternatives.

(b) Being aware of the resources available to the various parties involved in the decisionmaking process.

(c) Applying effective problem-solving strategies to help in decisionmaking.

(d) Avoiding situations and behaviors that contribute to errors.

(e) Risk management.

b. Communications. This topic includes internal and external influences on interpersonal communications. External factors include job title, corporate complexity, age, experience, gender, organizational culture, education, etc. Internal factors include speaking skills, listening skills, decisionmaking skills, conflict resolution techniques, and the use of appropriate assertiveness and advocacy. All training activities involving pilots, flight attendants, aircraft dispatchers, and aircraft mechanics should stress the importance of clear and unambiguous communication. More specific subtopics include the following:

(1) Briefings. Aircraft dispatchers provide weather briefings to pilots and shift turnover briefings to other aircraft dispatchers and operational briefings to coworkers. Briefings should be clear and concise, using standard terminology. Briefings should reaffirm established policies and procedures.

(2) Assertiveness. The training department should train aircraft dispatchers to advocate the course of action that the dispatcher feels is the safest, even though it may involve conflict with others. The PIC makes the final call.

(3) Inquiry. This training will stress the importance of proactively seeking information that is relevant to the aircraft dispatcher's operational and regulatory responsibilities. Personnel in the air carrier's training department, during DRM training, should discuss effective techniques for obtaining this information.

(4) Conflict Resolution. Training in effective techniques of resolving disagreements among team members that occur during interpreting information or while proposing courses of action. Training in maintaining open communication when dealing with conflict.

(5) Interdepartmental Coordination Process. Training should identify those departments with which the aircraft dispatcher will interact. This should include how the actions of other departments will impact the aircraft dispatcher.

(6) Interpersonal Relationships. The air carrier's training department, during DRM training, should stress that interpersonal relationships are key concepts. Curricula can include the following:

(a) Recognizing and dealing with diverse personalities and operating styles;

(b) Demonstrating the usefulness of showing sensitivity to other coworkers' personalities and styles; and

(c) Emphasizing the value of maintaining a friendly, relaxed, and supportive - yet task-oriented - tone in the workplace.

c. Workload Management.

(1) Situational Awareness. Training should stress the importance of maintaining awareness of the operational environment and anticipating contingencies. Instruction may address practices (e.g., vigilance, planning and time management, prioritizing tasks, and avoiding distractions) that result in higher levels of situational awareness.

(a) Preparation/Planning/Vigilance. Issues include methods to improve monitoring and accomplishing required tasks, requesting and responding to new information, and preparing in advance for required activities.

(b) Prioritizing Tasks. This training involves techniques for identifying periods of high workload and highlights the need for prioritization and multitasking during these instances. Additional training should identify those nonessential tasks and influences that could distract the aircraft dispatcher's attention from critical tasks. Training should include methods for redistributing workload when necessary.

(2) Tactical and Strategic Use of Resources. Training should focus on appropriate and innovative use of the aircraft dispatcher's tools and resources.

(3) Stress Management. Training in this area may include describing and demonstrating individual characteristics that can influence aircraft dispatcher effectiveness. Many aircraft dispatchers are unfamiliar with the negative effects of stress and fatigue on individual cognitive functions and team performance. Training may include a review of scientific evidence on fatigue and stress and their effects on performance. The content may include specific effects of fatigue and stress in potential emergency situations. The effects of personal and interpersonal problems and the increased importance of effective interpersonal communications under stressful conditions may also be addressed. Training may also include familiarization with various countermeasures for coping with stressors. Additional curriculum

topics may include examination of personality and motivation characteristics, self-assessment of personal style, and identifying cognitive factors that influence perception and decisionmaking.

13. ASSESSMENT OF DRM TRAINING PROGRAMS. It is vital that each program be assessed to determine if it is achieving its goals. Each organization should have a systematic assessment program to track the effectiveness of the training program. Critical topics for recurrent training should be identified and continuous improvements should be made. Evaluation of the training program should include observation of the training process by program administrators and self-reports by participants using standard survey methods. Duration of DRM training should be sufficient to allow for the inclusion of the suggested curriculum and topics contained in this AC.

a. Emphasis should be on improving aircraft dispatcher performance. The essential areas of DRM-related assessment include communications processes, decisionmaking, interpersonal relationships, workload management, technical proficiency, and situational awareness.

b. For optimal assessment, data on aircraft dispatcher attitudes and behavior should be collected before DRM indoctrination and again at intervals after the last component of DRM training, to determine both initial and enduring effects of the program. The goal should be to obtain an accurate picture of the organization's significant corporate personality traits before formal adoption of DRM training, and to continue to monitor those traits after implementation.

c. Reinforcement and feedback are essential to effective DRM training programs. Aircraft dispatchers should receive continual reinforcement to sustain DRM concepts. Effective reinforcement depends upon usable feedback to aircraft dispatchers on their DRM practices and on their technical performance. One of the best learning opportunities occurs when aircraft dispatchers examine their own behavior and performance with the assistance of a trained facilitator. The facilitator points out both positive and negative aspects of DRM performance. Whenever highly effective performance is observed, it is vital that the underlying behaviors are discussed and reinforced.

d. Usable feedback requires consistent assessment. Aircraft dispatchers and those involved in training and evaluation should be able to recognize effective and ineffective DRM behaviors. Each competency check is required by regulation to include DRM skills. DRM concepts should be critiqued during briefing/debriefing phases of checking events. Operators can easily gauge the effectiveness of DRM training programs through observing these skills during competency checks.

e. To summarize, the assessment program should:

(1) Measure and track the organization's corporate culture toward DRM as it is reflected in attitudes and behavior.

