Regulating Safety - Can the National Transportation Safety Board and the Federal Aviation Administration Improve the Safety of EMS Flights

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REGULATING SAFETY—CAN THE NATIONAL TRANSPORTATION SAFETY BOARD AND THE FEDERAL AVIATION ADMINISTRATION IMPROVE THE SAFETY OF EMS FLIGHTS?

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A RECENT RASH of accidents involving Emergency Medical Service (EMS) flights is raising eyebrows.1 EMS flights, most commonly Helicopter Emergency Medical Service (HEMS) flights, provide an important service in transporting patients to emergency care facilities,2 and are often used in a variety of instances where other methods of EMS transportation are impractical, if not impossible. Fueled by rapid growth in the first four years of this century, today there are approximately 840 EMS helicopters in operation nationwide.3 During this period of rapid growth, the number of accidents almost doubled from the total in the mid-1990s.4 Though EMS flights are inher-

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1 See National Transportation Safety Board, Most Wanted Transportation Safety Improvements: Aviation, Improve the Safety of Emergency Medical Service Flights (2008), available at http://www.ntsb.gov/Recs/mostwanted/aviation_improvesafety_emshelicopters.html. Between December 2007 and October 2008, nine EMS helicopter accidents occurred in which thirty-five people were killed. Id.


4 Id.
ently dangerous, the recent wave of crashes begs a few questions. Who regulates the safety standards of EMS flights? How, and under what circumstances, are EMS flights dispatched? Are EMS flights necessary in all instances in which they are used? What laws or administrative procedures determine when an EMS flight may or may not be used? Who has the authority to determine whether such flights are necessary? Are EMS flights used in situations where EMS ground transportation is a more viable option? This comment will review a brief history of EMS flights, recent accident statistics involving these flights, the current federal administrative procedures EMS aviation companies must follow, and changes to safety standards being proposed by the various federal agencies tasked with regulating such flights.

Ultimately, this comment will show that most of the enforcement authority surrounding the safety and regulatory oversight of EMS flights lies with the Federal Aviation Administration (FAA). The FAA can and should place requirements on HEMS operators that will improve safety, reduce the number of accidents, and improve the operating efficiency of these flights. EMS flight operators provide a valuable, often life-saving service. Implementing the recommendations outlined in the National Transportation Safety Board’s (NTSB) Most Wanted List, released in October 2008 and discussed herein, is the surest way to make an immediate impact on the safety of these EMS flights.

I. OVERVIEW OF EMS FLIGHTS

A. Operating Requirements

EMS flights primarily operate under one of two parts of Title 14 of the Code of Federal Regulations, Part 91 or Part 135. Part 91 encompasses general rules for operating an aircraft within the United States or within three nautical miles of the coast. When EMS flights are conducted without patients on board, the flight operator is permitted to operate under Part 91, which is primarily for "private" operations. These so-called positioning flights are better described as the outbound leg of an EMS

5 NTSB Special Investigation Report, supra note 2, at vii.
7 See NTSB, Most Wanted Transportation Safety Improvements, supra note 1; see also infra Part II.A.2.
8 NTSB Special Investigation Report, supra note 2, at 1.
10 NTSB Special Investigation Report, supra note 2, at 1.
flight: when an EMS flight is in route to pick up a patient. Alternatively, commuter and on-demand operations, basically commercial "for-hire" flights, are required to follow the more stringent rules of Part 135. When passengers other than crew members, namely patients, are on board an EMS flight it falls under Part 135. Many of the recent accidents that have taken place occurred while the flights were being operated under Part 91, and though no patients were aboard these flights, medical crew members were.

One distinct difference in the requirements within Part 91 and Part 135 deals with weather and visibility minimums. Under the basic visual flight rules (VFR) of Part 91, helicopters must simply remain "clear of clouds" when operating at an altitude of less than 1200 feet. Part 135 VFR is more stringent, requiring one-half mile visibility during the day and one mile visibility at night when flying a helicopter at altitudes below 1200 feet. These minimums can be even more stringent for certain EMS helicopter operations. Under Part 135, flights are also not permitted to operate under VFR unless the pilot "has visual surface reference or, at night, visual surface light reference, sufficient to safely control the helicopter."

