

NEMSPA RP-12:

DRAFT - CREW RESOURCE MANAGEMENT

ISSUED 1994-

1.0 SCOPE

1.1 Purpose

To increase the safety and efficiency of flight operations through improved coordination and communication, and the effective use of all available resources; human resources, hardware, and information.

1.2 Discussion

Investigations into the cause of accidents have shown that human error is a contributing factor in 60 to 80 percent of all aeromedical operations. Many problems encountered by flightcrews have very little to do with the technical aspects of operating in a cockpit. Instead, problems are associated with poor decision making, ineffective communication, inadequate leadership, and poor task or resource management. Pilot training programs historically focused almost exclusively on the technical aspects of flying and on an individual pilot's performance; they did not effectively address crew management issues that are also fundamental to safe flight.

- a. These observations have led to a consensus in industry and government that training programs should place emphasis on the factors which influence crew coordination and the management of crew resources.
- b. Coordinated efforts by representative from the aviation community have produced recommendations for CRM training programs. While compliance is not mandatory, these recommendations provide a useful reference for understanding the critical elements of CRM training.
- c. Continuing NASA and FAA measurements of the impact of CRM training show that after initial indoctrination significant improvement in attitudes occurs regarding crew coordination and flight deck management. In programs that also provide recurrent training and practice in CRM concepts, significant changes have been recorded in flightcrew performance during Line Oriented Flight Training (LOFT) and during actual flight. CRM-trained crews operate more effectively as teams and cope more effectively with nonroutine situations.

d. Research also shows that when there is no effective reinforcement of CRM concepts by way of recurrent training, improvements in attitudes observed after initial indoctrination tend to disappear, and individuals' attitudes tend to revert to former levels.

1.3 Application

Helicopter _

Fixed Wing _

1.4 Definitions

1.4.1 Human Factors: Human factors is the applied science which studies people working together in concert with machines. Variables which influence individual and team or crew performance include inadequate system design, operator training and/or design and management of crew tasks can contribute to group errors that lead to system performance degradation.

1.4.2 Crew Resource Management (CRM): The application of team management concepts in the flight deck environment, cabin crew, maintenance personnel and other available resources - human, hardware, and information. A current definition includes all other groups routinely working with the cockpit crew who are involved in decisions required to operate a flight safely. These groups include but are not limited to:

(i) aeromedical communications specialists

(ii) medical personnel

(iii) maintenance personnel

(iv) air traffic controllers

(v) first responders

CRM is one way of addressing the challenge of optimizing the human/machine interface and accompanying interpersonal activities. These activities include team building and maintenance, information transfer, problem solving, decision making, maintaining situational awareness, and dealing with automated systems. CRM training is comprised of three components: initial indoctrination or awareness, recurrent practice and feedback, and continual reinforcement. Each component must be continually renewed.

1.5 Applicability

1.5.1 Pilots _____

1.5.2 Medical personnel _____

1.5.3 Managers(operational and medical) _____

1.5.4 Communicators _____

1.5.5 Auxiliary Personnel _____

1.6 Operational Applicability

1.6.1 Regional Areas of operation ALL

1.6.2 Types of operation

1.6.2.1 IFR/VFR _____

1.6.2.2 Single Engine/Twin Engine _____

1.6.2.3 Day/Night _____

1.6.2.4 Special Operations _____ 1.6.2.5 Other _____

2.0 SUBSTANTIATING INFORMATION

2.1 US governmental Data & Documentation

2.1.1 FAA Advisory Circular 120-51A - Crew Resource Management Training

2.1.2 FAA Advisory Circular 120-35B - Line Operational Simulations: Line-Oriented Flight Training, Special Purpose Operational Training, Line Operational Evaluation

2.1.3 FAA Advisory Circular 120-54 - Advanced Qualification Program

2.1.4 DOT/FAA/RD-92/26 - Crew Resource Management: An Introductory Handbook

2.1.5 NASA - Cockpit Resource Management Training: Proceedings of a NASA/MAC Workshop, (NASA CP 2455), May 6-8. 1982.

2.1.6 NASA/ASRS - "Emergency Medical Service Helicopter Incidents Reported to the Aviation Safety Reporting System," Connell, L. & Reynard, W. (1993). Proceedings of the

Seventh International Symposium on Aviation Psychology, pp. 1001-8.

2.1.7 NASA/ASRS - "Common Pitfalls Leading to Incidents in the Emergency Medical Helicopter Operation." Connell, L. (1993). Aerospace Medical Association, 64th Annual Scientific Meeting. Published abstract in Aviation, Space, and Environmental Medicine.

2.1.8 DOT/FAA/PM - 86/45 - Aeronautical Decision Making for Helicopter Pilots. Adams, R. & Thompson, J. (1987).

2.1.9 DOT/FAA/PM - 86/42 - Aeronautical Decision Making for Commercial Pilots. Jensen, R. & Adrion, J. (1988).

2.1.10 DOT/FAA/DS - 88/5 - Aeronautical Decision Making for Air Ambulance Helicopter Pilots: Learning From Past Mistakes. Adams, R. & Thompson, J. (1988).

2.1.11 DOT/FAA/DS - 88/6 - Aeronautical Decision Making for Air Ambulance Helicopter Pilots: Situational Awareness Exercises. Adams, R. & Thompson, J. (1988).

Military Resources

2.2 Industry Data

Joel Harris, FSI, 1994 EMS Study, Aeromed Journal, Trade Journals

121 Operators, 135 Operators

2.3 Surveys

2.4 Reasonable and Prudent Practices _

2.5 OTHER

2.5.1 Cockpit Resource Management (1993). Wiener, E., Kanki, B., & Helmreich, R. Academic Press.

3.0 REGULATORY COMPLIANCE

3.1 FAR 135.321- Applicability and terms used, 323-Training program: General; 329-Crewmember training requirements

4.0 IMPLEMENTATION

4.1 Managerial