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# *Office of Inspector General*

# *Audit Report*

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## **DELAYS IN MEETING STATUTORY REQUIREMENTS AND OVERSIGHT CHALLENGES REDUCE FAA'S OPPORTUNITIES TO ENHANCE HEMS SAFETY**

*Federal Aviation Administration*

*Report Number: AV-2015-039*

*Date Issued: April 8, 2015*





# Memorandum

U.S. Department of  
Transportation

Office of the Secretary  
of Transportation  
Office of Inspector General

Subject: **ACTION:** Delays in Meeting Statutory  
Requirements and Oversight Challenges Reduce  
FAA's Opportunities To Enhance HEMS Safety  
Federal Aviation Administration  
Report Number AV-2015-039

Date: April 8, 2015

From: Matthew E. Hampton  
Assistant Inspector General  
for Aviation Audits

Reply to  
Attn. of: JA-10

To: Federal Aviation Administrator

The Helicopter Emergency Medical Services (HEMS)<sup>1</sup> industry safely transports over 400,000 patients in the United States each year, frequently in challenging conditions, including night flight, poor weather, low visibility, and landing at unfamiliar accident sites. The industry has grown significantly since 1980 when there were fewer than 50 air ambulances operating in the United States. In 2014 that number had grown to over 1,500 specialized air medical helicopters used by 75 different companies. As the industry grew, so did the number of accidents with 2008 being the deadliest year on record for HEMS operations with 29 fatalities. The Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) subsequently recommended significant changes to the industry, which may have helped lower the number of HEMS accidents, but fatalities and injuries continue to occur.

FAA and Congress have continued efforts to enhance safety in the HEMS industry. FAA issued its final HEMS rule in February 2014. Additionally, Congress passed the FAA Modernization and Reform Act of 2012 (FMRA),<sup>2</sup> which required that FAA take specific actions to reduce the HEMS accident rate. In light of these efforts, the Ranking Member of the House Aviation Subcommittee requested that we review FAA's progress in improving air ambulance safety. Accordingly, our audit objectives were to evaluate (1) FAA's progress in meeting requirements for HEMS operations cited in the 2012 FMRA

<sup>1</sup> Helicopter Emergency Medical Services (HEMS) are also referred to as Helicopter Air Ambulance (HAA).

<sup>2</sup> Pub. L. No. 112-95, FAA Modernization and Reform Act (FMRA) of 2012, February 14, 2012.

and (2) FAA's implementation of other actions, including oversight enhancements, to reduce the HEMS accident rate. We conducted this review in accordance with generally accepted Government auditing standards. Exhibit A details our scope and methodology, and exhibit B lists the specific organizations we visited or contacted.

## **RESULTS IN BRIEF**

FAA met or partially met three of the six major FMRA safety requirements for HEMS operators but has not completed the remaining three requirements involving safety data collection. Specifically, FAA completed a night vision goggle study, issued a HEMS rule implementing new operational procedures and additional equipment requirements, and initiated a second HEMS rule requiring improved training standards and additional safety equipment for crews and passengers. While FAA completed the requirements for both rules, the first rule was nearly 2 years late, and neither rule has been fully implemented. Therefore, the industry is not yet benefitting from the rules' provisions. Additionally, FAA did not complete the remaining three requirements for collecting, storing, and reporting HEMS-specific operations data. FAA has issued a notice to the industry that it will require operators to report operational data; however it did not meet the February 2013 congressionally mandated deadline to start this action. Therefore, FAA is currently not in the position to report its data gathering efforts to Congress, though it was required to do so starting in February 2014. Continued delays in meeting statutory deadlines will postpone enhancements needed to improve safety in the HEMS industry.

FAA has not enhanced HEMS oversight or taken other actions that could reduce accidents, such as establishing HEMS-specific accident reduction goals or gathering HEMS-specific data. Because FAA combines HEMS accidents with its general aviation statistics, it cannot assess the effectiveness of its HEMS accident reduction efforts and may be overlooking key risk factors expressly associated with HEMS operations. Further, FAA does not collect comprehensive HEMS data that could be used to target accident causal factors; rather, it relies on voluntary annual reporting of more generic general aviation data. Additionally, both large and small HEMS operators fly under the same conditions and face the same risks, but FAA uses a less robust and collaborative risk assessment process to oversee smaller operators and may be overlooking some of their key risk factors. Finally, FAA has not updated its inspector oversight, hiring, and training programs to keep pace with advancements in the HEMS industry, such as more sophisticated aircraft technology. As a result, FAA cannot ensure that the resources allocated to HEMS oversight are enhancing oversight and safety.

We are making recommendations to improve FAA's HEMS oversight efforts.

## BACKGROUND






Source: Rochester Post Bulletin; Used With Permission

HEMS pilots and crewmembers operate in a very demanding environment while providing crucial, reliable, and efficient transportation of patients to critical medical care facilities. HEMS operators are notably different from other helicopter operators in that they transport passengers (patients) who, in many cases, cannot choose which company provides their transportation.

The HEMS industry has changed dramatically from its inception in the late 1970s. Originally, these operations were small- to moderate-sized air taxi operators, using single engine helicopters flying in predominantly clear weather conditions under exclusive contracts to community hospitals. Today, the industry is almost evenly split between hospital-based and independent providers, often located outside hospitals, in suburban or rural communities. Many operators currently fly advanced helicopters, such as the Eurocopter EC135 and Sikorsky S-76, as shown in figure 1 below. These helicopters have improved weather capabilities and are better equipped to provide specialized medical care.