Parts 91 and 135 also differ significantly regarding the requirements of crew rest. Part 135 requires that the crew "obtain adequate rest before conducting an EMS flight with a patient on board." Specifically, crew members are required to have between nine and eleven hours of rest in any twenty-four hour period. Further, under Part 135 maximum duty time is set at fourteen hours. In stark contrast, Part 91 has no duty time maximums. Moreover, a pilot can work the maximum duty hours under Part 135 and then proceed to fly the helicopter

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11 Id.
13 NTSB Special Investigation Report, supra note 2, at 1.
14 Id.
15 Id.
16 14 C.F.R. § 91.155(a) (2009); see also NTSB Special Investigation Report, supra note 2, at 1.
17 14 C.F.R. § 135.205(b) (2009).
18 NTSB Special Investigation Report, supra note 2, at 1.
20 NTSB Special Investigation Report, supra note 2, at 1–2.
21 See 14 C.F.R. § 135.265(b) (2009).
22 14 C.F.R. § 135.267(c) (2009); see also NTSB Special Investigation Report, supra note 2, at 2.
23 NTSB Special Investigation Report, supra note 2, at 2.
back to its departure base with no patient on board under Part 91, thereby escaping Part 135 duty requirements.24

B. ARE EMS FLIGHTS USED UNNECESSARILY?

EMS flights no doubt serve a valuable purpose in transporting trauma patients, the critically ill or sick, and those in rural areas in need of immediate or expedited care. But are EMS flights ever used when other, more viable forms of transportation would be a safer alternative, not to mention more practical? Some reports seem to suggest that the answer to this question is yes.25

Some emergency physicians feel that EMS flights put many patients at risk unnecessarily.26

'The majority of these patients could have gone by ground just as well at 10 percent the cost and more safely. . . . [S]udies have shown that patients do just as well when transported by ground ambulance[,]’ said Dr. Bryan Bledsoe, a clinical professor of emergency medicine at the University of Nevada School of Medicine who has been studying the use of medical helicopters for six years.27

Dr. Bledsoe argues that while EMS flights are important, their overuse has become unsafe.28 In his opinion, for-profit EMS flight companies are interested in making money, and hospitals use the helicopters as marketing tools.29 A formalized decision-making process and dispatch procedure would solve some of the perceived misuse of EMS flights and likely lead to a better evaluation process for deciding on how to transport a patient.30

When transporting a patient between hospitals, the referring physician typically decides on the method of transportation, though there are few professional standards on deploying EMS helicopters for non-trauma transfers.31 Dr. Bledsoe added that ‘[t]here is no evidence on the use of helicopters for interhospital transportation,’ though most EMS flights involve these

24 Id.
26 Id.
27 Id.
28 Id.
29 Id.
30 See infra Parts IV.B.–C.
31 See TradingMarkets.com, supra note 25.
types of transports. He argues that an "objective evidence-based" study is needed to assure that future flights are only used for patients who will benefit from this type of transportation.

Dr. Ira Blumen, medical director of the University of Chicago Aeromedical Network, believes the "[s]peed and better care are the major advantages over ground transport." Though the overuse of EMS helicopter flights is not surprising, Dr. Blumen adds that "it's difficult at times to try to second-guess the doctor at the bedside when he or she feels a patient needs to be transported by helicopter.'

Following the crash of a Maryland EMS helicopter in September 2008, questions were raised about the necessity of such flights.

The question of when helicopters are appropriate has gained increasing attention in the medical community, as the number of fatal medevac crashes surged. A review by The Baltimore Sun of crash records and other documents related to the 26 most recent fatal accidents in the United States found that at least eight involved patients who waited longer for a helicopter than a ground ambulance might have needed to drive them to a hospital. At least six involved patients discharged soon after a helicopter dropped them off at a hospital, or who survived a lengthy ambulance ride after the helicopter sent to get them went down.

The Maryland crash involved patients who were initially classified as being in a less serious and non-life threatening condition. Paramedics later determined the patients might have more serious injuries after surveying damage to the car they were traveling in. This situation underscores the need for a more formalized analysis and pre-flight planning procedure designed to prevent misuse of EMS flights along with accidents. Further, tapes of a conversation between the EMS helicopter pilot and the dispatcher reveal a rather candid conversation re-

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32 Id.  
33 Id.  
34 Id.  
35 Id.  
37 Id.  
38 Id.  
39 Id.  
40 See infra Parts IV.B–C.
garding EMS providers on the ground in Charles County and how they typically do not want "to drive to the hospital." In this case the drive would have been about thirty-two miles. The Charles County director of fire and rescue services rebutted the idea that ambulance crews in the county are reluctant to drive such a distance and pointed out that protocol gives discretion on what type of transportation to use to providers at the scene. Though officials say they were "disturbed" by the conversation between the pilot and dispatcher, they pointed out that statistically Charles County did not appear to excessively call for helicopter transport.

