



Fact Sheet

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Contact: Alison Duquette

Phone: (202) 267-3883

EMS Helicopter Safety

Helicopter Emergency Medical Service (HEMS) operations are unique due to the emergency nature of the mission. In August 2004, the FAA initiated a new government and industry partnership to improve the safety culture at HEMS operators and recommend short-and long-term strategies for reducing accidents. While the FAA has not ruled out proposing new or changing existing rules, the agency has prompted significant short-term safety gains that do not require rulemaking. The FAA's immediate focus is:

- Encourage risk management training to flight crews so that they can make more analytical decisions about whether to launch on a mission.

- Better training for night operations and responding to inadvertent flight into deteriorating weather conditions.

- Promote technology such as night vision goggles, terrain awareness and warning systems and radar altimeters.

- Provide airline-type FAA oversight for operators. Identify regional FAA HEMS operations and maintenance inspectors to help certificate new operators and review the operations of existing companies.

Background

There are approximately 750 emergency medical service helicopters operating today, most of which operate under Part 135 rules. HEMS operators may ferry or reposition helicopters (without passengers/patients) under Part 91.

The number of accidents nearly doubled between the mid-1990s and the HEMS industry's rapid growth period from 2000 to 2004. There were nine accidents in 1998, compared with 15 in 2004. There were a total of 83 accidents from 1998 through mid-2004. The main causes were controlled flight into terrain (CFIT), inadvertent operation into instrument meteorological conditions and pilot spatial disorientation/lack of situational awareness in night operations. Safety improvements are needed.

FAA Oversight

The FAA inspects HEMS operators, but is prompting changes beyond inspection and surveillance. Rather, the FAA is moving to a risk-based system that includes the initiatives outlined below which focus on the leading causes of the HEMS accidents.

FAA Actions

In August 2004, the FAA established a task force to review and guide government and industry efforts to reduce HEMS accidents.

On January 14, 2005, the FAA hosted a meeting with HEMS industry representatives to discuss safety issues and gain feedback. Representatives from the Association of Air Medical Services, Helicopter Association International, the National EMS Pilots Association and several operators attended.

Decision-making skills: On January 28, 2005, the FAA published a notice providing guidance for safety inspectors to help operators review pilot and mechanic decision-making skills, procedural adherence, and crew resource management practices. It includes both FAA and industry intervention strategies (Notice 8000.293 Helicopter Emergency Medical Service Operations).

Risk assessment programs: On August 1, 2005, the FAA issued guidance to inspectors promoting improved risk assessment and risk management tools and training to all flight crews, including medical staff (Notice 8000.301 Operational Risk Assessment Programs for Helicopter Emergency Medical Services).

Air Medical Resource Management (AMRM): On September 22, 2005, the FAA issued guidance to HEMS operators establishing minimum guidelines for Air Medical Resource Management (AMRM) training. The training focuses on pilots, maintenance technicians, flight nurses, flight paramedics, flight physicians, medical directors, specialty team members (such as neonatal teams), communications specialists (dispatchers), program managers, maintenance staff, operational managers, support staff, and any other air medical team members identified by specific needs (AC No. 00-64 Air Medical Resource Management).

Special emphasis inspection program: On September 27, 2005, the FAA issued a revised standard for inspection and surveillance of HEMS operators, with special emphasis on operations control, risk assessment, facilities and training, especially at outer locations away from the certificated holder's principal base on operations.

FAA establishes new office: In December 2005, the FAA's Flight Standards Service's Air Transportation Division established the new Commuter, On Demand, and Training Center Branch (AFS-250) to work Part 135 and Part 142 policy issues. The branch is staffed by a manager and five specialists. Of those six inspectors, four are helicopter-qualified.

Loss of Control (LOC) and Controlled Flight Into Terrain (CFIT): On January 24, 2006 the FAA issued a handbook bulletin to inspectors describing acceptable models for LOC and CFIT avoidance Programs. The bulletin provides inspectors with information to provide to HEMS operators for developing LOC/CFIT accident avoidance programs and clarifies existing guidance (HBAT 06-02 Helicopter Emergency Medical Services (HEMS) Loss of Control (LOC) and Controlled Flight Into Terrain (CFIT) Accident Avoidance Programs).

HBAT 06-01 & OpSpec A021: On January 24, 2006 the FAA issued revised guidance to inspectors regarding HEMS OpSpecs, amending the Visual Flight Rule (VFR) weather requirements for HEMS operations, including consideration of the adverse affects of reduced ambient lighting at night and mountainous terrain (HBAT 06-01 Helicopter Emergency Services; OpSpec A021/A002 Revisions).

Guidance to Part 142 training centers: On February 24, 2006, the FAA issued a Notice to Training Center Program Managers assigned to oversee Part 142 training Centers advising them of recent changes to HEMS operations and training standards (Notice 8000.317, Operator Training Provided by Part 142 Training Centers for Helicopter Emergency Medical Services.)

Public HEMS operators: On March 2, 2006, the FAA issued guidance to inspectors on the surveillance and oversight of public aircraft operators for HEMS operations (Notice 8000.318 Public Helicopter Emergency Medical Services (HEMS) Operations).

