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of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

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Flight Standards Service
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http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest.

Subject: Helicopter Emergency Medical Services (HEMS) Operations.

Background:

a. Introduction. HEMS operate in a demanding environment. They provide an invaluable service to the nation by providing crucial, safe, and efficient transportation of critically ill and injured patients to tertiary medical care facilities. While the contribution of HEMS is profound as a component of the nation's medical infrastructure, from an operational standpoint, it is a commercial aviation activity performed by air carrier operators. Reducing accidents takes the dedicated involvement of all the aviation and medical professionals involved. To this end, the Federal Aviation Administration (FAA) issued Notice 8000.293, Helicopter Emergency Medical Services Operations, on January 28, 2005, which expired on January 28, 2006. This SAFO continues to highlight the concepts in that notice, provides wider dissemination to the community, and identifies recommended practices that the HEMS operational community is encouraged to adopt.

b. Preliminary Review. A preliminary review of the commercial HEMS accidents from January 1998 through December 2004 revealed that **CONTROLLED FLIGHT INTO TERRAIN (CFIT), NIGHT OPERATIONS, AND INADVERTENT FLIGHT INTO INSTRUMENT METEOROLOGICAL CONDITIONS (IMC)** are predominant factors. Of the 27 fatal HEMS accidents, 21 occurred during night operations. Of the 21 night accidents, 16 of the operations originated under visual flight rules (VFR) and inadvertently flew into IMC conditions resulting in CFIT. In addition, approximately 13 accidents during this timeframe were attributed to maintenance. The types and circumstances of the studied accidents indicate the need for:

- (1) Strengthening operational control;
- (2) Increasing pilot skill in adverse weather operations, especially in the avoidance of and recovery from inadvertent IMC;
- (3) Applying risk assessment in flight decisions;

- (4) Fostering collaborative decisionmaking between ground and flight personnel; and
- (5) Developing a safety culture in HEMS operations.

c. Completed FAA Actions. The FAA has accomplished several actions that directly address the safety concerns revealed in the preliminary review. Specifically, the following documents have been issued:

- (1) Notice 8000.293, Helicopter Emergency Medical Services (HEMS) Operations, issued 1/28/05 (now more widely distributed by this SAFO);
- (2) Notice 8000.301, Operational Risk Assessment Programs for Helicopter Emergency Medical Services (HEMS), issued 8/01/05
(http://www.faa.gov/library/manuals/examiners_inspectors/8000/media/n8000-301.doc);
- (3) Notice 8000.307, Special Emphasis Inspection Program for Helicopter Emergency Medical Services, issued 9/27/05
(http://www.faa.gov/library/manuals/examiners_inspectors/8000/media/N8000-307.doc);
- (4) Advisory Circular (AC) 00-64, Air Medical Resource Management, issued 9/22/05
([http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/b643be7ddea4b3af8625708c006529fc/\\$FILE/AC00-64.pdf](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/b643be7ddea4b3af8625708c006529fc/$FILE/AC00-64.pdf));
- (5) HBAT 06-01, Helicopter Emergency Medical Services; OpSpec A021/A002 Revisions, issued 1/23/06
(http://www.faa.gov/library/manuals/examiners_inspectors/8400/hbat/media/2006/hbat0601.doc)
; and
- (6) HBAT 06-02, Helicopter Emergency Medical Services (HEMS) Loss of Control (LOC) and Controlled Flight into Terrain (CFIT) Accident Avoidance Programs, issued 1/23/06
(http://www.faa.gov/library/manuals/examiners_inspectors/8400/hbat/media/2006/hbat0602.doc)

d. The HEMS Task Force, consisting of representatives from the Flight Standards Service, the Aircraft Certification Service, and the Office of Aircraft Accident Investigation, continues to review accident data to determine the desired course(s) of action to address accident safety causal factors in the HEMS operating environment. Additional guidance will be developed as a result of this ongoing effort. Such guidance may be in the form of ACs, notices, handbook bulletins or revisions, and the Aeronautical Information Manual (AIM).

Recommended Operator Initiatives:

a. These are voluntary initiatives which the FAA encourages HEMS operators to undertake to help in mitigating accident risk factors.