II. REGULATORY OVERSIGHT

A. NATIONAL TRANSPORTATION SAFETY BOARD

1. NTSB—Administrative Background

The National Transportation Safety Board (NTSB, Safety Board, or Board) is an independent agency within the federal government that investigates all civil aviation accidents in the United States. Additionally, to prevent future accidents, the NTSB issues safety recommendations. The five members of the bi-partisan Board are appointed by the President, confirmed by the Senate, and serve a five-year term. At least three members of the Board must be appointed on factors of technical and professional qualifications, which focus on various aspects of transportation safety and accident reconstruction. The NTSB may submit a recommendation regarding transportation safety to the Secretary of Transportation, which requires a written response within ninety days, and must indicate whether the Secretary intends to carry out the recommendation. The Secretary of Transportation must then submit a report to both Congress

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41 See Little, supra note 36.
42 Id.
43 Id.
44 Id.
46 See id. § 1132(a)(1); see also About the NTSB, History and Mission, http://www.ntsb.gov/ntsb/history.htm (last visited Aug. 10, 2009).
47 About the NTSB, History and Mission, supra note 46.
48 49 U.S.C. § 1111(b)–(c).
49 Id.
50 Id. § 1135(a).
and the Safety Board containing the status of each recommendation that is on the Board’s annual “Most Wanted List.”

2. NTSB’s Most Wanted List

In 1990, the NTSB began highlighting some of its most desired safety improvements in a Most Wanted List. The NTSB, however, has no regulatory responsibility and does not initiate enforcement actions. Enforcement responsibilities, with respect to civil aviation matters, lie with the FAA.

The NTSB released its 2008 Most Wanted List in October. The list is intended to raise awareness and support for safety issues within the transportation field. EMS flights made the list for the first time in 2008. The NTSB listed four goals as its objective for improving EMS flight safety. First, the Safety Board recommended that EMS flights be conducted in accordance with the stricter guidelines of Part 135 whenever medical personnel are on board. The Safety Board next recommended the development and implementation of flight risk evaluation programs for EMS operators. The third recommendation the Safety Board made was to require “formalized dispatch and flight-following procedures” that include real-time weather updates. Finally, the Safety Board suggested that terrain awareness and warning systems (TAWS) be installed on EMS aircraft.

This Most Wanted List of recommended improvements follows a January 2006 report on EMS operations that included the same recommendations. The Safety Board points out that nine EMS helicopter accidents, in which thirty-five people were

51 Id. § 1135(d).
52 About the NTSB, History and Mission, supra note 46.
53 Id.
54 49 U.S.C. § 44701(a)(1)-(5).
55 NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
58 NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
59 Id.
60 Id.
61 Id.
62 Id.
63 See NTSB Special Investigation Report, supra note 2, at vii.
killed, occurred between its release of the January 2006 report and the publication of the Most Wanted List in October of 2008.64 The Safety Board expressed its concern that unless a "concerted effort" is made, accidents are likely to continue to occur.65 In summarizing actions taken by the FAA, the NTSB strongly criticized the FAA's efforts, stating:

Despite the FAA's efforts to improve EMS operations safety, the FAA has not imposed any requirements on aircraft EMS operators regarding flights conducted without patients on board, risk management, flight dispatch, or the use of such technology as TAWS or H-TAWS. The FAA's published notices simply constitute information that principle operations inspectors may provide to their operators and encourage the operators to incorporate. . . . [T]he Board is concerned that until the FAA institutes our recommended requirements, some EMS operators will continue to operate in an unsafe manner, which could lead to further accidents.66

In response to the publication of the NTSB's Most Wanted list, the FAA said it agreed with the recommendations.67 A spokesman for the FAA noted that due to the nature of the federal rulemaking process, rulemaking is seldom the fastest way to adopt change.68 According to the spokesman, the FAA has worked with EMS flight operators in recent years to adopt safer policies, decision-making protocols, and technologies that focus on safety.69

B. FEDERAL AVIATION ADMINISTRATION

1. FAA—Administrative Background

The Federal Aviation Administration (FAA or Agency) is an administration within the Department of Transportation.70 The FAA is granted various powers and duties under Title 49 of the federal code.71 The head of the FAA is referred to as the Administrator and is appointed by the President and confirmed by

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64 NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
65 Id.
66 Id.
67 Zigmond, supra note 56.
68 Id.
69 Id.
the Senate. The Administrator, as a general requirement, must carry out the promotion of safety with regards to civil aeronautics. This is achieved in part by prescribing minimum standards for the design and application of aircraft, the inspection and servicing of aircraft, the maximum hours aircraft may fly between inspections and servicing, the qualifications required of personnel who operate aircraft, and so on. Further, the Administrator is specifically tasked with the reduction and elimination of accidents. As the federal regulatory body of EMS flight operators, the FAA’s role in reducing HEMS accidents is not only crucial, it is required by federal law.