**Figure 1. Examples of Variations in Today's HEMS Helicopters**

Bell 206	Eurocopter EC135	Sikorsky S-76
		
<p><b>Cost: \$800k - \$3 million</b></p> <ul style="list-style-type: none"> <li>• Single engine</li> <li>• Single pilot only</li> <li>• Limited weather capability</li> <li>• Limited weight carriage for medical equipment, fuel</li> </ul>	<p><b>Cost: \$4-6 million</b></p> <ul style="list-style-type: none"> <li>• Twin engine</li> <li>• 2 pilot capability</li> <li>• Instrument weather capability</li> <li>• Autopilot</li> <li>• Longer range</li> <li>• Higher critical care capability (e.g. balloon pumps, ventilation)</li> </ul>	<p><b>Cost: \$7-12 million</b></p> <ul style="list-style-type: none"> <li>• Twin engine</li> <li>• 2 pilot capability</li> <li>• Instrument weather capability</li> <li>• Autopilot</li> <li>• Greatest distance capability</li> <li>• Specialty transport capability (specialized pediatric)</li> </ul>

Source: NTSB







While HEMS operations increased over time, so did HEMS accidents. In 2006, NTSB issued a report detailing HEMS safety issues and has issued over 50 recommendations to FAA and the industry. NTSB again emphasized the need

to enhance safety in the HEMS industry by adding HEMS safety to its 2008 “Most Wanted” list of improvements. Despite NTSB, FAA, and industry efforts, HEMS accidents with similar causes continue to occur each year. (A detailed list of FAA actions taken to reduce accidents in the HEMS industry can be found in exhibit C.)

## FAA HAS PARTIALLY MET ITS FMRA HEMS REQUIREMENTS

FAA met or partially met three of the six FMRA requirements related to HEMS safety. However, FAA has not completed the remaining three requirements, which involve data gathering, storing and reporting efforts (see table 1). Ultimately, continued delays in meeting statutory deadlines could impede the success of FAA and HEMS industry safety initiatives.

**Table 1. FAA FMRA Mandate Completion Status**

Section	Description	Deadline	Progress	Status	Comment
318	FAA shall carry out a study on the feasibility of requiring HEMS pilots to use night vision goggles during nighttime operations.	2/14/2013		Complete/Met Deadline	FAA submitted a report to Congress on November 16, 2012 reporting the results of its Night Vision Goggle study.
306	FAA shall issue a HEMS final rule	6/1/2012		Complete/Missed Deadline	FAA issued the HEMS Final Rule on February 21, 2014, with most provisions not effective until April 22, 2015 or later.
306	FAA must initiate a subsequent rulemaking within 180 days of issuing a Final Rule	8/20/2014		Complete/Not Yet Implemented	FAA Rulemaking Committee accepted proposed rulemaking on July 29, 2014; Final Rule has not yet been issued.
306	FAA shall require part 135 HEMS operators to submit an annual operational report	2/14/2013 (and annually thereafter)		Incomplete/Missed Deadline	FAA proposed a new data collection method in the Federal Register in July 2014; Agency plans to require data collection through revision of HEMS A021 Operations Specification; Collection to start in 2015.
306	FAA shall develop a method to collect, store and protect the data collected under subsection (a).	8/12/2012		Incomplete/Missed Deadline	FAA has developed a report operators will use to submit their data, but has not directed operators to start reporting the data; FAA is finalizing plans to store and protect the data it intends to collect.
306	FAA shall submit a report to Congress containing a summary of the data collected under subsection (a).	2/14/2014 (and annually thereafter)		Incomplete/Missed Deadline	FAA determined that since no data had been collected when report was due, that no report would be rendered to Congress. FAA projects first report to Congress in 2016 after end of first annual reporting period.

Source: OIG analysis of FAA’s FMRA-mandated actions

## FAA Met the Timelines for Two FMRA Requirements

FAA met the requirement to study the feasibility of requiring helicopter pilots to use night vision goggles during nighttime air ambulance operations and report the results of the study to Congress within 1 year of the Act’s enactment. FAA established an Aviation Rulemaking Committee (ARC) in October 2012 to conduct the study required by Congress and submitted its report to Congress on

November 16, 2012. Ultimately, the ARC did not recommend a rulemaking requiring HEMS pilots to use night vision goggles.

FAA also met the August 2014 deadline to initiate a second HEMS rule. This rulemaking is expected to address pilot training standards and flight crew and medical personnel safety equipment use (e.g., use of shoulder harnesses, helmets, seatbelts, and fire resistant clothing to enhance crash survivability). FAA's Rulemaking Council accepted the rulemaking action plan in July 2014, which is the first step in developing a proposed rule. As such, FAA asserts that it met the FMRA requirement to "initiate" the new rule. However, FAA has not yet issued the Notice of Proposed Rulemaking so the industry is not yet aware of what provisions the rule will contain or when it will be implemented.

### **FAA Partially Met One FMRA Requirement but Missed the Deadline**

In February 2014, FAA met the FMRA requirement to issue a HEMS safety rule mandating improved HEMS operational procedures. The new rule requires operations with medical personnel on board to be conducted under Part 135 operating rules, rather than the less stringent Part 91 rules. The new rule also requires the use of additional equipment, such as terrain avoidance systems and radio altimeters (used to increase pilot awareness of their proximity to the ground). These changes in HEMS operations could improve the safety of the crew and passengers onboard air ambulances. While FAA missed the FMRA deadline of June 2012 by almost 2 years due to the length of time it took to address industry comments and complete multiple cost-benefit analyses, the rule did ultimately address all of the provisions required by Congress.

### **FAA Has Not Met Three FMRA Requirements Involving Data Collection**

FAA did not meet three FMRA requirements to develop, by June 2012, a method to collect, store, and protect HEMS operational flight data. FAA could use these data to monitor changes in annual HEMS operations, gain an understanding of new technologies used by HEMS operators, and validate the effectiveness of the Agency's safety efforts.

