

Examining NTSB and FAA Actions Regarding Helicopter Emergency Medical Services (HEMS) Safety: 2006–2008

By

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Introduction

The Helicopter Emergency Medical Services (“HEMS”) industry has experienced a sustained growth rate of 16% per year between 1991 and 2008.² During this time, the Part 121 fatal accident rate for commercial, scheduled passenger operations has decreased 80%, while the fatal accident rate for Part 91/135 HEMS operations has increased 59%.³ Additionally, 2008 concluded as the bloodiest year in HEMS history, with thirteen accidents, seven of which were fatal, resulting in twenty-five fatalities.⁴ As a result, the HEMS industry has come under significant scrutiny by both the NTSB and the FAA, and the call for additional regulation is only increasing. This article will review actions by the NTSB and FAA from January 2006 to December 2008 regarding HEMS operations and will conclude with a discussion of expectations for the HEMS industry in 2009.

January 2006: NTSB Special Investigation Report and FAA Safety Alert For Operators

Noting a 25% increase in the accident rate of aviation-based EMS operations between 1997 and 2001, the NTSB initiated a Special Investigative Report (“SIR”) of both fixed-wing and helicopter EMS accidents between January 2002 and January 2005. The NTSB SIR concluded that the following industry-wide procedures contributed to multiple accidents:

- HEMS operations without a patient on board operate under FAA Part 91 rules for weather minimums (“clear of clouds”) instead of Part 135 minimums of 1,000’ ceilings and 3 miles visibility.⁵
- HEMS operations without a patient on board also do not have to adhere to Part 135 crew rest requirements.⁶
- Lack of an industry wide requirement of a risk assessment and evaluation program leads to inadequate pre-flight assessment of associated mission risk.⁷
- HEMS flight dispatch by unqualified personnel, including 911 dispatchers or hospital staff, compounds inadequate risk assessment.⁸
- Lack of specialized equipment on-board to mitigate risk of controlled flight into terrain (“CFIT”) accidents, including Terrain Awareness and Warning Systems (“TAWS”) and use of Night Vision Goggles (“NVG”), has resulted in a disproportionate number of CFIT accidents in HEMS operations.⁹

Additionally, the FAA issued Safety Alert for Operators (“SAFO”) 06001 recommending voluntary adoption by the HEMS community of various procedures to mitigate many of the same items, including:

- Reviewing weather minimums, considering terrain and time of operation, and revise upward if necessary.¹⁰
- Establishing a risk management/assessment program to apply to each flight.¹¹

- Ensuring that pilot training includes recovery from inadvertent IMC encounters and use of radar altimeter during night operations.¹²
- Reviewing operational control procedures for compliance with Part 135 requirements and revise operator procedures if necessary.¹³
- Considering use of enhanced vision systems such as NVG and TAWS.¹⁴
- Emphasizing a safety culture within each HEMS operation and encouraging collaborative steps between HEMS organizations to address local safety issues.¹⁵

February 2006 – November 2008: NTSB Formal Safety Recommendations and FAA Response

While recognizing the public policy implications, inherent risk, and sensitivity to additional regulation of HEMS operations, the NTSB took the stance that HEMS operations were essentially closer to a Part 135 on-demand operation, and in some instances closer to a Part 121 operation, than a Part 91 operation and should be treated as such. On February 2, 2006, as a result of the SIR, the NTSB issued Safety Recommendations A-06-12 through A-06-15 addressing the contributing factors listed above.

NTSB SAFETY RECOMMENDATIONS PERTAINING TO HEMS OPERATIONS¹⁶	
A-06-12	Require all emergency medical services operators to comply with 14 <i>Code of Federal Regulations</i> Part 135 operations specifications during the conduct of all flights with medical personnel onboard.
A-06-13	Require all emergency medical services (EMS) operators to develop and implement flight risk evaluation programs that include training all employees involved in the operation, procedures that support the systematic evaluation of flight risks, and consultation with others trained in EMS flight operations if the risks reach a predefined level.
A-06-14	Require emergency medical services operators to use formalized dispatch and flight-following procedures that include up-to-date weather information and assistance in flight risk assessment decisions.
A-06-15	Require emergency medical services (EMS) operators to install terrain awareness and warning systems on their aircraft and to provide adequate training to ensure that flight crews are capable of using the systems to safely conduct EMS operations.