2. FAA Action

The FAA has taken a number of steps in recent years to improve the safety of EMS flights, particularly HEMS operations. In 2004, the FAA was able to initiate a partnership between government regulators and industry participants that effectively reduced the number of HEMS accidents for the two years following. In the past year, however, the number of fatal accidents is up sharply. The FAA is following the recommendations of the NTSB by pursuing new rules and, at the same time, taking significant action that does not require new rulemaking. The Agency aims to make significant safety gains in the near term with these non-rulemaking actions. The FAA’s immediate focus includes: encouraging risk-management training; better training for night operations and operations in deteriorating weather conditions; the promotion of technologies such as night vision goggles (NVGs) and terrain awareness and warning systems (TAWS); and providing “airline-type” FAA oversight for operators.

Beyond inspection and surveillance, the FAA takes initiative through a risk-based system that focuses on factors contributing

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73 See id. § 44701.
74 See id.
75 Id. § 44701(c).
76 See id.
77 See FAA, Fact Sheet, supra note 3.
78 Id.
79 Id.
80 Id. See also NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
81 FAA, Fact Sheet, supra note 3.
82 Id.
to HEMS accidents. A fact sheet released on January 15, 2009, highlighted some of the actions the FAA has taken in the past with regards to improving HEMS flights. In 2004, as mentioned above, the FAA established a government and industry task force. In January of the following year, the FAA met with industry groups in order to open a dialogue dealing with EMS flight safety. Several weeks later the Administration published a notice that provided guidance to operators on various issues from pilot and mechanic decision-making to crew management. In September 2005, guidance on Air Medical Resource Management (AMRM) training was issued, and focused on the broad array of members that make up an air medical team. The next week, "revised standards for inspection and surveillance of HEMS operators" were issued. In early 2006, revised guidance was issued to inspectors, amending the VFR weather requirements. This was followed by a request in June of 2006 for the establishment of a committee to develop standards for Helicopter Terrain Awareness and Warning Systems (H-TAWS). This committee could be instrumental in the implementation of H-TAWS for HEMS operations, as recommended by the NTSB.

The FAA also established a task group that focuses on large HEMS operators that service a broad group of medical programs throughout the country. And in 2008, the Administration issued a "best practices" advisory for HEMS operators in May, followed by a meeting in July with the Association of Air Medical Service (AAMS), regarding the use of NVGs among other topics.

The FAA issued a notice of mandatory changes in HEMS flights in November of 2008. The notice contained a revision

83 Id.
84 The fact sheet was updated April 27, 2009. Id.
85 Id.
86 Id.
87 Id.
88 Id.
89 Id.
90 Id.
91 Id.
92 Id.
93 See NTSB, Most Wanted Transportation Safety Improvements, supra note 1; see also infra Part IV.D. (discussion on Terrain Awareness and Warning Systems).
94 See FAA, Fact Sheet, supra note 3.
95 Id.
96 Id.
of Operations Specifications. Specifically, "if a flight, or sequence of flights, includes a part 135 segment then all visual flight rules (VFR) segments of the flight must be conducted within the weather minimums and minimum safe cruise altitude determined in pre-flight planning." Further, the notice contained revised weather minimums by which pilots must determine the required minimum ceiling and visibility to conduct a HEMS flight. In providing more access to weather reporting, the FAA is requiring flight crews to determine minimum safe altitudes prior to initiating a flight.

The FAA has also stated its support for the voluntary use of TAWS by HEMS operators. However, the Administration has yet to require the use of such system in HEMS operations. Though it has considered implementing this measure, the Administration feels "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." Specifically, the Administration cited potential false warnings and nuisance warnings generated at low altitude operation which may negatively impact pilots who are already attempting to safely operate the aircraft. Regarding nuisance warnings, one study suggests that

[the effectiveness of TAWS is dependent on the balance between saves and nuisance warnings. Excessive nuisance warnings can degrade the pilot's confidence in the system to the point where the pilot will deactivate or ignore the system. The objective for TAWS should be to give the maximum save percentage while minimizing nuisance warnings during a typical aircraft mission.]