- In July 2014, 17 months after the deadline, FAA published a plan to collect HEMS data by requiring operators to submit information, such as the number of HEMS flights, hours flown under instrument flight conditions, and the time of day of each HEMS flight. According to FAA, it did not meet the deadline to begin gathering HEMS flight information because of extensive Paperwork Reduction Act requirements. FAA adjusted its original data gathering proposal to address industry concerns; however, the Agency has yet to begin collecting the data.

- FAA has not yet mandated HEMS operators to submit annual flight operations reports, though the Act required operators to do so by February 2013. According to FAA, HEMS operators will be directed to start gathering data in second quarter fiscal 2015 and report it to FAA at the end of the calendar year.
- Finally, FAA has not met the requirement to report its data gathering results annually to Congress starting in February 2014. FAA has yet to require this information from HEMS operators so the Agency has not yet reported any results to Congress. FAA stated that it intends to submit the first report to Congress in 2016.

## **FAA HAS NOT SET GOALS, GATHERED SUFFICIENT DATA, OR ADJUSTED ITS OVERSIGHT PROGRAMS TO REDUCE HEMS ACCIDENTS**

FAA combines its HEMS accident data with its general aviation statistics and therefore cannot assess the effectiveness of its HEMS accident reduction efforts. This, coupled with a lack of comprehensive industry data that could provide insight on the number and location of HEMS operations, impedes FAA's decision making and ability to effectively target resources for HEMS safety initiatives. FAA also has not adapted its oversight structure or hiring and training policies to coincide with the growth and complexity of the HEMS industry.

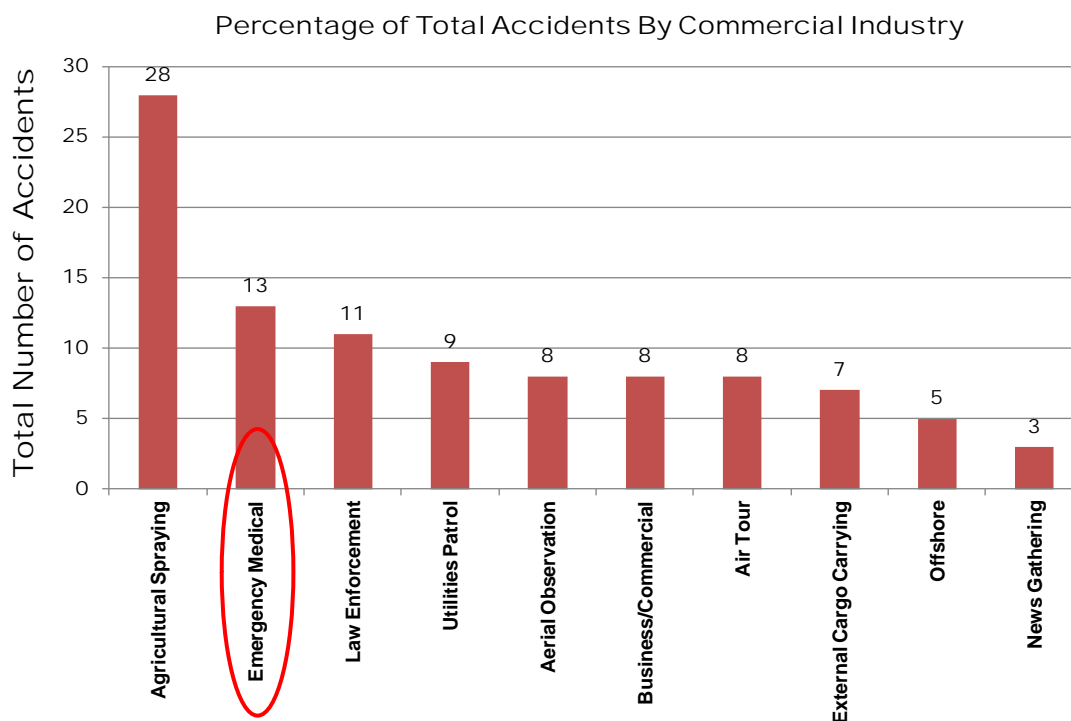
### **FAA Lacks HEMS Accident Reduction Goals and Comprehensive Data To Guide Safety Efforts and Measure Success**

FAA does not specify HEMS accident reduction goals as part of its oversight efforts. FAA believes that broader general aviation and generic helicopter safety goals<sup>3</sup> will increase safety for not only HEMS operators, but all helicopter operators. However, as shown in figure 2, HEMS operations account for the second highest commercial accident category tracked by FAA.

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<sup>3</sup> FAA, as member of the International Helicopter Support Team, has adopted the goal of reducing worldwide helicopter accidents by 80 percent by 2016.

**Figure 2. Fiscal Year 2014 Percentage of Accidents by Industry**



Source: OIG analysis of FAA Rotorcraft Directorate Monthly Accident Briefing July 2014 (excluding non-commercial categories)

Without HEMS-specific accident reduction goals, FAA may be overlooking key risks expressly associated with HEMS operations. For example, HEMS operators fly under unique conditions, not characterized by typical general aviation operations. HEMS operators typically fly in high-stress situations to transport critical care patients quickly, often landing on uneven terrain near unmarked obstacles. They also operate in areas where accurate weather reporting capabilities may not exist. NTSB has recognized the need for HEMS safety enhancements due to their unique operating environments and stressful flying conditions. Yet, focusing solely on broad-based general aviation goals will not produce the level of change NTSB envisioned through its numerous safety recommendations.

