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**SAFETY THROUGH SELF-
REGULATION: A Road Map for
Aviation Organizations**

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16. Abstract <p>This report provides a methodology for aviation organizations to follow in developing a self-regulatory program through the implementation of safe operating practices. The objective of this guideline is to improve safety within segments of the aviation industry by establishing recommended practices for training, operations and procedures. The efforts of the National EMS Pilots Association are used to illustrate the implementation and effectiveness of this type of program in building cohesion among operators and adopting consensus based Recommended Practices (RPs) for the industry to follow. Steps towards creating similar programs are provided along with the summarized RPs adopted to date by NEMSPA.</p>					
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INTRODUCTION

"Developing Recommended Practices to Ensure Industry Safety" resulted from the culmination of two years of meetings among members of the National EMS Pilots Association. The purpose of these meetings was to establish and adopt industry guidelines and operating practices to improve safety and avert federal regulation. The project and its products set the tone and framework for other industries in working to provide a safer operating environment and context for its pilots and the public. This project has been sponsored jointly by the National EMS Pilots Association (NEMSPA) and the Federal Aviation Administration (FAA) with the endorsement of the Helicopter Association International. The FAA's contractor, Advanced Aviation Concepts, Inc. was responsible for helping NEMSPA create, direct and monitoring this important project through all its phases, beginning in 1993.

This Summary is provided to give the reader an understanding of the industry's objectives in establishing a form of self regulation and the accomplishments of the organization in achieving that goal. The report is set up so that general statements regarding the process are made and illustrated through examples of NEMSPA's experience.

1.0 BACKGROUND

The fall of 1992, the President of the National EMS Pilots Association approached the FAA about EMS safety asking for their assistance in developing a program for reducing the accident rate of this growing industry. Helicopter EMS had suffered a number of mishaps but was showing improvement during the last two years. NEMSPA members felt that training was the key to preventing accidents and that guidelines for the training program curricula would help all EMS programs, especially those small operations where resources were limited.

The FAA agreed to invest in the energy of the EMS representatives by funding the development of a safety program to avert accidents and federal regulation. A contractor, Advanced Aviation Concepts, Inc. was hired in 1992 to develop a program plan for the industry and assist them in accomplishing their goals.

NEMSPA drew from the success of the Helicopter Safety Advisory Conference (HSAC), a group of operators from the Gulf oil industry. HSAC is a widely accepted helicopter safety organization that has developed guidelines for offshore oil operations. With the help of the FAA, NEMSPA conducted a series of workshops to provide an ongoing forum for addressing risks and creating solutions for recurring problems.

These workshops have brought together representatives of the EMS industry from all over the country to discuss their perspectives on the safety needs of the industry. Focused primarily on the helicopter aspects of air ambulance pilot/crew training it was determined that many of the concerns raised were equally applicable to the fixed wing air medical community. The safety issues identified at the initial and subsequent workshops were derived from an analysis of six years of helicopter EMS accidents and a value assessment of risks of EMS operations. Collectively, the group agreed to establish an ongoing committee to review and develop guiding principals for the EMS industry.

It is hoped that the efforts and successes experienced by the EMS pilots, and documented here, will be of benefit to other organizations by providing an understanding of the interactive process by which safety guidelines can be developed to meet similar goals.

2.0 SAFETY PROGRAM METHODOLOGY

Many steps were taken by the EMS pilots association toward completing their objectives which will provide guidance for other organizations seeking similar goals. Here, these steps are summarized and illustrated through descriptions of NEMSPA's efforts during this time frame.

2.1 Identifying Goals and Objectives. Each industry must determine what its goals and objectives might be for establishing a safety committee and developing operational guidelines.

For the EMS operators, reducing accidents by minimizing risk and providing training that was somewhat standardized were of primary concern. Part of NEMSPA's concern was driven by the migration of pilots among EMS organizations and changes in institutional policies from one hospital to another. Most of these issues were based on the differences in training programs and it was felt that there should be commonality among some elements of these programs such as local geographic/ environment familiarization, training new comers to "mission" profiles, etc. With these thoughts in mind, their focus was on a "Zero Accident Rate" and building a mechanism for assuring that goal.

These goals and objectives must consider the demands of the specific mission and at a minimum should include:

- Provision for a mechanism for the discussion of risks in operations and identifying methods for improving safety.

- Creation for a consensus based practices or standards grounded in sound statistical data, studies and/or safe and prudent operating practices; and
- An ongoing forum for continued sharing of ideas and concerns for the future development of safe operating practices as designed and embraced by that industry.

2.2 Initial Organizational Establishment. Organization and preparation for the workshop can be accomplished through the coordinated efforts of an ad hoc committee. The committee should be comprised of members of a parent organization or recognized industry experts that hold a common goal.

NEMSPA called on representatives of the EMS industry to participate regardless of their affiliation to the organization itself. Their objective was to employ the expertise of key individuals known for their organizational and training skills. From this base, the organization and safety program was launched.

The first task for this committee will be the construction of the program framework, the identification and assignment of tasks, the determination of the type organizational control, and the identification of candidate topics for presentation and discussion at the workshops. A workshop manager, either within the organization or hired independently, can take the committee through the steps of implementing its own regulatory or advisory program, help conduct the workshops and provide support to assure a progressive forward movement. Additionally, the committee will need to research and approve the nature of its regulatory process, the methodology for processing rules requests and create an mechanism for adding, deleting or changing their content. The organization may also want to add or amend by-laws to enable or formalize the committee, or change the scope or authority of an existing committee.

2.3 Regulatory Format. The organization should select a format for the development, dissemination and enforcement of operational procedures.

NEMSPA's original objective was to initiate a safety program based on the establishment of operational standards for the industry to follow. However, regulatory standards are preempted by federal law, thereby undermining the impact of rules which govern industry operational issues. Acceptance and implementation of operating practices is often facilitated by the participation, drafting and approval of guidelines by representatives of the industry working in concert. This is evidenced by consumer recognition and industry adoption of Society of Automotive Engineers (SAE) standards and recommended practices on a large scale and the HSAC recommended practices on a more limited basis. An important issue focuses on liability as recommended practices typically does not incur the liability if an accident occurs and there has been non-compliance. Finally, methods of pulling the industry into compliance should be done

through voluntary guidelines, more easily garnered with recommended operational procedures than the rigid standards.

NEMSPA investigated the approaches that other organizations employed to guide their membership on technical matters. Several organizations have adopted some form of standard, guideline or recommended practice: Association of Air Medical Services (AAMS), Society of Automotive Engineers (SAE) [in which there are several aviation related committees], Helicopter Safety Advisory Conference (HSAC) and the Commission on Accreditation of Air Medical Services (CAAMS). Aspects evaluated included the types of documents, the method of compliance, disclaimers, and how the documents were developed. Definitions of the documents were provided along with an outline as to the issues the committee should consider in adopting a regulatory format.

It is important to understand the degree to which a particular document is accepted by the industry and what its purpose is in guiding that industry. The following is a brief discussion of the methods of governing activities employed by other trade associations.