(1) Ensure that pilot training includes adequate area-specific inadvertent IMC and night cross-country for their specific area of operation. In addition, operators are encouraged to develop action plans to deal with inadvertent IMC for each of their local flying areas.

(2) Review FAA-H-8083-21, Rotorcraft Flying Handbook, Chapter 14, Aeronautical Decision Making, to see if your policies, procedures, and training programs reflect the principles in the handbook. The handbook is available at the following Web site:
<http://www.faa.gov/library/manuals/aircraft/media/faa-h-8083-21.pdf>

(3) Emphasize a safety culture within your HEMS organization that applies basic system safety attributes and risk management techniques to your operation. Apply safety attributes or risk management/assessment strategies to each flight. A safety culture should include a team concept that ensures the participation of the pilot, medical crewmembers, ground communications specialists/dispatchers, and, if necessary, management representatives in the go/no-go decision. Information on System Safety and Risk Management can be found in Notice 8000.301 (see above).

(4) Incorporate realistic night flight training such as Line Oriented Flight Training (LOFT), provide operating experience for new crewmembers, and consider conducting line checks under operating conditions.

(5) Ensure that ground and flight training provides aircraft system malfunction training, especially in the context of transportation flight operations. In addition to training the flight manual procedures for these emergency and abnormal procedures, include training in the aeronautical decisionmaking required in actual HEMS operations, including the decision to divert, continue, or terminate the flight. Examples of the types of situations to consider in an operational context are emergencies and abnormal conditions such as partial power loss, loss of hydraulic boost, loss of fuel transfer, or fuel boost.

(6) Ensure that pilots receive training and checking in and the conduct of aircraft system and configuration checks before takeoff and landing. Examples of such system checks include hydraulic and flight control system functional checks, electrical system checks, avionics checks, float system checks, and engine checks. Examples of configuration checks include pre-takeoff engine and fuel lever positions checks, and landing gear position checks before landing.

(7) Emphasize the use of a radar altimeter, particularly for night operations.

(8) Consider using enhanced vision systems, night vision goggles, and Terrain Awareness Warning System (TAWS).

(9) Review the weather minimums, particularly for night operations, for each operational area, focusing on minimums specific to the terrain of the intended operational area. If necessary, increase weather minimums to enhance safety.

(10) Ensure pilots are aware of the importance of receiving a current weather briefing at the time of mission launch. Develop a standard operating procedure that ensures pilots receive a complete weather briefing before flight and, if necessary, access current weather data inflight.

(11) Review significant terrain and obstacles in the area of operations; identify minimum altitudes for specific sectors.

(12) Apply an operations risk assessment tool to include increased management participation in the decision to accept or continue a flight assignment as circumstances become more challenging (see Notice 8000.301 for guidance).

(13) Determine that operational control procedures are current, applicable, and effective for each base of operation (see Title 14 of the Code of Federal Regulations (14 CFR) part 135, sections 135.23(l) and 135.79). Revise these procedures, if required.

(14) Make pilot compartment, to the extent possible, free of glare and reflections. Ambient light may have been a factor in some of the night accidents.

(15) Review pilot, medical crew, mechanic, and other ground personnel shift schedules and fatigue management programs to ensure that only rested and alert personnel are assigned safety duties.

(16) Consider accreditation by a recognized independent auditing entity to ensure that the most current safety practices are used in the conduct of HEMS operations.

(17) Operators should avail themselves of as much technical support and safety information as possible. Sources for this support and information include, but are not limited to, airframe, engine, and engine manufacturers, professional aviation groups associations, and the FAA's Aviation Safety Team (FAAST).

(18) Operators are encouraged to meet with the Air Traffic Control (ATC) facilities they work with to develop a better understanding of HEMS operational needs, and to better understand facility capabilities, including communications, radar coverage, and airspace responsibilities. If Letters of Agreement are developed between HEMS operators and ATC facilities, ensure that routes, altitudes, and operational procedures are designed with characteristics that support CFIT and loss of control accident avoidance.

(19) Operators are encouraged to work collaboratively on safety issues, especially those of a local nature. Some operators have successfully formed networks with other nearby operators to share safety-related information and improve the safety of all HEMS flight operations in their area.

Questions concerning this SAFO should be directed to the Commuter, On Demand, and Training Center Branch, AFS-250, at (202) 267-3437.