FAA currently does not have comprehensive data to conduct industry trend analysis or develop HEMS-specific accident reduction goals. FAA currently collects some data on HEMS operators,<sup>4</sup> but it is voluntarily submitted by operators when FAA randomly selects one of their aircraft to review. Therefore, these data are not representative of the entire HEMS industry and may not provide the Agency with key operator information, such as increased concentration of

<sup>4</sup> The FAA uses its General Aviation and Part 135 Activity Survey to provide the Agency with information on general aviation and on-demand Part 135 aircraft activity including evaluating the impact of safety initiatives and regulatory changes.



operators within certain congested metropolitan areas. According to industry experts, without comprehensive industry data, it would be impossible to calculate annual HEMS accident rates or to draw any meaningful conclusions or comparison. As a result, FAA cannot assess whether the accident rate is increasing or decreasing each year, develop HEMS-specific accident reduction efforts, or determine if its previous safety efforts have been successful.

### **FAA Has Not Adapted Its Oversight Approach To Coincide With Changes in the HEMS Industry**

FAA has not adapted its oversight structure and risk assessment processes to match the growth and complexity of the HEMS industry, making it difficult to ensure effective, consistent risk identification. FAA uses distinctly different surveillance processes for large (those with 25 or more helicopters) and small HEMS operators—even though these operators face nearly identical operating environments and risks (see figure 3). For larger operators, FAA has assigned dedicated teams of inspectors who have more collective experience to draw from to oversee larger operators, while FAA inspectors who oversee smaller operators typically do not have the same level of helicopter experience and must divide their surveillance time between many other operators. For example, general aviation inspectors conduct oversight of repair stations, corporate jets, and training centers beyond their HEMS surveillance responsibilities.

**Figure 3. Comparison of FAA Oversight Offices for HEMS Operators**

<b>FAA Oversight Office for Large Operators</b>	<b>FAA Oversight Office for Small Operators</b>
<ul style="list-style-type: none"> <li>• Operators have 25 or more helicopters</li> </ul>	<ul style="list-style-type: none"> <li>• Operators have 24 or fewer helicopters</li> </ul>
<ul style="list-style-type: none"> <li>• Oversight team focused on only one operator</li> </ul>	<ul style="list-style-type: none"> <li>• Oversight team focused on multiple operators</li> </ul>
<ul style="list-style-type: none"> <li>• Use data and risk-based collaborative process to develop solutions to identified risks</li> </ul>	<ul style="list-style-type: none"> <li>• Use data and subjective inspector inputs to target inspections on reducing risks</li> </ul>
<ul style="list-style-type: none"> <li>• Inspections are targeted to mitigate each risk area identified</li> </ul>	<ul style="list-style-type: none"> <li>• Inspections are prioritized based on overall risk score compared to other operators overseen</li> </ul>
<ul style="list-style-type: none"> <li>• Uses its own inspectors to cover remote bases</li> </ul>	<ul style="list-style-type: none"> <li>• Uses support from inspectors at other offices for remote support</li> </ul>

Source: OIG analysis of FAA programs

FAA also uses a less precise and less collaborative risk assessment process for small HEMS operators than it does for larger operators. In 2006 FAA began using

the Surveillance Enhancement Package (SEP) risk assessment tool<sup>5</sup> for large HEMS operators because it determined this program was more effective than traditional, event-based surveillance. Through this program, all inspectors assigned to the certificate collaborate to identify hazards that may affect the operator. Each identified hazard is analyzed separately to determine how likely it would be to occur, how catastrophic the occurrence would be, and how to mitigate the risk.

Conversely, inspectors overseeing smaller HEMS operators use a process called the Surveillance Priority Index (SPI), which is less robust than the system used for larger operators because it does not provide the capability to identify unique hazards that affect an operator, such as local seasonal weather impacts or multiple helicopter operators within the same area creating a higher mid-air collision risk (see figure 4).

**Figure 4. Comparison of Oversight Models for Large and Small HEMS Operators**

Program Characteristic	SEP	SPI
Identifies hazards unique to each operator	✓	
Promotes collaboration between Principal Inspectors to analyze and mitigate hazards	✓	
Directed for use by FAA for largest HEMS operators	✓	
Risk score only serves as a means of comparison between two different operators		✓
Risk score prioritizes operators for surveillance		✓
Program questions do not take into account whether a change in the company or inspector has a positive or negative impact on risk (so even positive change can increase the risk “score”)		✓

Source: OIG analysis of FAA programs

FAA recognizes the need to enhance the oversight structure for smaller HEMS operators but is reluctant to make significant changes to the program since it began

<sup>5</sup> FAA’s Surveillance and Evaluation Program (SEP) assists inspectors in identifying areas of risk *within* the certificate holder’s operation and targeting surveillance activities to identified risk areas.

using the Safety Assurance System (SAS)<sup>6</sup> to oversee these operators in 2015. The new oversight system does include risk-based decision making, but the success of this system is yet to be determined. Additionally, not all oversight offices are slated to be trained on this new system until at least the end of 2015, leaving smaller HEMS operators under the current, less robust risk identification process for at least another year.

### **FAA Has Not Modified Its Inspector Hiring, Assignment Policies, and Workload Distribution for HEMS Inspectors**

FAA hires inspectors rated in commercial airplanes even though some are assigned to oversee helicopter operators. FAA's inspector qualification standards require experience with single and multiple engine airplanes, not helicopters.<sup>7</sup> However, this focus on larger aircraft experience has left shortages of helicopter inspectors. For example, we identified a shortage of helicopter inspectors in four of the seven smaller HEMS oversight offices we visited. Because of the unique operating characteristics of HEMS, inspectors with helicopter experience may be better suited to identify HEMS-specific risks.