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98 Id.
99 Id.
100 FAA, Fact Sheet, supra note 3.
101 Id.
102 Id.
103 Id.
104 Id.
Following a report of the committee mentioned above, created to develop standards for H-TAWS, the Administration issued an order to "standardize the manufacture of H-TAWS."106

C. CONGRESS

Congress has the ability and the authority to impact the safety measures used by the EMS flight industry. Both the NTSB and the FAA are federal agencies created by statute.107 Ultimately, Congress can create new statutes requiring either agency to adopt a particular policy. Due to the recent rash of accidents, some members of Congress are taking an interest in the industry of EMS flights.108 In fact, recently introduced bills echo the recommendations of the NTSB’s Most Wanted List.109

Senate Bill 3229, the Air Medical Service Safety Improvement Act of 2008, was introduced by Sen. Cantwell of Washington State and referred to the Committee on Commerce, Science, and Transportation.110 The bill calls for all EMS aircraft, both helicopter and fixed-wing, to comply with Part 135 whenever medical personnel are on board, with the exception of training missions.111 The bill also requires the implementation of a flight risk evaluation program to begin no later than sixty days after the bill is enacted.112 A standardized checklist of risk evaluation factors would be part of the risk evaluation.113 Further, the bill would require changes to dispatch procedures, calling for "performance based flight dispatch and flight-following procedures."114 The bill also calls for improved situational awareness via the use of a "terrain awareness and warning system that meets the requirements of the applicable Federal Aviation Administration Technical Standard Order."115

109 See S. 3229; H.R. 3939.
110 See S. 3229.
111 See id.
112 See id.
113 See id.
114 See id.
115 See id.
House Bill 3939 was introduced by Rep. Doolittle of California, now retired, and Rep. Salazar of Colorado.116 The bill calls for all EMS flights to operate under Part 135 whenever medical personnel are on board unless operating under instrument flight rules.117 If operating under instrument flight rules, the duty and rest-time rules of Part 135 would apply.118 The bill also requires the implementation of flight risk evaluation procedures, which includes standardized risk evaluation factors.119 Pilots would be required to use the standardized evaluation checklist when determining whether a mission should be accepted.120 Much like the Senate bill, House Bill 3939 would also require “comprehensive consistent flight dispatch procedures” that are performance based, along with a measurement of compliance.121

D. State And Local Authority

State and local regulatory bodies are preempted by federal authority in the field of aviation safety.122 In Abdullah v. American Airlines, Inc., the Third Circuit stated that “contrary to courts that have found that federal law does not preempt state and territorial air safety standards, . . . we find implied federal preemption of the entire field of aviation safety.”123 Obviously, this would include HEMS operations. The Third Circuit clarified its reasoning by explaining that “[o]ur finding on preemption is based on our determination that the FAA and relevant federal regulations establish complete and thorough safety standards for interstate and international air transportation and that these standards are not subject to supplementation by, or variations among, jurisdictions.”124 It is important to note, however, that the court did conclude that “state and territorial damage remedies still exist for violation of those standards.”125

117 See id.
118 See id.
119 See id.
120 See id.
121 See id.; see also S. 3229, 110th Cong. (2d Sess. 2008).
123 Abdullah, 181 F.3d at 365 (emphasis added).
124 Id.
125 Id.
The Third Circuit's decision has been followed by the Second Circuit in *Drake v. Laboratory Corp. of America Holdings*¹²⁶ and by the Ninth Circuit in *Montalvo v. Spirit Airlines*.¹²⁷ The Second Circuit reiterated in *Drake* that state law remedies are not preempted by the federal government as are state law substantive standards.¹²⁸ Elaborating on the notion of implied preemption in *Montalvo*, the Ninth Circuit explained that "[i]mplied preemption exists when federal law so thoroughly occupies a legislative field 'as to make reasonable the inference that Congress left no room for the States to supplement it.'"¹²⁹ Further, field preemption "occurs when Congress indicates in some manner an intent to occupy a given field to the exclusion of state law."¹³⁰ It was the Ninth Circuit's conclusion that Congress has "indicated its intent to be the sole regulator of aviation safety."¹³¹ Thus, any state or local laws with respect to EMS flight safety are federally preempted.