- *Guidelines* - suggested methods of approaching a situation or problem. They provide standards or principles by which to make a judgment or determine a policy or course of action .
- *Recommended Practices* - Documentation of practices, procedures and technology intended as GUIDES for standard operating practices. Content is general in nature and includes data that is not yet widely accepted. Should emphasize the capabilities and limitations of the information contained within.
- *Standards* - A rule or basis of comparison in measuring or judgment of capacity, quantity, content, extent, value, quality. Broadly accepted practices or specifications for procedures, process or test methods.

It was found that the organizations have varying regulatory measures and methods of compliance. Enforcement and validation of the operator's or industry's compliance with the rules also differed among the groups. Each organization is discussed below.

AAMS issues guidelines and standards for its membership. Compliance with these rules is a requirement for initial and sustained membership. A sample guideline was reviewed. This guideline, "Weather Minimums," includes a statement of intent, an interpretation, specific minimums and recommendations for IFR Programs. A requirement to follow federal air regulations is imbedded in the text. There is no validation program indicating that AAMS assumed the operation was in compliance with the safety program. Guidelines and standards are generated by committee.

SAE issues five levels of reports. An "Aviation Information Report" compiles engineering reference data or educational material useful to the topic. An "Aerospace Resource Document" is an issue oriented document which compiles issues on which action of varying importance should be taken. Issues are prioritized as critical, serious, desirable, describes the deficiency, establishes requirements and proposes actions and conclusions. The "Aerospace Recommended Practice" documents practices, procedures and technology intended as guides for standard operating practices. "Aerospace Standards" are practices or specifications for procedures, processes or test methods which have been widely accepted by the membership. Finally, the "Terminology Standard" lists terms, related symbols and definitions for technical areas.

HSAC is the organization which addresses the safety concerns of the energy exploration and production operators most notably those involved with offshore oil. This group issues Recommended Practices (RP) which are broad in nature but are widely disseminated to all operators whether or not they are a member of the conference. HSAC's success is due to wide helicopter industry support as well as that of the oil companies and related oil service industries.

The RPs pertain to operations of and around helicopters. Each RP provides a background as a rationale for the RP and the recommended practice. A disclaimer is printed on each RP indicating they are not intended to replace individual engineering or corporate judgment nor to replace instruction in company manuals or government regulations. Issuance of RPs is performed by a steering committee after receiving a request from a "sponsor" (person or operator recommending the RP) along with backup information supporting its adoption. The issue is investigated, drafted and submitted to a target group of operators and published if there is general agreement as to its merit. Compliance is assured through the encouragement of not only the helicopter operator's clients but other associations affiliated with offshore drilling and the states in which they are operating. There is no formal validation program.

CAAMS has standards which are used to determine if a hospital operation meets the criteria necessary for certification. Standards must be met prior to certification and are validated through field inspection. There are no disclaimers advising the operator not to pre-empt federal laws, compromise good judgment or corporate policy. Standards are reviewed and accepted by the Board of Directors of CAAMS.

The form adopted by an organization is determined by the level of authority desired and whether that regulatory mechanism is enforceable or conflictive with federal regulations. NEMSPA chose Recommended Practices because of federal preemption authority. It would seek compliance through several avenues, not just the

operators but through related industry acceptance of the practices as safety indicators awarded by lower insurance premiums or certification benefits.

2.4 Development of the Recommended Practice Process. An ad hoc committee should identify a series of tasks necessary to start the organizations regulatory program and assign members to these tasks.

NEMSPA's tasks included: format development, approval process, documentation, and identification of candidate topics. NEMSPA's committee created a timeline chart with each subtask leader specifying their own deliverable dates. The dates and products were monitored by the consultant and sometimes fluctuated with the workload of the members. The following are task descriptions provided to highlight the scope of duties performed.

Format Development: The procedure and format for completing, submitting and issuing RPs should reflect the level of control and review desired and the critical elements to be covered by the regulation.

NEMSPA's RP was created after reviewing the SAE formats for standards and recommended practices. NEMSPA adapted and simplified the SAE form to its needs. The subtask leader wanted to include information such as Purpose, Scope, Discussion, Applicability (to whom the RP applies), under what conditions the RP applies, and the methodology to be used.

The RP form to be submitted for consideration by the safety committee should also indicate a brief statement of the need, to which type aircraft and any definitions necessary to clarify the language in the RP. In most cases, the sponsor only needs to check boxes applicable.

Important in the dissemination and adoption of these practices are the applicability of the recommendation. Initially, the RPs may deal with training and operations; however, it is perceived that eventually, the roles and relationships between pilots and medical crews might require definition through an RP. Figure 2.1 below provides the blank RP form that is to be completed and distributed for discussion. It forms the basis for the final product which will be a summarized (see Appendix A).

NEMSPA RECOMMENDED PRACTICES		
NEMSPA RP _____:		
_____ TITLE		
ISSUED 199 - -		
.0	SCOPE	
1.1	Purpose	
1.2	Discussion	
1.3	Applications-	
	Helicopter	_____
	Fixed Wing	_____
1.4	Definitions	
1.5	Applicability	
	1.5.1 Pilots	_____
	1.5.2 Medical Crew Members	_____
	1.5.3 Communicators	_____
	1.5.4 Auxiliary Personnel	_____
1.6	Operational Applicability	
	1.6.1 Regional Areas of operation	
	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 Government Data and Documentation	_____
2.2	Industry Data	_____
2.3	Surveys	_____
2.4	Reasonable and Prudent Operating Practices	_____
2.5	OTHER	_____
3.0	REGULATORY COMPLIANCE	
3.1	FAR's	_____
3.2	OSHA	_____
4.0	IMPLEMENTATION	
4.1	Managerial	
4.2	Content of Instruction	
4.3	Cycle	

Figure 2.1 RP Submission Form

RP Approval Process: A formal, rule based, system for handling RP submissions should be created for program management consistency and to assure fairness.

A step-by-step process was developed jointly by the contractor (AAC) and NEMSPA. The committees which should be reviewing the documentation and proposing adoption of the RPs were identified. From this exercise, it was determined

that by-laws and the NEMSPA organizational structure changes may be required to formally extend the scope of its current safety committee.

A description of the proposed RP process was provided subsequent to the discussion on workshop structure. It was NEMSPA's intent to provide a mechanism for member and non-member operators to submit RPs on issues they felt deserved industry recognition. A step-by-step process was constructed to facilitate and encourage participation by the industry as shown below in Figure 2.2.