Recommendation A-06-12: Medical Personnel On-Board = Part 135 Operation

The NTSB took a dim view of the FAA’s policy of allowing HEMS operators to conduct flights under Part 91 regulations using an expansive interpretation of the term “positioning flight” to skirt Part 135 weather minimums and crew rest requirements contained within their operations specifications. The NTSB noted that there is no discernable difference in the base-to-patient, patient transport, and offload-to-base phase as they all make up one continuous EMS mission, and allowing operators to bookend the patient transport leg (Part 135) with two Part 91 legs was simply unacceptable.¹⁷ In the 55 accidents the NTSB reviewed in the SIR, ten of the accident flights would not have been legal under Part 135 weather minimums.¹⁸ The NTSB also chided attempts by HEMS operators to train medical personnel to perform minimal aviation-

related duties qualifying them as “crewmembers” in order to operate flights as Part 91 positioning flights, with the NTSB preferring to treat them as passengers which would require Part 135 regulations to apply.¹⁹

On May 30, 2006, the FAA responded that the NTSB recommendation to treat all three phases as Part 135 operations was acceptable except that most helipads with IFR procedures were not capable of meeting Part 135 weather reporting requirements, and that implementation would result in IFR operations having to be conducted under VFR rules.²⁰ The NTSB responded to the FAA on April 3, 2007 by agreeing that holding HEMS operations with medical personnel on board under Part 135 rules except for destination weather reporting requirements was acceptable and in the interest of aviation safety, classifying the recommendation as “Open-Acceptable Alternate Response.”²¹ The FAA took no further action on this recommendation for the rest of 2007 and most of 2008. On October 28, 2008, citing a lack of progress in the face of a mounting accident rate, the NTSB voted to reclassify this item as “Open-Unacceptable Response.”²²

On November 14, 2008 the FAA started the regulation ball rolling by publishing in the Federal Register a notice of revisions to Operations Specifications (“OpsSpecs”) A021 and A050 requiring all legs of a HEMS mission involving a Part 135 leg to be conducted under Part 135, and prescribing weather minimums ranging from 800’ ceiling and two miles visibility (day, local flight, non-mountainous) to 1500’ ceiling and five miles visibility (night, cross-country, mountainous, without NVG or TAWS), along with a call for public comments.²³ The revised OpsSpecs would also allow landing at a helipad under IFR as long as an approved weather reporting source was within 15 nautical miles.²⁴ The public comment period closed on December 15, 2008.²⁵

Recommendation A-06-13: Require HEMS Operators to Implement a Risk Analysis Program Applicable to Every Flight

The NTSB applauded the FAA for its proactive stance in issuing guidance and recommendations for a risk analysis program applicable to HEMS operations through its 2005 issuance of Notice 8000.301, which included a detailed risk analysis program, decision criteria, and an applicable decision matrix. Unfortunately, without a requirement to implement such a tool, HEMS operators had not utilized the program and accidents had occurred that likely could have been prevented. The NTSB noted that 13 of the 55 accidents studied within the SIR may not have occurred if such a recommendation had been in place.²⁶ As a result, in the interest of aviation safety, the NTSB called for a requirement to implement such a program through the OpsSpecs.²⁷ The FAA responded by noting that a requirement would be added by September 2006.²⁸ The NTSB noted that as of December 11, 2006 this requirement had not been added due to a delay in issuing a revision to the OpsSpecs, and additionally as of October 2008 there had been no change despite the proposed revision to OpsSpecs A021 listed above.²⁹

On October 28, 2008 the NTSB revised classification of this recommendation from “Open-Acceptable Response” to “Open-Unacceptable Response” resulting from the FAA’s failure to issue a requirement.³⁰

Recommendation A-06-14: Require a Standardized Dispatch and Flight-Following Procedure to Ensure Up-to-Date Weather and Risk Assessment Opportunity