**III. ADDITIONAL STAKEHOLDERS**

**A. RESPONSIBILITY LYING WITH CREW AND MANAGEMENT**

Some experts argue that legislative or administrative mandates are unnecessary and fail to recognize that the primary cause of accidents lies with the imprudent decision making of flight crews.¹³² Ed MacDonald is lead pilot for an EMS flight operator in Santa Fe, New Mexico, and holds committee and advisory positions with various EMS flight organizations.¹³³ MacDonald contends that "[p]oor decision making and apparent loss of situational awareness continue as root causes [of EMS flight accidents]—almost nothing in proposed legislation will have any effect on the most basic reasons we have accidents in our community."¹³⁴ Further, EMS flights would likely be made safer if solutions were geared toward "poor or pressured decision making" by pilots.¹³⁵ Though he does argue that legislative

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¹²⁶ *Drake v. Lab. Corp. of America Holdings*, 458 F.3d 48, 64 (2d Cir. 2006).
¹²⁷ *Montalvo v. Spirit Airlines*, 508 F.3d 464, 468 (9th Cir. 2007).
¹²⁸ *Drake*, 458 F.3d at 64 (citing *Abdullah*, 181 F.3d at 375).
¹²⁹ *Montalvo*, 508 F.3d at 470 (citing *Cipollone v. Liggett Group, Inc.*, 505 U.S. 504, 516 (1992)).
¹³⁰ *Id.* at 470 (citing *Cipollone*, 505 U.S. at 516).
¹³¹ *Id.*
¹³³ See *id.* at 13 (see bio following article).
¹³⁴ *Id.* at 12.
¹³⁵ *Id.*
or administrative measures are unnecessary, MacDonald seems
to be supporting the types of flight-risk planning and formalized
dispatch procedures recommended by the NTSB.\textsuperscript{136}

MacDonald finds irony in the fact that none of the key deci-
sion makers in Congress, the NTSB, nor the FAA, have experi-
ence as an EMS pilot.\textsuperscript{137} He was hopeful that those decision
makers would listen to pilots at hearings scheduled for February
2009.\textsuperscript{138} "Far too many clinicians and business managers are trying
to make decisions that they are very simply not capable of
making."\textsuperscript{139}

MacDonald believes organizational structures contribute to
the rash of recent accidents as well, as safety too often takes a
back seat to the business plans of EMS flight companies.\textsuperscript{140}
Managers often use flight volume as the measure of success
when comparing their own companies with the competition.\textsuperscript{141}
This, MacDonald suggests, sends a message that safety is not the
number one goal.\textsuperscript{142} And though MacDonald is not calling for
administrative action, this is where the FAA should step in and
require improvements in safety—as safety is one of the primary
reasons for the Agency's existence.\textsuperscript{143}

MacDonald raises questions concerning the leadership of
companies, such as, whether proper emphasis is placed on mak-
ing safety a top priority, or whether companies are thrusting
leaders into positions without giving them the tools they need to
succeed.\textsuperscript{144} Many companies have a process for effectively se-
lecting their leadership and ensuring their success, and these
are the companies that others in the industry should model
their own companies after.\textsuperscript{145} MacDonald notes that selecting
effective management and ensuring they have the tools neces-
sary to prioritize safety is not something that the NTSB will focus
its attention on.\textsuperscript{146} The FAA, however, is certainly required by
statute to do so.\textsuperscript{147} In order for the industry to make real pro-

\begin{itemize}
\item \textsuperscript{136} See NTSB, Most Wanted Transportation Safety Improvements, \textit{supra} note 1.
\item \textsuperscript{137} MacDonald, \textit{supra} note 132, at 12.
\item \textsuperscript{138} Id.
\item \textsuperscript{139} Id.
\item \textsuperscript{140} See \textit{id.} at 13.
\item \textsuperscript{141} Id.
\item \textsuperscript{142} Id.
\item \textsuperscript{144} MacDonald, \textit{supra} note 132, at 12.
\item \textsuperscript{145} Id. at 13.
\item \textsuperscript{146} Id.
\item \textsuperscript{147} See 49 U.S.C. § 44701(c).
\end{itemize}
gress in what MacDonald feels are “ailing safety cultures,” bridging the existing “leadership gaps” should be the primary focus.148

MacDonald’s advice for improving safety is practical and sound. He calls for pilots, managers, and other players to draw upon thirty years of collective experience as an industry.149 He encourages those involved to “follow the rules and lessons learned . . . to take a hard, honest look at deficiencies within our own organizations.”150