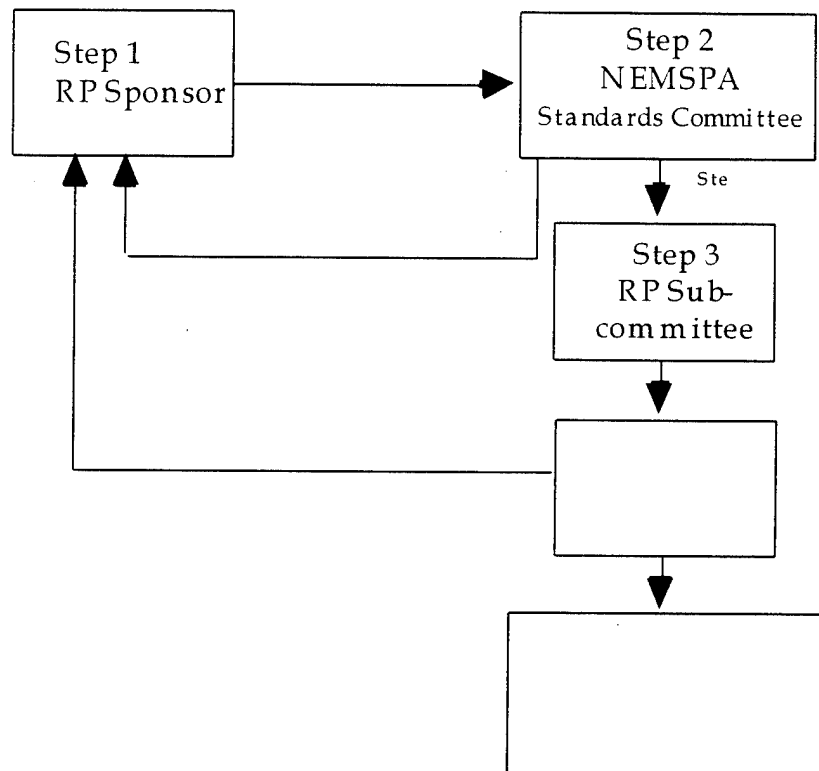


Figure 2.2 NEMSPA RP Processing Flow Chart

The following description spells out the steps for treating RPs. Important in this process is the loop for obtaining additional information to substantiate the RP.

- Step 1: An individual/operator, "sponsor," may determine that a risk exists with a particular mode of operating or activity. A NEMSPA RP form is completed by that sponsor and submitted to the NEMSPA Standards Committee.
- Step 2: The Standards Committee determines if the RP has merit and acts accordingly:

- Step 2a: Approvals get forwarded to the RP Subcommittee;
- Step 2b: Rejections, be they for additional information or lack of substantiating documentation are returned to the sponsor.
- Step 3: A formal RP subcommittee reviews the candidate RP and forwards to the Safety Review Committee
- Step 4: RP Safety Review committee evaluates need for, substantiation and merits of the RP at the semiannual RP workshop, during which the RPs are discussed and drafted.
- Step 4a: If the RP is approved, it is published and disseminated (Step 4a) as an addition to the RP manual to be produced by NEMSPA.
- Step 4b: If this committee decides the candidate RP is not warranted, needs further development or better documentation, it will be returned to the sponsor.

RP Topics : RP topics should be driven by known operational problems that can be validated through an analysis of accident data and research. This assures that the unique mission requirements of each industry will be addressed.

This committee based much of its assumptions and RP topics on its investigation into five years EMS specific accident data that was first analyzed and tabulated by the contractor. They also reviewed findings from two previous studies: the 1989 NTSB "Commercial Emergency Medical Service Helicopter Operations" NTSB/SS-88/01 and the Technical Paper, "Emergency Medical Service Helicopter Incidents Reported to the Aviation Safety Reporting System," by LJ Connell and WD Reynard, NASA, April 29, 1993 at the Ohio State University Seventh International Symposium on Aviation Psychology.

The major contributing factors to accidents were found to be: Weather, weather interpretation, information acquisition; poor judgment, inadvertent IMC, pressure induced by self and management, fatigue, and currency. A sideline issue included the failure of management to familiarize themselves and understand safety issues. These individual cause factors were categorized into four groups and are defined below: Procedural Activities, Perceptual Motor activities, Decisional Activities, and Ground Activities.

Procedural activities included weight and balance, density altitude, emergency procedures not performed, fuel exhaustion, loss of control and inadequate communications. A majority of the accidents involved a procedural problem resulting typically from a decisional error.

Perceptual Motor activities centered around a lack of visual outlook and clearance of obstacles (mountains, trees, objects) was not maintained. Other skill related causes

included inadequate compensation for the wind, poorly executed confined area operations, diverted attention and improper use of equipment leading to visual perception and spatial disorientation deficiencies. These latter factors are typically associated with misjudging clearances and inadvertent IMC.

Decision Making activities included poor weather evaluation resulting in inadvertent IMC or flight into hazardous weather conditions. Fuel exhaustion, operating with known deficiencies in the aircraft, hazardous weather conditions or lack of currency (IFR or Night), and inadequate preflight planning and enroute planning.

Ground Related activities focused on maintenance procedures and corporate or operator policies which were inadequate or incomplete, manuals or guidelines for pilots or maintenance crew which were not provided. Facility accidents included collision with light fixtures, elevator doors, curbs surrounding the takeoff area. In several cases, the ground crews provided incorrect information about the landing zone, power lines or other hazards that may have existed.

In all several general areas of human factors solutions were identified:

- Greater accessibility to current weather with in-house computer based services.
- Training on interpretation of weather and hazardous weather avoidance
- Training and familiarization with local topographic and weather phenomenon.
- Improved management understanding and attention to EMS safety through issuance of guidelines, policies and manuals on operations, maintenance and crew coordination.
- Increased training of ground and medical crews in communications, LZ set up, obstacle identification.

The development of RP topics evolved into a list of over 35 suggested areas to consider. Some of these candidate RPs are fairly general and could apply to many segments of the helicopter industry, however, their approach and content differentiate the EMS industry, tailoring the resolution of the problem to the uniqueness of the mission. These topics are provided in Table 2.1 below while summaries of the specific RPs adopted can be found in section 3.0.

Table 2.1 Initial List of RP Topics Created
by the Safety Review Committee

Aircraft Flight Training & Schedule	Operations Specifications
Testing in Aircraft Type	Far 61, 91, 135
Curriculum Guidelines	Navigation and Use of Nav aids
Normal Emergencies, Emergency Proced.	ATC system IFR & VFR
Abnormal Emergencies	Procedures for Avoiding Hazardous WX
Taxi Hazards	Inadvertent IMC Training
Medical Equipment hazards	Communications procedures
EMS Equipment On-board	Hazardous Materials Carriage and
Weather data Gathering/Interpretation	Accident Response
Patient Loading/unloading	New Procedures and Policies
Considerations for patients-emergencies	Ground Training
Confined Area Operations,	General Training
Settling with Power	LZ Safety/Set Up
Crew Coordination	Helipad/Heliport/LZ log or directory
Checklists	Dispatch
Route Check	Annual training-Medical Crew, Ancillary
CRM/ ADM	personnel, First Responders
Crew Coordination	Checklists
Isolation from medical crew ops & patient	Operation Control
information	Emergency Drills
Recurrent Training	

Supporting Documentation and Reference Materials: Documentation is used for three primary purposes - to substantiate the necessity of an RP topic through research which has identified the problem; to investigate the potential ways in which the problem can be resolved; and to be referenced during drafting of RPs so that the language does not conflict with existing regulations or advisory circulars. A literature search with annotated abstracts should be conducted to locate and obtain relevant documents. Industry contacts within the FAA and NASA's Aviation Safety Reporting System (ASRS) program might also be able to assist in developing a strategy for searching for key studies or provide copies of reports.

There were numerous documents which detailed problems in EMS operations. Much emphasis in the academic and research arena has been placed on the alleviation of problems through the implementation of or changes in the training programs. These include NTSB accident data, accident studies, incident studies prepared by NASA's ASRS, Aeronautical Decision Making manuals and operations analyses.