As a result of the shortage of inspectors with helicopter experience, small oversight offices must often rely on voluntary support from other offices to accomplish their mission. For example, an inspector responsible for oversight of a HEMS operator acquired 17,000 hours of airplane flying time but only 260 hours in helicopters. This inspector was not qualified to conduct helicopter pilot flight evaluations because he had not completed FAA's mandatory initial helicopter training course and was not qualified to conduct night vision goggle inspections, even though his operator uses this technology. Consequently, the inspector had to rely on other inspectors with helicopter experience to fulfill this responsibility.

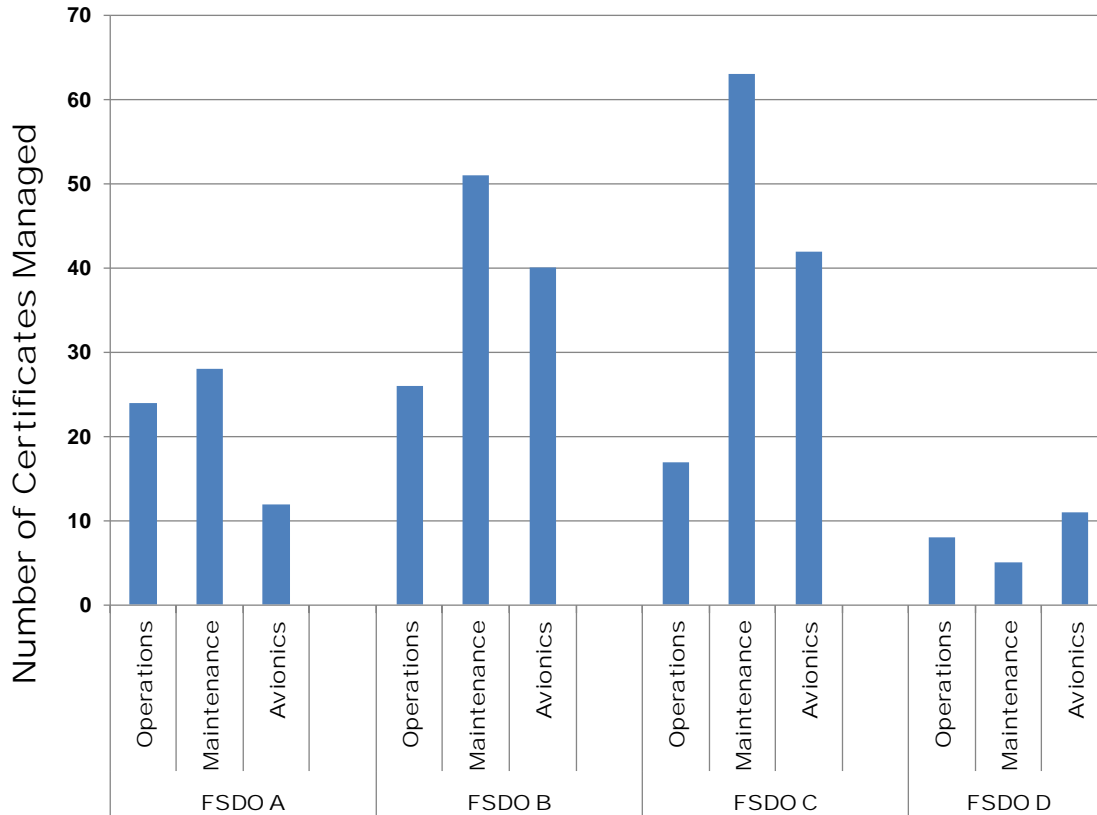
In addition to a shortage of inspectors with helicopter experience, FAA is currently facing widespread inspector vacancies. We identified vacancies in over 50 percent of the smaller oversight offices we visited. The Chairman of FAA's Human Capital Committee confirmed that there is a widespread shortage of inspectors, particularly operations inspectors, but no one in his office knows how many positions are vacant at either a national or regional level. Further, inspectors stated that they experience a heavy workload because they have to assume oversight responsibilities for a large number of certificates as they wait for FAA to fill these vacancies (see figure 5).

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<sup>6</sup> FAA's Safety Assurance System (SAS) is a comprehensive system safety approach to the oversight of aviation entities with the goal of improving safety beyond current levels by enhancing FAA's risk-based, data-supported approach. SAS will be FAA's oversight model beginning in 2015.

<sup>7</sup> FAA uses Office of Personnel Management series 1825 Aviation Safety Inspector qualifications in its job announcements for all general aviation inspectors. These qualifications require fixed wing experience, and although FAA has developed "helicopter only" qualifications, it does not always include those standards in its announcements for jobs with helicopter responsibilities.

**Figure 5. Number of Certificates Managed Within Sampled FAA Offices**



Source: OIG analysis

The volume of work required of FAA inspectors overseeing numerous types of certificates hinders their ability to focus oversight on a particular certificate, such as HEMS operators. Inspectors providing oversight of the smaller HEMS operators that we visited conducted, on average, as few as 2.3 inspections per aircraft per year (over a 3-year period, from 2011 to 2013). Conversely, over the same time period, inspectors for the large operators we reviewed conducted an average of between 5.4 and 7.0 inspections per aircraft per year. Lower inspection averages for smaller operators can be due to several factors, including inspector shortages due to personnel turnover and the amount of time needed to accomplish other duties unrelated to certificate oversight. Because of the time constraints, inspectors may focus solely on meeting FAA's minimum inspection requirements.