IV. DETAILING THE NTSB’S MOST WANTED

A. OPERATE ALL EMS FLIGHTS UNDER PART 135

The NTSB stated in its January 2006 special investigation report that “EMS operations should [not] be permitted to continue to operate under the less strict requirements of Part 91 simply because a patient is not on board.”151 As discussed earlier, Parts 91 and 135 differ in requirements of weather and visibility minimums, as well as crew rest and maximum duty time guidelines.152 When pilots are allowed to operate an outbound flight under Part 91 “in minimal weather conditions or near the end of their duty time” they are likely to be significantly influenced by a patient’s critical condition to complete the mission, even if not permissible under Part 135.153 The Safety Board added that missions should not be attempted if “unable to operate safely under Part 135 requirements.”154

The Safety Board believes that positioning flights, whether en route to pick up a patient or returning to base after dropping off a patient, should not be separated from the actual patient-transportation flights.155 Since the EMS mission is composed of the positioning leg or legs, and the patient-transportation leg, “the Safety Board conclude[d] that the safety of EMS operations would be improved if the entire EMS flight plan operated under Part 135 operations specifications.”156 Moreover, because all EMS operators must follow Part 135 when transporting patients,

148 MacDonald, supra note 132, at 13.
149 Id.
150 Id.
151 NTSB Special Investigation Report, supra note 2, at 2.
152 See supra Part I.A.
153 NTSB Special Investigation Report, supra note 2, at 2.
154 Id.
155 Id. at 3.
156 Id.
little change would be necessary in the way those same operators fly when patients are not on board.\textsuperscript{157} The Safety Board believes that it would be prudent for the FAA to mandate that all EMS flights operate under Part 135 whenever medical personnel are on board.\textsuperscript{158}

**B. Flight Risk Evaluation**

Though HEMS operations are inherently dangerous, evaluating the risks associated with each HEMS flight can improve the likelihood of a safe and successful mission.\textsuperscript{159} The special investigation report issued by the NTSB in January 2006 discussed a 2002 study by the Air Medical Physician Association (AMPA).\textsuperscript{160} The AMPA's study highlighted operational risks such as "unprepared landing sites, complacency, and situational stress[,]" in addition to the risks associated with weather and nighttime flight identified by the Safety Board.\textsuperscript{161} Flight risk evaluation programs systematically evaluate and manage these risks. "[A]n effective flight risk evaluation program acknowledges and identifies threats, evaluates and prioritizes the risks, considers the probability that a risk will materialize, and mitigates loss."\textsuperscript{162} One difficult aspect of flight risk evaluation is the fact that the person or persons conducting the evaluation must separate the initial urgency that comes with the call requesting emergency services from the evaluation of flight risks.\textsuperscript{163}

The 2006 NTSB report used the details of a 2003 accident in Salt Lake City to demonstrate how a flight risk evaluation program could have helped to avoid an accident in which the pilot and flight paramedic were killed.\textsuperscript{164} Prior to the accident flight operated by Intermountain Health Care (IHC), another HEMS operator aborted the same mission due to bad weather conditions.\textsuperscript{165} Upon returning to base, the pilot who aborted the mission contacted the IHC pilot who was then attempting the mission and learned that he was going to try to "get over" the

\textsuperscript{157} Id.
\textsuperscript{158} Id.
\textsuperscript{159} See id. at 4.
\textsuperscript{160} See id.
\textsuperscript{161} Id.
\textsuperscript{162} See id. (citing AMPA study).
\textsuperscript{163} See id.
\textsuperscript{164} See id.
\textsuperscript{165} Id. app. A at 17–18.
fog that caused the initial pilot to abort.\textsuperscript{166} The IHC pilot also informed a dispatcher that the weather had taken a turn for the worse.\textsuperscript{167} As weather conditions worsened, the IHC pilot also attempted to abort the mission.\textsuperscript{168} Unfortunately, the pilot was unable to safely land the aircraft.\textsuperscript{169} The NTSB determined that “the pilot’s delayed remedial action and continued flight into known adverse weather conditions . . . resulted in his failure to maintain clearance with the ground.”\textsuperscript{170} “[P]revailing fog and the pressure to complete the mission” were cited as contributing factors to the accident.\textsuperscript{171}