NEMSPA mailed copies of the relevant studies and papers to preregistered attendees for their preparation for the workshop. This prevented the expense of time educating the participants on the details of the RP topics. Additionally, documentation was needed as reference material during the workshop so that questions regarding regulations, FAA definitions and study conclusions could be readily reviewed. NEMSPA supplied the following reports either previous to or at the workshop:

1. Accident Briefs, Rotorcraft, Years 1986-1991. National Transportation Safety Board, Washington, DC
2. NTSB reports on mission specific industries
3. Draft copy of RP topics
4. Initial schematic of RP Process
5. "Aeronautical Decision Making For Air Ambulance Operators Helicopter Pilots: Learning From Past Mistakes," Adams, R.J. Advanced Aviation Concepts, Inc., Thompson, J.L., Systems Control Technology for the Federal Aviation Administration, Washington, DC, DOT/FAA/DS-88/5, July 1988.
6. Technical Paper, "Emergency Medical Service Helicopter Incidents Reported to the Aviation Safety Reporting System," by L.J. Connell and WD Reynard, NASA, April 29, 1993 at the Ohio State University Seventh International Symposium on Aviation Psychology.

During the workshops, registrants also received a "workbook" devoted to each topical area so that notes could be taken and referred to in the future if necessary.

2.5 Workshop Attendees. Representatives from the target industry should be invited to attend the workshops including operators, pilots, and interested parties that may interact with specialty industry. This will give a broad audience an overview of the problems the operators face as well as solicit inputs from a wider base of impacted parties. Regulators and vendors add to the exchange of information by serving as technical resources.

The NEMSPA workshops started by inviting operators, pilots, program directors from the hospitals and aeromedical personnel. The perception of the audience was that much could be done to assure the safety not only of the flight crew but the medical crews and the patients transported.

The next few workshops were attended primarily by operators. Each operator was requested to send no more than two employees, one from flight operations and one from training if possible. This served several purposes: it brought the policy manager and the trainer together, the expertise for training program development and policy making were merged to facilitate the adoption of a stronger organizational safety program. Pilots from the same operation could also be split into different working

groups to prevent large operators from controlling or blocking RPs important to the general industry. Manufacturers and the FAA were requested to provide technical input and presentations on safety issues. Product promotions were not allowed as forum discussions.

Attendees should preregister so that reference materials, studies and reports can be mailed to them before the workshops. NEMSPA expected their attendees to prepare for their discussions through this mechanism. Reports or articles were not lengthy but highlighted topical areas that would be introduced during the workshop.

Voting and Adopting RPs. Attendees should be tasked with the responsibility of discussing, drafting and voting on the regulatory mechanisms.

NEMSPA wanted pilots and operators, the people most affected by RPs, to "buy into" the process by giving them votes to adopt, amend or reject RPs. "Voting Members" were defined prior to the workshops so that everyone understood their role in formulating industry guidelines. NEMSPA Attendees were categorized according to their association with the EMS industry. "Members" included pilots and/or employees of EMS operators with each receiving one vote per attendee. Manufacturers, consultants and government were designated "Observers." Their role was in the capacity of technical resource. The balance of attendees were technical support provided by the contractors.

2.6 Workshop Organization. The agenda for the workshop should be designed to maximize the participation of the attendees.

For NEMSPA, this was best accomplished through a composite format of plenary sessions and smaller working groups which are assigned topics. Prior to the workshop, topics should be identified and working group facilitators should be committed to leading and controlling discussions and technical detail. Operators/pilots known for their expertise and ability to conduct meetings should be chosen. Copies of the first and second workshop agendas detailing the subjects presented is located in Appendix B.

Using Plenary Sessions. Plenary sessions bring attendees together at the beginning of the program and during the workshop to present and discuss concepts and information as well as revise negotiated proceedings. They are useful for keeping everyone apprised of progress and deliberations.

Plenary sessions were opened by NEMSPA officials, setting the theme for the workshops. NEMSPA's goals and objectives in establishing a formal safety program were usually highlighted and included a review of the Recommended Practices for all operators to follow. During workshops where working groups were employed, plenary sessions were used the last hour of the day to bring deliberations to the entire group.

Planning Meetings. Planning meetings are necessary primarily during the initial stages of program establishment to outline and assign responsibilities.

Meeting a month prior to the second workshop, NEMSPA's RP committee, after a briefing on regulatory formats, decided to accept recommended practices as their regulatory vehicle. In NEMSPA's case, RPs offered the most flexibility with the least legal implications. Their effectiveness as a governing tool had been proven through HSAC's experience. The RPs gained clout and respect within the offshore oil community and were followed by the smaller operators whether or not they were members of the conference. NEMSPA envisioned a similar track of acceptance with growing strength in the use of RPs by EMS operators and acceptance by the hospital community.

Workshop Structure. Workshop scheduling should be based on the goals and objectives of the meetings, therefore, an organization considering standards or practices development should first decide what is to be accomplished. A two year plan with milestones and dates would assist the organization in achieving its goals and objectives. For example, the NEMSPA plan included the following:

<u>Program Initiatives</u>	<u>Type of Meeting</u>
• Presenting the Need for Enhanced Training and Specific Safety Issues to Aeromedical Industry	Workshop 1
• Mechanics of processing and managing RP program, roles and duties of committee members	Planning Meeting
• Program Development and initial RP processing	Workshop 2
• RP requests, discussion and voting	Workshops 3 & 4
• Industry status meeting and presentation of concept for formal safety committee establishment	Workshop 5
• RP and safety committee meetings	Twice yearly

Initial Program Presentation: An initial workshop can be a forum for educating the industry of the problems and need for self-regulation and monitoring and receiving perspectives on industry status from the attendees.

NEMSPA's first goal was to present the issues to a range of aeromedical personnel - pilots, operators, medical personnel and administrators. The first workshop was designed for presentations and soliciting inputs from the audience. The speakers were chosen because of their expertise in training and their ability to orchestrate dialog. The workshop could have broken up into working groups after the first day and a half based on general topics to maximize input from the attendees. Many people are reluctant to ask questions in large groups but are active in less formal, smaller group settings. Regardless, the quality of the speakers was strong and the participation in the Q&A sessions was extensive.

Kicking Off the RP Program: The second workshop was designed to introduce the attendees to the RP process and current issues such as accident reports, analyses or critical research that might be relevant to the RPs to be discussed.

The objectives of the second workshop were to enhance the participants' understanding of the philosophical underpinnings for establishing and formalizing recommended practices. These included:

- Identify specific risk areas for which recommended practices (RP) or standards would be drafted.
- Invite key representatives from the helicopter industry to discuss RP issues and generate a set of guidelines that can be implemented.
- Obtain industry commitments to invest time and technical resources in maintaining and expanding the recommended practices through regularly scheduled RP workshops.

Much of the meeting design was based on the number of attendees and topics so that discussions would flow and not get bogged down in a myriad of opinions. Working sessions were part of the mechanics of the meeting and were based on a categorization of the RP topics into four general areas: Flight Training, Human Factors, Ground Training, and Regulatory Compliance. Figure 2.2 above details the structure of this second meeting.