### **FAA Has Not Adapted Its Training Policies for HEMS Inspectors**

FAA has not updated its training programs to ensure inspectors in both large and small operator's oversight offices maintain expertise in current HEMS aircraft and technology. Without the proper training, inspectors cannot conduct flight

proficiency evaluations<sup>8</sup> on the type or model of aircraft they oversee. Additionally, FAA does not provide recurrent training for inspectors on helicopters with advanced technology, such as automatic piloting systems. Inspectors formally expressed these concerns to FAA's Air Transportation Division stating that FAA's helicopter recurrent training does not provide the training in sophisticated multi-engine helicopters with glass cockpits, autopilots and computer controlled engines currently used in the HEMS industry. Rather, FAA's helicopter qualification and recurrent training for all helicopter inspectors is conducted in older helicopters<sup>9</sup> that do not contain the advanced equipment now used by many HEMS operators as illustrated in figure 6.

**Figure 6. Helicopter Cockpit Complexity Comparison**



Source: Aviation Business Index

Inspectors also stated that FAA has a restriction that prohibits them from attending more than one flight course per year per category of aircraft (such as helicopters), which hinders their ability to obtain the training they need. According to FAA's Flight Program Division, while it was not possible to train inspectors on every type of helicopter they might be required to oversee, FAA was in the process of procuring advanced stationary training cockpits for its formal helicopter flight courses. However, at the time of our review, inspectors were not yet using these training tools. Tasking inspectors with oversight responsibility for technologically advanced helicopter operations without providing adequate training on these helicopters impedes an inspector's ability to provide effective oversight.

<sup>8</sup> FAA's policy is that pilots who fly aircraft weighing 12,500 pounds and under do not require a "type rating"—meaning that a pilot may operate any type of helicopter having a generic rotorcraft pilot certificate even though there are significant differences between older, legacy helicopters and the newest, most advanced rotorcraft being used in the HEMS industry today.

<sup>9</sup> FAA's Initial General Aviation Indoctrination Training is conducted in single engine helicopters. FAA's recurrent flight training course does not include training in any multi-engine aircraft.

## **CONCLUSION**

HEMS operators play a critical role in the aviation industry by providing reliable and efficient transportation of patients to critical medical care facilities, often under challenging circumstances and environments. In the 2012 FMRA, Congress provided an important roadmap to enhance the safety of the HEMS industry, and FAA's recently issued HEMS Rule is a good first step toward realization of FMRA goals. However, continued delays in finalizing the remaining mandates affect FAA's ability to focus its accident reduction efforts and limit the effectiveness of safety initiatives. Additionally, until FAA updates key oversight policies and obtains meaningful safety data to analyze for trends, it will not be well positioned to effectively oversee a rapidly expanding HEMS industry.

## **RECOMMENDATIONS**

To enhance the effectiveness of FAA's efforts to reduce HEMS accidents, we recommend that FAA:

1. Develop helicopter-specific accident reduction goals and communicate them in FAA planning documents and business plans.
2. Expand the criteria for dedicated certificate management teams and use of SEP for HEMS operators with 20 to 24 aircraft.
3. Conduct a workforce assessment that includes a determination of whether:
  - a. inspectors are at the right locations to provide adequate surveillance of the growing number of HEMS certificates,
  - b. it has the correct number of inspectors with the required specialized knowledge, and
  - c. district office inspector workload is adequately measured in complexity ratings and balanced between district offices.
4. Review and revise inspector hiring and training policies so that they provide sufficient flight and aircraft systems experience and training needed for inspectors to successfully accomplish their surveillance duties.
5. Develop and implement a plan to provide inspectors access to new technology training opportunities and leverage both airplane and helicopter training if needed in their surveillance requirements.

## **AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE**

We provided a draft of this report to FAA on February 23, 2015, and received an interim response on March 19, 2015, which is included as an appendix to this report. In its response, FAA stated that it concurred with two of our five recommendations and partially concurred with three recommendations.

For recommendation 1, FAA partially concurred and stated that it reviewed helicopter-specific accident reduction goals and determined that the root causes of HEMS accidents apply to a broader spectrum of the helicopter community. FAA stated that Agency resources should be deployed across the commercial helicopter community proportionate to risk and not disproportionately focused upon HEMS operators. We acknowledge that focusing on broader helicopter accident reduction goals might ultimately lead to an improvement in HEMS safety; however, HEMS flights are unique from other commercial operations in that the urgency of patient transport often creates pressures to conduct these operations quickly in various environmental conditions, such as in inclement weather, at night, or at unfamiliar landing sites. Further, HEMS accidents continue to occur at a troubling rate, as evidenced by two recent fatal accidents. Therefore, we continue to believe that FAA emphasis on the specific risks associated with HEMS operations is warranted, and we request that FAA reconsider its response to this recommendation.

For recommendation 2, FAA partially concurred, stating that it considered the use of dedicated certificate management teams (CMT) but determined that the risk assessment tools in its new oversight system, SAS, currently being deployed, would more effectively address our recommendation. While we are encouraged that SAS may have effective risk assessment tools, this oversight system is not yet implemented at HEMS operators. Because HEMS accidents continue to occur and are ranked second in commercial helicopter accident rates, FAA should consider an interim risk assessment strategy for these operators. Additionally, FAA acknowledged during meetings with us that the Agency has had success in using dedicated CMTs for HEMS operators with 25 or more aircraft, so it would seem logical to conclude that dedicated CMTs for companies operating 20 to 24 aircraft would also enhance HEMS safety. Therefore, we request that FAA reconsider its response to this recommendation.

For recommendation 3, FAA partially concurred, stating that it continues to evaluate its inspector resources so that they are sufficiently focused upon the surveillance of operators with the highest risk profiles. However, FAA did not specify whether it intends to conduct a workforce assessment including the location, number, or workload of inspectors overseeing HEMS operators. Because

FAA's response did not provide sufficient detailed information on how it would address this recommendation, we request that FAA reconsider its response to this recommendation.