Terrain Awareness and Warning Systems (TAWS): On June 27, 2006, at the FAA's request, RTCA, Inc. established a Special Committee to develop Helicopter Terrain

Awareness and Warning System (H-TAWS) standards. These standards will be used to develop FAA requirements for H-TAWS systems, installation and operations.

Aeronautical Information Manual: In August 2006, the FAA revised the Aeronautical Information manual (AIM) to provide guidance to pilots on assessing ambient lighting for night visual flight rule (VFR) operations and for off-airport/heliport landing zone operations.

Aviation Rulemaking Committee (ARC): The FAA is currently reviewing the 140 recommendations made by the Part 135/125 ARC, many of which pertain to HEMS operations and training.

International Helicopter Safety Team (IHST): The helicopter industry has formed the IHST to gather data and draft strategies to reduce helicopter accidents globally by 80 percent by 2015. The effort is modeled on the Commercial Aviation Safety Team (CAST) which has achieved a significant reduction in the commercial fatal accident rate in the United States. Members include the FAA, European Aviation Safety Agency (EASA), Transport Canada, the International Civil Aviation Organization (ICAO), and industry representatives.

Surveillance of large HEMS operators: The FAA's Flight Standards Service has a task group focusing on the certification and surveillance requirements for large HEMS operators that support diverse medical programs throughout the United States.

Weather

In March 2006, the FAA and the University Corporation for Atmospheric Research hosted a weather summit in Boulder, Colorado to identify the HEMS-specific issues related to weather products and services. Attendees explored possible regulatory improvements, weather product enhancements, and operational fixes specific to HEMS operations. Attendees included the National Weather Service, National Center for Atmospheric Research (NCAR), Helicopter Association International, American Helicopter Society International, Association of Air Medical Services, National EMS Pilots Association, National Association of Air Medical Communications Specialists, manufacturers, and many operators.

As a result, the FAA is funding NCAR to develop and implement a graphical flight planning tool for ceiling and visibility assessment along direct flights in areas with limited available surface observations capability. It should improve the quality of go/no-go decisions for HEMS operators. The tool was fielded in November 2006. Initial response has been very favorable (Notice 8000.333, HEMS use of the aviation digital data service experimental HEMS tool).

Night Vision Goggles

The FAA has a solid record of facilitating safety improvements and new technologies for EMS helicopters, including certification of Night Vision Goggles (NVGs). Since 1994, the FAA has worked 28 projects or design approvals called Supplemental Type Certificates (STCs) for installation of NVGs on helicopters. This number includes EMS, law enforcement and other types of helicopter operations. Of the 28 projects, the FAA has approved approx. 15 NVGs for EMS helicopters. The FAA initiated and wrote (in coordination with RTCA) the minimum standards for NVGs/cockpit lighting. Technical Standard Order (TSO) C164 was published on September 30, 2004 referencing RTCA document DO 275 Minimum Operational Performance Standards (MOPS), published October 12, 2001. The FAA has hosted workshops to help applicants work with the FAA to obtain NVG certification. One set of NVGs costs approx. \$7,000 and an operator must carry multiple sets per flight. Certification is just one step. The operator must also have an FAA-approved training program for using NVGs.

The FAA has revised the NVG guidance in the Air Transportation Operations Inspectors Handbook, Order 8400.10. Produced using considerable industry input, the revision includes the establishment of a cadre of NVG national resource inspectors (Notice 8000.349, Night Vision Imaging Systems).

Flight Data Recorders

Flight Data Recorders (FDRs) are not required for HEMS operations. FDRs offer value in any accident investigation by providing information on aircraft system status, flight path and attitude. The weight and cost of FDR systems are factors. Research and development is required to determine the appropriate standards for FDR data and survivability in the helicopter environment, which typically involves substantially lower speeds and altitudes than airplanes. Funds are currently best invested in preventive training.

However, the FAA is studying alternatives to expensive and heavy airliner-style FDRs, especially in light of the relatively low-impact forces in most helicopter accidents. By establishing a standard appropriate to the helicopter flight envelope, the FAA may be able to make meaningful future FDR rulemaking efforts.

Terrain Awareness Warning Systems

The FAA supports the voluntary implementation of Terrain Awareness Warning Systems (TAWS) and did consider the possibility of including rotorcraft in the TAWS rulemaking process. Through this process, however, the FAA concluded that there are a number of issues unique to VFR helicopter operations that must be resolved before the FAA considers mandating the use of TAWS in this area, such as modification of the standards used for these systems. For example, helicopters typically operate at lower altitudes so TAWS could potentially generate false alerts and "nuisance" warnings that could negatively impact the crew's response to a valid alert. TAWS application to HEMS would require study of TAWS interoperability within the lower altitude HEMS environment, and possibly a modification of TAWS system standards.

At the FAA's request, RTCA, Inc. has established a Special Committee (SC-212) to develop H-TAWS standards for use in future FAA rulemaking projects. A report is expected in March 2008.

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