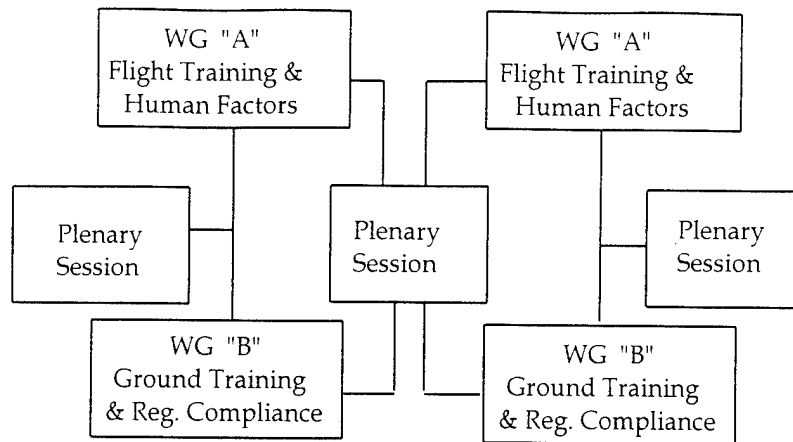


Figure 2.3 Helicopter EMS Safety Workshop Structure

Flight training dealt with airborne operations; human factors covered aspects of man-machine interface, crew interaction, pilot error, communications etc.; ground training included ground school, recurrent training, procedures, policies, hazardous materials, heliport establishment, Federal Air Regulations, and dispatch; Regulatory compliance focused on checklists, operations control, emergency drills, and weather data requirements.

The RP committee divided the attendance list between the groups based on known expertise. This was to assure coverage by an equal number of EMS representatives and to split attendees from the same company. Observers, manufacturers, researchers and consultants, were allowed to move back and forth between the two groups. Table 2.1 lists the working groups and their respective RP topics.

2.7 Demonstration Exercise - In order to demonstrate the methodology by which the RP can be created, walking the attendees through the first RP is essential. A congregation of pilots often starts out with random discussion, hangar flying and a modicum of productivity. Leadership should not stifle this but strive to direct it because it is a form of "ice breaking." Pilots often feel more comfortable if they have an opportunity to share experiences and get to know each other. As the RP process progresses, productive time will increase dramatically and extraneous discussion will decline.

NEMSPA used an easy topic to kick off the discussion with the group as a whole. Once familiar with the RP format, the pilots approached the development of the RP on a level based on their general expertise than personal experience. The following

discusses the scope of interaction among participants during the "Check-out" RP - **VFR Weather Minimums Recommended Practice**.

For example, in looking at VFR minima for non-mountainous terrain, the group decided to breakdown the minima into day and night, with the understanding that day and night, mountain VFR would be addressed in future meetings. Conditions for utilizing the minimum criteria also included level terrain and known obstructions, local flight and cross country flight. The group was divided on whether to approach cross country flight on a graduated scale basis with lower ceilings and higher visibilities or whether to establish a single minimum. Suggested scales included 800-2, 700-3 and 600-4 citing the desire for greater visibility as the ceilings went down.

The group adopted minima for day and night, local and cross country minima as follows: 500-1 for local day, 800-2 for cross country day and 800-2 for local night and 1000-3 for cross country night. The balance of the detailed submission form was completed as follows in the final Recommended Practice, subsequently numbered NEMSPA RP 93-1.

NEMSPA RECOMMENDED PRACTICES

NEMSPA RP 93-1:
VFR Weather Minimums, Non-Mountainous Terrain
ISSUED 1993-09-11

Submitted for recognition as a NEMSPA Recommended Practice

- | | | |
|-----|---|-----------------|
| 1.0 | SCOPE | |
| 1.1 | Purpose - Define minimum VFR weather criteria. | |
| 1.2 | Discussion These are minimum requirements based on level terrain, and should not be construed as safe for all programs. | |
| 1.3 | Applications- | |
| | Helicopter | <u> x </u> |
| | Fixed Wing | <u> x </u> |
| 1.4 | Definitions | |
| | Non-Mountainous | |
| | Mountainous | |
| | Local Area | |
| | Cross Country | |
| | Ceiling in feet above ground level | |
| | Visibility in statute miles | |
| 1.5 | Applicability | |
| | 1.5.1 Pilots | <u> x </u> |
| | 1.5.2 Medical Crew Members | — |
| | 1.5.3 Communicators | — |
| | 1.5.4 Auxiliary Personnel | — |
| 1.6 | Operational Applicability | |
| | 1.6.1 Regional Areas of operation | Non-Mountainous |
| | 1.6.2 Types of operation | |
| | 1.6.2.1. VFR | <u> x </u> |
| | 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 Government Data and Documentation | — |

- 2.2 Industry Data —
- 2.3 Surveys —
- 2.4 Reasonable and Prudent Operating Practices x

3.0 REGULATORY COMPLIANCE

- 3.1 FARs
- 3.2 OSHA x

4.0 IMPLEMENTATION

4.1 Managerial
 Manager should establish safe program minimums based on, but not limited to terrain, known obstructions, local weather phenomenon, aircraft equipment speed and ground lights. Managers should also reiterate that these minimums apply as launch criteria, and support the pilots decision to turn down flights due to weather.

4.2 Content of Instruction
 Before Flight - Pilot ensures that launch criteria are met.
 Enroute - If weather lower than minimums is encountered, the flight is aborted and appropriate action is taken.

NON MOUNTAIN DAY		NON-MOUNTAIN NIGHT	
LOCAL 500-1	X-COUNTRY 800-2	LOCAL 800-2	X-COUNTRY 1000-3
MOUNTAIN DAY		MOUNTAIN NIGHT	
LOCAL NEXT RP	X-COUNTRY NEXT RP	LOCAL NEXT RP	X-COUNTRY NEXT RP

4.3 Cycle
 Initial and Recurrent
 Pilot Meetings
 Continuing Awareness of Hazards

3.0 Summaries of Recommended Practices Developed by NEMSPA:

During the last 12 months, NEMSPA has held four additional workshops to work on recommended practices specified in the second workshop with followup meetings held in conjunction with related trade conferences. The attendance has established an equilibrium of 30 participants including members and vendors. This section highlights the recommended practices and their substance. More detailed RPs can be found in Appendix A.

VFR WEATHER MINIMUMS, NON-MOUNTAINOUS TERRAIN

NEMSPA RP 93-1:

Purpose To define minimum VFR weather criteria as minimum requirements based on *level terrain*.

TAKEOFF HAZARDS

NEMSPA RP 93-2:

Purpose A pilot must treat all departures as if hazards exist. Pilots should be trained in local surface phenomena such as whiteout, brownout and be taught that the only guaranteed clear area is an airport runway. Therefore this RP is designed to enhance the Pilot's knowledge and awareness through "Procedural Discipline" and increased training to prevent collision with obstruction and hazards.

LANDING HAZARDS

NEMSPA RP 93-3:

Purpose A pilot must treat all departures as if hazards exist. Pilots should be trained in local surface phenomena such as whiteout, brownout and be taught that the only guaranteed clear area is an airport runway. Enhance the Pilot's knowledge and awareness by increased training to prevent collision with obstructions and hazards including "Procedural Discipline."