FAA concurred with recommendations 4 and 5 as written but did not provide specific information on its planned actions or completion timeframes. Therefore, we consider these recommendations open and unresolved.

FAA stated that it plans to provide a detailed response to each recommendation after the publication of our final report.

## **ACTIONS REQUIRED**

We acknowledge the comments provided by FAA on actions it is taking to address the concerns highlighted in this report; however we did not find the response sufficient to resolve the recommendations. Therefore, we consider all five recommendations open and unresolved pending receipt and review of FAA's detailed planned actions and completion timeframes. We also request that the Agency reconsider its position for recommendations 1 through 3 and provide more information on its proposed actions for recommendations 4 and 5. Please provide a revised response within 30 days of the date of this report in accordance with DOT Order 8000.1C.

We appreciate the courtesies and cooperation of FAA representatives during this audit. If you have any questions concerning this report, please call me at (202) 366-0500 or Tina Nysted, Program Director, at (404) 562-3770.

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cc: DOT Audit Liaison, M-1  
FAA Audit Liaison, AAE-100



## **EXHIBIT A. SCOPE AND METHODOLOGY**

We conducted this review between November 2013 and February 2015 in accordance with generally accepted Government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Our audit objectives were to evaluate (1) FAA's progress in meeting requirements for HEMS operations cited in the 2012 FMRA and (2) whether FAA has implemented other actions, including oversight enhancements, to reduce the HEMS accident rate.

To assess FAA's progress in meeting requirements for HEMS operations cited in the 2012 FMRA, we reviewed FAA's program documentation and interviewed FAA headquarters representatives responsible for HEMS program oversight to obtain information and documentation on which FMRA requirements had been met and how. We also interviewed HEMS and helicopter safety industry groups to determine whether FAA's actions appropriately responded to the requirements in the 2012 FMRA.

To assess whether FAA has implemented other actions, including oversight enhancements, to reduce the HEMS accident rate, we interviewed FAA headquarters personnel responsible for HEMS safety and inspector training programs, met with FAA field inspectors in nine FSDOs/CMUs<sup>10</sup> to understand how they provide surveillance for HEMS operators and what challenges inspectors and operators faced in reducing HEMS accidents, and met with management officials and pilots from nine HEMS operators to understand industry challenges. We also interviewed representatives of five HEMS or helicopter industry groups to learn what actions they and FAA had undertaken to reduce the HEMS accident rate and to determine if further actions needed to be taken by FAA or industry. Lastly, we also spoke to representatives of NTSB to determine which HEMS recommendations had been issued to FAA and, of those, which recommendations had yet to be closed.

There were no FAA internal controls tested during the course of this audit.

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<sup>10</sup> To select the HEMS operators and FSDO/CMUs we reviewed, we divided the universe of 58 private HEMS operators into 3 groups (large, medium and small) by number of aircraft and selected a stratified random sample of 9 out of 58 HEMS operators, and the 7 FSDOs and 2 CMUs that provided surveillance for these operators. Our sample represented HEMS operators and district offices from different regions of the United States to capture geographic concerns.

## **EXHIBIT B. ORGANIZATIONS VISITED OR CONTACTED**

### **Federal Aviation Administration (FAA) Headquarters**

Flight Standards, Air Transportation Division	Washington, DC
General Aviation and Commercial Division	Washington, DC
Safety Management System Program Office	Washington, DC
Safety Analysis & Evaluation Branch	Kansas City, MO
Flight Standards National Field Office	Dulles, VA
Flight Standards Training Division	Herndon, VA
Office of Accident Investigation and Prevention	Washington, DC
FAA Office of Rulemaking	Washington, DC
Office of Audit and Evaluation	Washington, DC
FAA Human Capital Committee	Renton, WA
AFS Flight Program Division	Fort Worth, TX

### **FAA Flight Standards District Offices (FSDO)**

Rochester FSDO	Rochester, NY
Allegheny FSDO	Pittsburgh, PA
Memphis FSDO	Memphis, TN
South Florida FSDO	Miramar, FL
Sacramento FSDO	Sacramento, CA
Grand Rapids FSDO	Grand Rapids, MI
Houston FSDO	Houston, TX

### **FAA Certificate Management Units (CMU)**

Air Methods CMU	Denver, CO
AirEvac CMU	St. Louis, MO

### **Helicopter Emergency Medical Services (HEMS) Operators**

Air Methods Corporation (Large Operator)	Englewood, CO
Air Evac Lifeteam (Large Operator)	O'Fallon, MO
STAT MedEvac (Medium Operator)	West Mifflin, PA
California Shock Trauma Air Rescue (CALSTAR) (Medium Operator)	McClellan, CA
Memphis Medical Center Air Ambulance Service, Inc. (Hospital Wing) (Small Operator)	Memphis, TN
Memorial Hermann Life Flight (Small Operator)	Houston, TX
Trauma Star Air Ambulance (Small Operator)	Marathon, FL
Mercy Flight of Western New York (Small Operator)	Buffalo, NY
AeroMed Spectrum Health (Small Operator)	Grand Rapids, MI

### **Exhibit B. Organizations Visited or Contacted**

**Industry Groups**

Air Medical Operators Association	Washington, DC
Flight Safety Foundation	Alexandria, VA
Helicopter Association International	Alexandria, VA
National Emergency Medical Services (EMS) Pilots Association	Fort Wayne, IN
Association of Air Medical Services (AAMS)	Alexandria, VA