The NTSB contrasted the safety of Part 121 operations conducted with a flight dispatcher against Part 91/135 HEMS operations conducted largely to an extent without a “consistent, comprehensive flight dispatch procedure.”³¹ The NTSB, specifically citing an accident in Newberry, South Carolina in which a 911 operator dispatched a fourth helicopter to a scene without informing the pilot that the first three had aborted or refused the mission, noted that a flight dispatcher with technical aviation knowledge would facilitate a greater ability to evaluate mission risk, where the current procedure of dispatch per 911 operator or emergency hospital staff did not allow such synergy to develop.³² Additionally, the NTSB cited the increased safety resulting from flight dispatchers following their flights and allowing position reports to go directly to knowledgeable personnel instead of untrained emergency staff who are performing numerous non-aviation related tasks.³³ Consequently, the NTSB recommended that the FAA require HEMS operations be dispatched through a formalized dispatch procedure by a flight dispatcher well-versed in aviation knowledge.³⁴

Following the *Darby Aviation* accident on February 2, 2005 and subsequent NTSB recommendations regarding the accident on November 8, 2006 (A-06-66 through A-06-69), “operational control” became a high priority issue within the FAA. The FAA, recognizing shades of *Darby* within the HEMS industry, noted that the use of a “communications specialist” would enhance not only pre-flight risk mitigation, but would enhance operational control and flight following as well.³⁵ As a result, the FAA researched and developed “a set of best practices related to standardization of communications specialists’ position descriptions and training requirements.”³⁶

On May 5, 2008 the FAA released AC-120-96 “Integration of Operations Control Centers into Helicopter Emergency Medical Services Operations” noting that the FAA hopes HEMS operations will reap safety benefits under a program closer to Part 121 standards than Part 91/135, similar to that recognized by commuter airlines through their movement to Part 121 in 1996. Although an advisory circular is merely a recommendation and not a requirement, the NTSB has been pleased enough with the FAA’s twenty-three page AC to classify the recommendation as “Open-Acceptable Response.”³⁷

Recommendation A-06-15: Mandate Use of TAWS to Enhance HEMS Safety

The NTSB identified that a large percentage of HEMS operations are conducted VFR-only and that a significant percentage of the accidents studied in the SIR (17 out of 55) were CFIT accidents or related to flight over featureless terrain, where awareness of terrain could have prevented the accident.³⁸ As a result, the NTSB recommended that TAWS should be required on HEMS aircraft to mitigate this risk.³⁹

The FAA, in their May 30, 2006 response to the NTSB supported inclusion of VFR helicopters in TAWS requirements, but noted that guidelines necessary to accomplish this item had not been crafted.⁴⁰ The FAA responded by appointing the Radio Technical Commission for Aeronautics (“RTCA”) to develop the necessary guidelines the FAA could use to develop a Technical Standards Order (“TSO”), allowing TAWS to be installed in HEMS aircraft under Part 135. The RTCA began this task on June 27, 2006 and on March 13, 2008 issued report DO-309 “Minimum Operational Performance Standards for Helicopter Terrain Awareness and Warning System Airborne Equipment.”⁴¹ The FAA is currently reviewing DO-309 and drafting a TSO that is scheduled to be completed by December 31, 2008.

The NTSB originally categorized the recommendation as “Open-Acceptable Response”, but on October 28, 2008 voted to reclassify as “Open-Unacceptable Response” pending the FAA’s issuance of the TSO and mandating installation of TAWS in HEMS aircraft.

October 2008: NTSB Most Wanted List of Safety Improvements – Improve Safety of Emergency Medical Services Flights and Public Hearing Announcement

Citing the issuance of recommendations A-06-12 through A-06-15, and the subsequent nine fatal HEMS accidents between December 2007 and October 2008 the NTSB added HEMS safety to its Most Wanted List of Safety Improvements and subsequently changed the status of A-06-12, A-06-14, and A-06-15 to “Open-Unacceptable Response” during its board meeting on October 28, 2008.⁴² The NTSB noted that the FAA has largely failed to issue requirements and that the HEMS industry has not widely implemented FAA recommended procedures to enhance safety.⁴³

Additionally, the NTSB announced that it will hold an informational four-day public hearing in early February 2009 to learn from the industry what it believes can be done to lower the accident rate.