CHECKLISTS-AIRCRAFT OPERATIONS

NEMSPA RP93-4

Purpose Checklists are important in providing the pilot with the appropriate amount of information, sequentially presented, and necessary to be assured that the aircraft and procedures have been performed for various phases of flight. The pilot should be provided with and shall use an accepted checklist which should include EMS

specific items. The checklist should be conveniently located for the pilot and in an "Easy to Use" format.

INADVERTENT IMC/LOSS OF VISUAL REFERENCE

NEMSPA RP93-5

Purpose: Encompass training to enable pilots to recover from inadvertent loss of visual reference, under IMC or VMC. Pilots should recognize and be proficient in recovering the aircraft from a loss of visual reference. Loss of visual reference can be caused by inadvertent IMC, surface phenomena, loss of visual horizon, loss of external visual cues.

AIR MEDICAL OPERATIONAL PROFILE CHECK

NEMSPA NO. RP 93-6:

Purpose Pilots should be evaluated on the multitude of tasks associated with the air ambulance industry. This RP is to assure validation of the pilots ability to perform an air ambulance profile.

HAZARDOUS WEATHER AVOIDANCE

NEMSPA RP NO 93-7:

Purpose Many accidents are caused by inappropriate interpretation of weather phenomena during the preflight planning stage. The purpose of this RP is to ensure the pilot is provided adequate training in recognition, interpretation and avoidance of hazardous weather.

HAZARDOUS MATERIALS

NEMSPA RP 93-8:

Purpose Hazardous materials can be ground, air, patient or medically related. This RP is to prescribe a level of training for the PIC that is necessary to recognize and respond to hazardous materials incidents.

NEW POLICIES AND PROCEDURES

NEMSPA RP:9:

Purpose Analysis of EMS accidents indicates that a lack of guidelines and corporate policy contributes to confusion, workload and frequently mishaps. The purpose of this RP is to provide written policies, guidelines and procedures to follow for safe and efficient operations that are not covered by Operations and Specifications.

CREW COORDINATION

NEMSPA RP - 10 Deleted as topic is covered in RP # 12, Crew Resource Management.

PILOT-IN COMMAND AUTHORITY

NEMSPA RP-11

Purpose In the past, pilots have reported that medical personnel and administrators have attempted to override the pilot's decision making authority, encouraging flight when it was not safe. The purpose of this RP is to recognize the PIC has the final authority for the operation of the aircraft. This RP is a clarification of the authority of the Pilot-in-Command (PIC) as detailed in FAR Part 91.3.

DRAFT - CREW RESOURCE MANAGEMENT

NEMSPA RP-12:

Purpose Many problems encountered by flight crews 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. The purpose of this RP is 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.

BIOHAZARDS

NEMSPA RP 94-13

Purpose Personnel involved with air medical operations are routinely exposed to potentially infectious materials. Organisms are spread through various means, including direct contact and/or airborne transmission. This RP is for the purpose of recognizing the dangers of biological hazards, to implement a plan to minimize exposure and decontaminate exposed personnel and aircraft, and recommend procedures for addressing significant exposure.

4.0 Promoting the Recommended Practices. The organization must establish a promotional plan so that the industry along with affiliated services adopt the recommended practices. Experience with HSAC reveals that acceptance of their RPs was not immediate. It took continued support of all members and salesmanship to encourage widespread adoption of the program. Safety manuals containing the RPs were sent to Gulf area operators whether or not they were members of the conference. RPs were available to anyone interested in the approved safety measures. RPs are now recognized by not only the operators but also insurance companies, the mineral service industries, federal regulators from not only the FAA but the Department of Energy, safety engineers and vendors. Compliance with RPs has also been written into contract language to assure the helicopter service operates within the guidelines of recommended industry practices.

The plan must consider:

- A comprehensive plan for maintaining and "selling" the RP program.
- Outreach support and presentations at industry meetings with which the aviation segment(s) interact.
- Packaging the RP guidelines
- Dissemination of RP manuals, related materials and updated information
- Establishing an information clearing house for safety information
- Assessment of rates and fees for products to derive operating funds
- Monitoring the effects of the program
- Soliciting and obtaining recognition and benefits from related industries.

5.0 CONCLUSION

The NEMSPA experience paves the way for other organizations to initiate programs for self regulation and monitoring. The project was well supported because of the cohesion among the pilots/operators and their concern for their own personal as well as industry safety. NEMSPA's efforts impressed many operators and encouraged a wider participation than anticipated. The implementation of the program attracted larger operators interested in the improved professional attitude and focus on sound training practices and operational guidelines. Smaller operators, short on resources for developing comprehensive training packages and guidelines expressed their appreciation for being able to obtain general tools for their EMS operations drawing on the expertise of larger, more established programs.

NEMSPA found a consensus on several issues pertaining to the program as a whole which would build on the momentum created by the first two workshops. The success of the program is the result of:

1. Commitment of the operators towards NEMSPA's program to improve safety.
2. NEMSPA's outreach to all affiliated organizations and an open door policy toward drafting the RPs.
3. Continuity of NEMSPA members involved in the RP Process.
4. Continued support by the FAA to promote the RPs to the industry.

Appendix A

Currently Approved Recommended Practices

NEMSPA RECOMMENDED PRACTICES

TAKEOFF HAZARDS

NEMSPA RP 93-2:

Purpose A pilot must treat all departures as if hazards exist. Pilots should be trained in local surface phenomena such as whiteout, brownout and be taught that the only guaranteed clear area is an airport runway. Therefore this RP is designed to enhance the Pilot's knowledge and awareness through "Procedural Discipline" and increased training to prevent collision with obstruction and hazards.

Applicability

Helicopter & Fixed Wing
Pilots

Region

ALL

Types of operation

ALL

Implementation

Managerial: Provide Adequate ground and flight training to accomplish this task.

Content of Instruction:

- 1 Ground Recognition (Situational Awareness)
- 2 Hazard Recognition
- 3 Preflight Performance Card
- 4 Takeoff Profile
- 5 Local Area
- 6 Noise Abatement Awareness Training

Cycle

Initial and recurrent
Pilot Safety/briefing Meetings
Continuing Awareness of Risks

NEMSPA RECOMMENDED PRACTICES
LANDING HAZARDS
NEMSPA RP 93-3:

Purpose A pilot must treat all departures as if hazards exist. Pilots should be trained in local surface phenomena such as whiteout, brownout and be taught that the only guaranteed clear area is an airport runway. Enhance the Pilot's knowledge and awareness by increased training to prevent collision with obstructions and hazards including "Procedural Discipline."

Applicability

Helicopter
Pilots

Region

ALL

Types of operation

IFR/VFR
SE/ME
Day/Night
Special Operations

Implementation

Managerial: Provide Adequate ground and flight training to accomplish this task.