**Other Organizations**

National Transportation Safety Board	Washington, DC
Professional Aviation Safety Specialists	Washington, DC Scottsdale, AZ

## EXHIBIT C. SIGNIFICANT FAA ACTIONS TO REDUCE HEMS ACCIDENTS

Year	Action
2004	HEMS Task Force Established to Guide Government and Industry Safety Efforts
2005	Hosted HEMS Industry Safety Meeting
2005	Published Notice to Inspectors on Reviewing Operator Decision-Making Skills
2005	Issued Guidance on Promoting Risk Assessment Programs to Operators
2005	Issued Guidance on Air Medical Resource Management (AMRM) Training
2005	Issued Revised Standards for Special Emphasis Inspection Program
2005	Established new Commuter, On Demand, and Training Center Branch
2005	Formed the International Helicopter Safety Team (IHST) with Industry
2006	Issued Loss of Control (LOC) and Controlled Flight Into Terrain (CFIT) Inspector Handbook
2006	Issued Revised Guidance to Part 142 Training Center Inspectors on Changes to HEMS Standards
2006	RTCA Established, at FAA's Request, a Committee to Develop HTAWS Standards
2006	Revised the Aeronautical Information Manual to Provide Guidance on Night VFR Operations
2006	Hosted a Weather Summit to Identify HEMS-specific Weather Product and Services Issues
2008	Issued Advisory Circular on Operational Control Centers
2008	Hosted FAA/Association of Air Medical Service (AAMS) Safety Meeting
2009	Issued Notice to Determine HEMS Operator Acceptance of FAA-Recommended Best Practices
2009	Established a Task Group to Review Surveillance of Large HEMS Operators
2014	Issued HEMS Final Rule

**EXHIBIT D. MAJOR CONTRIBUTORS TO THIS REPORT**

<b><u>Name</u></b>	<b><u>Title</u></b>
Tina Nysted	Program Director
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Ruth Foyere	Senior Analyst
Manuel Ramos	Auditor
Andrea Nossaman	Writer/Editor
Petra Swartzlander	Senior Statistician

## APPENDIX. AGENCY COMMENTS



# Federal Aviation Administration

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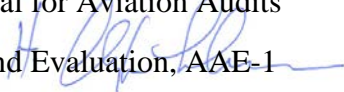


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## Memorandum

Date: March 19, 2015

To: Matthew E. Hampton, Assistant Inspector General for Aviation Audits

From: H. Clayton Foushee, Director, Office of Audit and Evaluation, AAE-1 

Subject: Federal Aviation Administration's (FAA) Response to Office of Inspector General (OIG) Draft Report: FAA'S Opportunities to Enhance HEMS (Helicopter Emergency Medical Services) Safety

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The FAA achieved a major milestone by issuing a final rule in February 2014 that is expected to significantly enhance the safety of the Helicopter Air Ambulance (HAA) industry. This rulemaking will go into effect in April 2015. The FAA is currently developing a rulemaking proposal to respond to the remaining statutory mandate to address pilot training enhancements and other factors not included in the first rulemaking project. The initial and follow-on rulemaking will provide the foundation for a safer industry. In addition, the FAA is transitioning to a more risk-based oversight system for HAA operators, which will allow for better FAA safety inspector resource allocation.

The FAA has reviewed the draft report and offers the following comments in response to the OIG's findings and recommendations:

- The FAA continues to work within the parameters set forth in the FAA Modernization and Reform Act of 2012 (P.L. 112-95), as well as with the affected HAA stakeholders to enhance the safety of the industry.
- The FAA continues to work closely with stakeholders to develop a standardized report that HAA operators will use to submit operating data and is currently working to finalize industry concerns on the storage and security of the required data. Once this system is implemented, the FAA will collect and analyze those data, and provide an annual report to Congress as required by P.L. 112-95.
- The FAA is currently transitioning HEMS operators from a mandatory, time-based inspection regimen to a risk-driven process. This process, the Safety Assurance System (SAS), uses data-driven risk assessments, which allow for targeted surveillance based on identified, significant risk factors.

- The FAA has been working to develop enhanced experience requirements and hiring strategies to ensure that the most qualified Aviation Safety Inspectors (ASI) are placed in the areas where oversight is most needed. In addition, the FAA intends to review the ASI rotorcraft training curriculum.

The FAA concurs with recommendations 4 and 5, as written, and partially concurs with recommendations 1-3. With regard to the latter, the Agency has reviewed helicopter-specific accident reduction goals and has determined that the root causes of accidents in HAA apply to a broader spectrum of the rotorcraft community. The FAA's position is that agency resources should be deployed across the commercial rotorcraft operational community proportionate to risk and not disproportionately focused upon HAA operators.

In response to the recommendations, the Agency also considered the use of dedicated certificate management teams (CMTs), but has determined that the risk assessment tools in the SAS, currently being deployed within the field offices, will more effectively address the OIG's recommendations on inspector resource allocation. The structure of the HAA industry is continually changing, and the use of dedicated CMTs in this case would compromise the Agency's ability to rapidly respond to industry reconfiguration. The FAA continues to evaluate inspector resources so that they are sufficiently focused upon the surveillance of operators with the highest risk profiles.

The agency will provide a detailed response to each recommendation after the publication of the final report. Because rulemaking is a lengthy process due to the statutory requirements, the Agency plans to implement those recommendations associated with rule changes by December 30, 2018. However, inspector resource allocation based upon risk-based profiles and other safety enhancements are already underway. The Agency will provide the OIG with updates on the non-regulations related recommendations by November 30, 2015.

We appreciate this opportunity to offer additional perspective on the OIG draft report. Please contact H. Clayton Foushee at (202) 267-9000 if you have any questions or require additional information about these comments.