2009: Standing at the Crossroads of HEMS Regulation

In 2006, the NTSB and FAA recognized lapses in industry policies that affected safety and issued guidance to the HEMS industry listing voluntary steps to implement. As the NTSB noted in its October 2008 meeting, the HEMS industry has largely failed to implement these voluntary suggestions and the FAA has been slow to implement regulations to solve these issues. During this time, the NTSB noted the skyrocketing number of fatalities resulting from the very items the NTSB sought to remedy.⁴⁴

The result of including HEMS safety on its Most Wanted List is a clear indication that the NTSB views this combined lack of regulation by the FAA and the perceived unwillingness to implement voluntary safety initiatives on the part of numerous operators in the HEMS industry as a market failure. In the face of this market failure the NTSB sees a renewed push for regulation as appropriate, and its October 2008 actions of changing A-06-12, -13, and -15 to “Open-Unacceptable Response” is a very public and clear indication that the NTSB has adopted a tough stance on both the FAA’s handling of the HEMS industry and the HEMS industry itself. In 2009 the HEMS industry will likely see the Part 135 mission requirement and the weather minimums change to the OpsSpecs triggered by A-06-12 and the issuance of the TSO, and possibly a requirement to install TAWS in HEMS aircraft from A-06-15; but more importantly for the HEMS industry, it will be given an opportunity at the NTSB’s February public hearing to show a constructive and proactive attitude toward safety. The image the HEMS industry projects in 2009 will to a large extent determine just how tough the stance will be that regulatory agencies adopt towards HEMS operations in the near future. A renewed emphasis on safety coupled with an improvement in the overall and fatal accident rate in 2009 will go a long way toward reestablishing credibility for the industry, but a repeat of the industry’s safety record from 2008 will result in stringent regulations above and beyond those resulting from A-06-12 through A-06-15.

In Conclusion: Looking Forward to a New Horizon in HEMS Operations

HEMS operations are in many ways unique in aviation. Segment times are often extremely short (in the three to eight minute range), landing zones are often off-airport / heliport, speed is absolutely essential, and the stakes of the mission are extremely high. Added to this, the industry has experienced explosive growth and operators have been put under excessive pressure to cut operating costs and remain competitive. Consequently regulators must take note of the unique theater and pressures in which HEMS operators function. Although the mission is unique, this does not mean that the HEMS industry, and regulators, cannot learn from similar situations in the past.

Similar to the post airline deregulation era, this is the time in the HEMS industry where existing regulations will be tested, and we may find that additional regulation is necessary. The NTSB and the FAA has taken the first steps toward producing additional regulations, and much like the commuter airline experience in moving under Part 121, the pendulum appears to be shifting toward a “one level of safety” approach in which regulation pushes HEMS operations more on the continuum toward Part 121 and away from Part 91/135. If the commuter airline experience holds true, the HEMS industry should become more of a level playing field where competition based on safety is regulated out of the industry. But as we have seen in the past, regulation alone will not solve this problem.

Additionally, similar to the Part 121 experience, it will likely take a systems safety approach to reduce the accident rate beyond that which regulatory improvement alone will yield. Every operator in the industry must operate under a culture of safety in which crewmembers are given the training, skills, and latitude necessary to exercise good aeronautical decision making. When flaws are found and mistakes made, these same crewmembers must have proactive safety programs at their disposal so flaws are disclosed, operators are educated, and links in the error chain are mended before an accident occurs. When accidents do occur, the NTSB must be proactive in demanding improvements, and the FAA must also be proactive by making those appropriate improvements. Through collaboration, the HEMS industry, the NTSB, and the FAA will not be doomed to repeat the past, but can look forward to a safer future.

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² See Helicopter Ass’n Int’l, *Improving Safety in Helicopter Emergency Medical Services (HEMS) Operations*, (Aug. 2005); See Linda Werfelman, *Critical Care*, AEROSafetyWorld, Sept. 2008, at 15, available at http://www.flightsafety.org/asw/sept08/asw_sept08_p12-17.pdf. (HEMS operations increased from 162,000 flight hours in 1991 to approximately 430,000 flight hours in 2008).