Content of Instruction

- 1 Day/Night Differences in Requirements Training
- 2 High/Low Recognition
- 3 Settling with Power
- 4 Loss of Tail Rotor Effectiveness
- 5 Noise Abatement Awareness Training
- 6 Communications with Ground
- 7 Minimum Area Required and Surface Condition
- 8 Performance Planning Card
- 9 Lighting (Ground and Auxiliary Aircraft)
- 10 Aborted Landing (Snow, dust, wire, vehicle on LZ)
 - A. Obstruction/visibility related
 - B. Performance Related
 1. Time to Transition from descent to climb
 2. Power Management
 - C. LDP considerations/Use
 - D. Avoid Hospital Over flights (antennas, mechanicals)

Cycle: Initial training including both day and night and recurrent training
Pilot Meetings
Continuing Awareness of Risks

NEMSPA RECOMMENDED PRACTICES

CHECKLISTS-AIRCRAFT OPERATIONS

NEMSPA RP93-4

Purpose Checklists are important in providing the pilot with the appropriate amount of information, sequentially presented, and necessary to be assured that the aircraft and procedures have been performed for various phases of flight. The pilot should be provided with and shall use an accepted checklist which should include EMS specific items. The checklist should be conveniently located for the pilot and in an "Easy to Use" format.

Applicability

Helicopter and Fixed Wing
Pilots

Regional

ALL

Types of Operation

ALL

Implementation

Managerial: Provide a current accepted checklist in usable form.

Content of Instruction:

- Method of use
- EMS specific items
- Program specific format

Cycle:

- Initial
- Recurrent
- Change of Equipment

NEMSPA RECOMMENDED PRACTICES

INADVERTENT IMC/LOSS OF VISUAL REFERENCE

NEMSPA RP93-5

Purpose Encompass training to enable pilots to recover from inadvertent loss of visual reference, under IMC or VMC. Pilots should recognize and be proficient in recovering the aircraft from a loss of visual reference. Loss of visual reference can be caused by inadvertent IMC, surface phenomena, loss of visual horizon, loss of external visual cues.

Applicability

Helicopter

Pilots

Region

ALL

Types of operation

ALL

Implementation

Managerial: Ensure all levels of management understand and support procedures. Ensure training support for proficiency of IMC/Loss of visual reference recovery procedures. Identify and establish written plan for IMC/Loss of visual reference recovery.

Content of Instruction: For loss of visual reference due to surface phenomena, refer to Recommended practices "Takeoff Hazards" (RP93-2) and "Landing Hazards" (RP93-2 & 3).

Cycle: Initial and recurrent
Continuing awareness of risks and during pilot meetings.

NEMSPA RECOMMENDED PRACTICES

AIR MEDICAL OPERATIONAL PROFILE CHECK

NEMSPA NO. RP 93-6:

Purpose Pilots should be evaluated on the multitude of tasks associated with the air ambulance industry. This RP is to assure validation of the pilots ability to perform an air ambulance profile.

Applicability

Helicopter
Pilots

Region

ALL

Types of operation

IFR/VFR
Single/Twin
Day/Night

Implementation

Managerial: Pilots should be trained to accomplish an air ambulance profile.

Content of Instruction:

Training should include:

- a. Preflight planning
- b. All flight Phases-approach, departure, enroute
- c. Flight following
- d. Communications
- e. Coordination
- f. Inadvertent IMC recovery procedures
- g. If possible land at a simulated scene

Cycle: Initial (Day and Night)
Recurrent (Day and Night if possible)
Site Orientation

NEMSPA RECOMMENDED PRACTICES

NEMSPA RP NO 93-7:

HAZARDOUS WEATHER AVOIDANCE

Purpose Ensure Pilot is provided adequate training in recognition, interpretation and avoidance of hazardous weather.

Applicability

Helicopter and Fixed Wing

Pilots

Region

ALL

Types of operation

ALL

Implementation

Managerial: Ensure all levels support [understand their role and understand procedures for avoidance. Recognize pilot's decision making role. PIC is final authority. Management should avail aviation the equipment to make viable weather decisions.

Content of Instruction: Utilize instructors qualified in interpretation of weather, local weather patterns, deterioration of weather, weather decision making, automated services, special equipment. Ensure specifics to individual program area are covered (Regulatory, training manual, policy manuals, operation manuals), VCR, Tests, Instructor, (APM, FSS, Commercial).

Cycle: Initial new hire, annual recurrent, site specific equipment for obtaining weather information, (as required). Seasonal weather instruction.

NEMSPA RECOMMENDED PRACTICES

HAZARDOUS MATERIALS

NEMSPA RP 93-8:

Purpose Hazardous materials can be ground, air, patient or medically related. This RP is to prescribe a level of training for the PIC that is necessary to recognize and respond to hazardous materials incidents.

Applicability

Helicopter and Fixed Wing
Pilots

Region

ALL

Types of operation

ALL

Implementation

Managerial: Ensure support and that pilots are trained to recognition and hazardous material incidents.

Content of Instruction: Awareness of potential hazard. Recognition of potential hazard, flight precaution when hazmat identified, decontamination of individual prior to transport, post flight decontamination.

Cycle: Annual
Awareness - continual

NEMSPA RECOMMENDED PRACTICES

New Policies and Procedures

NEMSPA RP-9:

Purpose To provide written policies, guidelines and procedures to follow for safe and efficient operations that are not covered by Operations and Specifications.

Applicability

Helicopter and Fixed Wing
Pilots
Medical Crew Members
Communicators
Auxiliary Personnel

Region

ALL

Types of operation

ALL

Implementation

Managerial: Identify, define and adopt policies and procedures

Cycle: Initial, annual, recurrent and as required.

NEMSPA RECOMMENDED PRACTICES

Pilot-In Command Authority NEMSPA RP94-11

Purpose The PIC has the final authority for the operation of the aircraft. This RP is a clarification of the authority of the Pilot-in-Command (PIC)

<u>Applicability</u>	Helicopter and Fixed Wing Pilots
<u>Region</u>	ALL
<u>Types of operation</u>	ALL

Implementation

Managerial: Ensure that all personnel understand and support the authority and responsibilities of the PIC in operation of the aircraft.

Content of Instruction:

FAR 91.3

Cross-Operational Education to include the awareness of resources and expertise from teams outside the flight crew and of the PIC role and responsibilities to personnel outside the flight crew

Cross-Reference to CRM Recommended Practices

- (1) Reference certain key areas of CRM training:

Leadership

Decision Making

Resources, information, and time management

Stress management

Communication skills and conflict resolution

- (2) Reference to practicing the PIC skills/opportunities for LOFT

Enact situations where responsibilities are not so clear

When is negotiation appropriate vs. time critical procedures

Issue of team familiarity vs. unknown, standard procedures

Scenario of flight phases & priorities

Scenario of medical service phases and priorities

Other scenarios. . . .

Cycle: Initial Indoctrination/ Awareness
Recurrent Practice and Feedback
Continuing Reinforcement

NEMSPA RECOMMENDED PRACTICES

DRAFT - CREW RESOURCE MANAGEMENT

NEMSPA RP-12:

Purpose Many problems encountered by flight crews 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. The purpose of this RP is 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.

Applicability

Helicopter and Fixed Wing
Pilots
Medical personnel
Managers (operational and medical)
Communicators
Auxiliary Personnel

Region

ALL

Types of operation

ALL

Implementation Specific content of the training and organization of topics should reflect the particular organization's culture, mission, and needs.