(2) Identify topics needing emphasis within the DRM program. Experience has shown that resource management training works best if it is continually refreshed by subject matter that is timely, relevant, and useable.

(3) Ensure that all supervisors and instructors are well prepared using standardized lesson plans to deliver effective DRM training.

14. THE CRITICAL ROLE OF SUPERVISORS AND INSTRUCTORS.

a. The success of any DRM training program ultimately depends on the skills of the people who administer the training and measure its effectiveness. DRM instructors, supervisors, and course designers should be skilled in all areas related to the practice and assessment of DRM. These skills comprise an additional level to those associated with traditional aircraft dispatch instruction and checking.

b. Gaining proficiency and confidence in DRM instruction, observation, and measurement requires special training for instructors and supervisors in many DRM training processes. Among those processes are role-playing simulations, systematic dispatcher-centered observation, leading group discussions, administering joint pilot/aircraft dispatcher LOFT programs, and providing usable feedback to the aircraft dispatchers.

c. Instructors and supervisors also require special training in order to refine and standardize their own skills.

d. Instructors and supervisors should use every available opportunity to emphasize the importance of coordination skills. The best results occur when the aircraft dispatchers examine their own behavior with the assistance of a trained instructor who can point out both positive and negative DRM performance. Whenever highly effective examples of coordination are observed, it is vital that these positive behaviors be discussed and reinforced. Debriefing and critiquing skills are important tools for instructors and supervisors.

e. Feedback is most effective when it refers to the concepts that are covered in the initial indoctrination/awareness training. The best feedback refers to instances of specific behavior, rather than behavior in general.

15. EVOLVING CONCEPTS OF DRM.

a. Joint DRM Training. More and more carriers are discovering the value of revising DRM training to reach various employee groups and sometimes to combine those groups during training. The carriers' objective is to improve the effectiveness and safety of the entire operations team as a working system. DRM principles become more relevant for aircraft dispatchers, pilots, and other groups by addressing those principles in a familiar, job-related context. Furthermore, each group should benefit from concurrent training in DRM that is complemented by usable knowledge of the other's job.

(1) The fundamental interaction of aircraft dispatchers and pilots is very important. This joint responsibility doctrine ensures the safest form of air transportation possible. Therefore, DRM training that nurtures this pivotal relationship is strongly encouraged.

(2) Aircraft dispatchers are required to observe operations from the cockpit jump seat as part of their annual qualification under part 121.

(3) Some carriers invite pilots to their aircraft dispatchers' offices to provide insight into the other side of the joint responsibilities inherent in operational control. Those trips have commonly been part of the special training offered to pilots. Additionally, aircraft dispatchers are increasingly being used in LOFT sessions. The training experience gained by the pilot and the aircraft dispatcher during LOFT is considered the logical extension of earlier training methods, providing interactivity where DRM (and CRM) principles are applied and discussed.

(4) Dedicated resource management training courses for maintenance personnel have been operating since 1991. Interactive training between maintenance personnel and aircraft dispatchers should be encouraged. Aircraft dispatchers and maintenance controllers should meet face to face to discuss issues of mutual interest in a real-life setting.

(5) Even broader DRM concepts could be considered, using other groups such as passenger service agents, ground operations agents, air traffic management personnel, mid- and upper-level managers, and special crisis teams like HazMat, hijack and bomb-threat teams.

b. Error Management. Industry and the FAA understand that errors cannot be entirely eliminated. It is important, therefore, that aircraft dispatchers develop appropriate error management skills and procedures. It is certainly desirable to prevent as many errors as possible, but since they cannot all be prevented, detection and recovery from errors should be addressed in training.

c. Advanced DRM. Some air carriers are integrating DRM performance requirements or procedures into their SOPs. They also have included specific procedures, checks, and guidance in their manuals, quick-reference handbooks, abnormal/emergency procedures, and job aids. This integration captures DRM principles into explicit procedures used by aircraft dispatchers and flightcrews.

d. Culture Issues. While individuals and even teams of individuals may perform well under many conditions, they are subject to the influence of at least three cultures--the professional culture of the individuals themselves, the culture of their organizations, and the national culture surrounding the individuals and their organizations. If not recognized and addressed, factors related to culture may degrade performance. Hence, effective DRM training should address culture issues as appropriate in each training population.

16. SUMMARY. Effective DRM begins in initial training; it is strengthened by continual practice and feedback; and it is sustained by reinforcement. Ideally, DRM will become a part of an airline's corporate culture and become embedded in every stage of an aircraft dispatcher's training.

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