³ See Nat’l Transp. Safety Board, NTSB/SIR-06/01, Special Investigation Report on Emergency Medical Services Operations, (Jan. 25, 2006) [hereinafter *NTSB SIR 06*]; See Werfelman, *supra* note 2, at 15. (Fatal accident rate in 1991 approximately 0.617 per 100,000 flight hours to current level in 2006-2008 of approximately 0.977 per 100,000 flight hours.); See Rick Darby, *A Favorable Trend Continues*, AEROSafetyWorld, June 2008, at 49, available at http://www.flightsafety.org/asw/june08/asw_june08_p48-51.pdf; Nat’l Transp. Safety Board, Aviation Accident Statistics – Table 2, available at <http://www.nts.gov/aviation/Table2.htm> (major accident rate decrease from 1991 of 0.424 per million flight hours to approximately 0.069 per million flight hours for years 2005 to 2007 combined for Part 121 operations).

⁴ See following NTSB Accident Dockets: DFW08FA062, CHI08FA128, MIA08LA106, CHI08FA141, NYC08FA198, DEN08FA101, LAX08LA198, DEN08MA116A, DEN08MA116B, LAX08IA241, MIA08MA203, CEN09MA019, CEN09IA032, available at <http://www.nts.gov>. (Note: Docket CHI08FA269 (three fatalities) was excluded from these figures as a HEMS aircraft involved in an accident not resulting from HEMS activity).

⁵ *NTSB SIR 06* at 1–3.

⁶ *Id.*

⁷ *Id.* at 5.

⁸ *Id.* at 7.

⁹ *Id.* at 11–13.

¹⁰ Fed. Aviation Admin., Safety Alert for Operators 06001 (Jan. 28, 2006).

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ Nat'l Transp. Safety Board, Safety Recommendations A-06-12 through -15 (Feb. 7, 2006), *available at* http://www.nts.gov/Recs/letters/2006/A06_12_15.pdf [hereinafter *NTSB A-06-12/-15*].

¹⁷ *Id.* at 3–4.

¹⁸ *Id.* at 4.

¹⁹ *Id.* at 5.

²⁰ Letter from Marion Blakey, Administrator - FAA to Mark Rosenker, Acting Chairman NTSB (May 30, 2006) [hereinafter *FAA Response*].

²¹ Letter from Mark Rosenker, Chairman NTSB, to Marion Blakey, Administrator - FAA (Apr. 3, 2007) [hereinafter *NTSB Response*].

²² See <http://www.nts.gov/safetyrecs/private/QueryPage.aspx> [enter A-06-012], last accessed Dec. 26, 2008.

²³ See also proposed OpsSpec A021, Helicopter Emergency Medical Services (HEMS) Operations, *available at* http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs200/branches/afs250/media/OpSpecA021.pdf.

²⁴ *Id.*

²⁵ Helicopter Emergency Medical Services Operations, 73 Fed. Reg. 67,564–565 (Nov. 14, 2008) (to be codified at 14 C.F.R. pt. 119.51).

²⁶ *NTSB A-06-12/-15* at 7.

²⁷ *Id.*

²⁸ *FAA Response* at 2.

²⁹ *NTSB Response* at 2.

³⁰ *Id.*; Nat'l Transp. Safety Board, Improve Safety of Emergency Medical Services Flights (Oct. 28, 2008).

³¹ *NTSB A-06-12/-15* at 7.

³² *Id.*

³³ *Id.*

³⁴ *Id.*

³⁵ *FAA Response* at 2.

³⁶ *Id.*

³⁷ See <http://www.nts.gov/safetyrecs/private/QueryPage.aspx> [enter A-06-014], last accessed Dec. 26, 2008.

³⁸ *NTSB SIR 06* at 11, 32.

³⁹ *NTSB A-06-12/-15* at 12–13.

⁴⁰ *FAA Response* at 2–3.

⁴¹ See http://www.rtca.org/downloads/ListofAvailableDocs_OCTOBER_2008.htm [See DO-309].

⁴² See http://www.nts.gov/recs/mostwanted/aviation_improvesafety_ems_flights.html.

⁴³ *Id.*

⁴⁴ See statement of Robert Sumwalt, Vice-Chairman NTSB, *available at* <http://www.nts.gov/Events/Hearing-HEMS/Hearing-HEMS-announcement.htm> (“[T]he Safety Board believes some of these accidents could have been prevented if our recommendations had been implemented.”).