Managerial: Research suggests that the greatest benefits are achieved by adhering to the following managerial practices:

- a. Assess the status of the organization before implementation.
- b. Get commitment from all managers, starting with senior managers.
- c. Customize the training to reflect the nature and need of the organization.
- d. Define the scope of the program.
- e. Communicate the nature and scope of the program before startup.
 - f. Institute quality control procedures.
 - g. Allocate resources -AC Section 9
- 2 Content of Instruction- Specific content of the training and organization of topics should reflect the particular organization's culture, mission, objectives, and needs.
 - a. Communication Processes and Decision Behavior
 - (1) briefings
 - (2) inquiry/advocacy/assertion
 - (3) crew self-critique (debriefings)
 - (4) conflict resolution
 - (5) communication skills and decision making
 - b. Team Building and Maintenance

- (1) leadership/followership/concern for task
- (2) interpersonal relationship/group climate
- (3) workload management and situational awareness
- (4) individual factors/stress management
- c. Special Topics such as automation and new aircraft transition training

Cycle Initial New Hire, Instructors and Evaluators
Recurrent Practice and Feedback
Continuing Reinforcement

NEMSPA RECOMMENDED PRACTICES

BIOHAZARDS NEMSPA RP 94-13

Purpose Personnel involved with air medical operations are routinely exposed to potentially infectious materials. Organisms are spread through various means, including direct contact and/or airborne transmission.

This RP is for the purpose of recognizing the dangers of biological hazards, to implement a plan to minimize exposure and decontaminate exposed personnel and aircraft, and recommend procedures for addressing significant exposure.

Applicability

Pilots
Helicopter and Fixed Wing
Medical Crew Members
Communicators
Auxiliary Personnel

Region

ALL

Types of operation

ALL

Implementation

Managerial: Provide & support a plan for compliance with regulations considering exposure to potentially infectious materials.

Content of Instruction:

- 1 Recognition of potentially infectious materials
- 2 Use of protective equipment implementation of universal precautions
- 3 Decontamination of equipment
- 4 Immunization, TB surveillance and other methods of prevention

Cycle: Initial, recurrent and event specific.

Appendix B

WORKSHOP AGENDAS

NEMSPA/FAA HELICOPTER EMS SAFETY WORKSHOP (#1)

Miami, Florida

AGENDA

Monday - February 22, 1993

7:00-8:00am	<i>Continental Breakfast</i>	
8:00-9:00am	Introduction & Opening Plenary	Paul Erway, <i>Vertical Flight Program Office/FAA,</i> Craig Lunaas, <i>President, NEMSPA</i>
9:00-10:15	Rotorcraft Safety	Paul Erway, <i>Vertical Flight Program Office/FAA</i>
	MRI	
10:15-10:30am	<i>Break</i>	
10:30-12:00pm	Judgment Training Program	Rich Adams, <i>Vice President, Advanced Aviation Concepts, Inc.</i>
12:00-1:00	<i>Lunch - On Your Own</i>	
1:00-3:00pm	Landing Zone Safety	Dave Watters, <i>Director of Operations</i>
3:00-3:30	Hospital Heliport Design	Jack Burke, <i>Office of Airport Safety & Standards/FAA</i>
3:30-3:45	<i>Break</i>	
3:45-4:30	PreMission Planning	Craig Lunaas, <i>Pilot, MedFlight;</i> Bill Smoot, <i>Director of Operations, CareFlight</i> Bill Wallace, <i>Nat'l Specialist Rotorcraft Operations/FAA</i>
4:30-5:30	Planning for Inadvertent IMC	John T. Read, <i>Director of Training, Omniflight Helicopters, Inc.</i>

Tuesday - February 23, 1993

7:00-8:00am	<i>Continental Breakfast</i>	
8:00-9:30am	Air Ambulance Pilot (Helicopter Training)	Ed Gambone, <i>Chief Pilot, Corporate Jets</i>
9:30-10:30	Pros and Cons of IFR-I	Joel Harris, <i>Instructor, Flight Safety International</i>
10:30-10:45am	<i>Break</i>	
10:30-12:00pm	Pros and Cons of IFR-II	Joel Harris, <i>Instructor, Flight Safety International</i>
12:00-1:00	<i>Lunch - on your own</i>	
1:00-2:00pm	Helicopter Safety Advisory Conference	Thomas H. Marlow, <i>Vice President, Marketing, ERA Aviation</i>
2:00-3:45	Closing Plenary Session	Craig Lunaas, <i>President, NEMSPA, Paul Erway, FAA</i>

**NEMSPA/FAA HELICOPTER EMS SAFETY WORKSHOP
ON RECOMMENDED PRACTICES (#2)**

September 10-12, 1993 • Grand Prairie , Texas

Friday, September 10, 1993

- | | |
|-------------|---|
| 8:30-10:15 | -Welcome. David Smith, President, American Eurocopter
-Workshop Goals and Objectives. Craig Lunaas, President, NEMSPA
-Introduction of FAA representatives.
-Discussion of FAA's role in helping NEMSPA. Paul Erway, ARD-30.
-Introduction of Workshop participants.
-Purpose of the Workshop. Craig Lunaas, President NEMSPA, Dave Watters, President Elect.-Workshop and Recommended Practice mechanics. |
| 10:15-10:30 | Break |
| 10:30-12:00 | -Causes and related factors in EMS Accidents 1986-1991. Catherine Adams, Advanced Aviation Concepts.
-Review of Proposed RPs, Mike Hurst, PHI. |
| 11:30-1:00 | Lunch |
| 1:00-3:00 | RP Development - Weather Requirements. Co-Chairmen Craig Lunaas, Med Flight, Dave Watters, Butterworth AeroMed. |
| 3:00-3:15 | Break |
| 3:15-5:00 | Working Group A - Flight Training and Human Factors. Co Chairmen: Craig Lunaas, Med Flight; Kevin Brandt, CareFlight
Working Group B - Ground Training and Regulatory Compliance-Co-Chairmen: Dave Watters, Butterworth Aeromed; Mike Antonelli, CARE Inc. |

Saturday, September 11, 1993

- | | |
|-------------|--|
| 9:00-10:00 | Plenary-Preliminary Findings from Friday Working Group Sessions |
| 10:15-10:30 | Break |
| 10:00-12:00 | Working Group A - Flight Training and Human Factors
Working Group B - Ground Training and Regulatory Compliance |
| 12:00-1:00 | Lunch |
| 1:00-2:00 | Plenary-Findings, Voting |
| 2:00-4:00 | Working Group A - Flight Training and Human Factors
Working Group B - Ground Training and Regulatory Compliance |
| 4:00-5:00 | Plenary Session-RP Wrap-up |

Sunday, September 12, 1993

- | | |
|------------|---|
| 9:00-11:30 | Plenary-Strategy for the future
ELVIRA - Findings and recommendations from the Extremely Low Visibility Instrument Rotorcraft Approaches (ELVIRA) Workshop-Joel Harris, Flight Safety International
Status of GPS - A review of program initiatives and anticipated benefits of the GPS program - Steve Hickok, FAA/ARD-30. |
|------------|---|