The NTSB noted that a flight risk evaluation program did not exist at IHC at the time of the Salt Lake City accident.\textsuperscript{172} Had one been in place, “the pilot would likely have been required to complete a standardized flight risk evaluation matrix before the flight, including assessing weather minimums and the route of flight.”\textsuperscript{173} Given the poor nighttime weather conditions, the mission would have been evaluated as a mission of higher risk.\textsuperscript{174} And a “systematic evaluation” of the risks associated with the mission may have resulted in a decision not to initiate the flight.\textsuperscript{175}

Though the NTSB recognizes the FAA’s attempts to encourage flight risk evaluation programs, the Safety Board feels these programs should be required of EMS operators.\textsuperscript{176} Put simply, “the FAA should require all EMS operators to develop and implement flight risk evaluation programs.”\textsuperscript{177} Certainly, the inclusion of flight risk evaluation programs in the Safety Board’s Most Wanted List reiterates its desire to see these programs implemented.\textsuperscript{178}

\textsuperscript{166} Id.
\textsuperscript{167} Id. app. A at 18.
\textsuperscript{168} Id.
\textsuperscript{169} Id.
\textsuperscript{170} Id.
\textsuperscript{171} Id.
\textsuperscript{172} See id. at 4.
\textsuperscript{173} Id. at 4.
\textsuperscript{174} Id.
\textsuperscript{175} Id.
\textsuperscript{176} Id. at 5–6.
\textsuperscript{177} Id. at 6.
\textsuperscript{178} See NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
C. Flight Dispatch

Improving the dispatch procedures of EMS flights is a vital part of improving the overall safety of EMS flights. The NTSB has specifically recommended formalized dispatch procedures for a number of years and stated so quite clearly, both in the October 2008 Most Wanted List and earlier in a January 2006 special report. Currently, pilots are often notified by 911 operators or hospital staff of an emergency that requires an airborne EMS operation. However, neither 911 dispatchers nor hospital staff typically have the expertise needed to advise the flight crew on weather conditions, or flight and landing procedures. Because traditional EMS dispatchers typically have a medical background, the tasks of gathering information regarding flight routes, landing operations, and weather conditions are often left to the pilot or crew. Recently, as highlighted by both the NTSB and the FAA, awareness has risen that dispatchers need some type of aviation training as well.

The Safety Board’s 2006 special report claims that eleven of fifty-five accidents for the period that the report covers may have had a different outcome had formalized dispatch procedures been used. For example, the pilot of an accident in Pyote, Texas, did not contact the destination hospital in Lubbock until after he departed with the patient on board. Severe thunderstorms in the area, along with brown-out conditions from blowing dust and sand created fatal flight conditions. The helicopter crashed into terrain, resulting in the death of the pilot, a flight paramedic, the patient, and the patient’s mother.
The NTSB cited "the pilot's inadvertent encounter with adverse weather, . . . dark night conditions, the pilot's inadequate pre-flight preparation and planning, and the pressure to complete the mission" as the causes of the accident.\textsuperscript{189} It is sobering to learn that had the pilot obtained a weather report pre-flight, he would have been informed of the thunderstorm activity.\textsuperscript{190} And, though a significant weather bulletin was not issued until fifteen minutes after the flight had departed with the patient on board, had a formalized dispatch and flight-following procedure been in place, the pilot would have been updated and may have aborted the flight.\textsuperscript{191}

In an effort to improve the role dispatchers play in the safety of EMS flight operations, EagleMed air ambulance service of Wichita, Kansas, introduced an EMS air dispatcher training curriculum in 2006.\textsuperscript{192} The course is designed to educate dispatchers in a broad array of topics that are typically involved in the dispatch of both helicopters and fixed-wing EMS aircraft.\textsuperscript{193} Allen Zon, director of operations at EagleMed, designed the curriculum to include "use of the latest in navigational tracking and satellite communications, visual displays, and terrain and obstacle awareness systems."\textsuperscript{194}

The National Association of Air-Medical Communication Specialists (NAACS), established in 1989, is an organization established to promote and educate air medical communications specialists.\textsuperscript{195} Industry experts assembled at a 2006 Safety Summit sponsored by the NAACS to address proposed FAA regulations focusing on EMS flight dispatch procedures.\textsuperscript{196} A summary of discussions from the summit showed that experts generally agreed that communications specialists (dispatchers) could be trained to access and interpret weather reports.\textsuperscript{197} Further, there was a general consensus that accreditation and certification of communications specialists would enhance operational safety.\textsuperscript{198} Putting communications specialists in

\textsuperscript{189} Id.
\textsuperscript{190} Id. at 8.
\textsuperscript{191} Id.
\textsuperscript{192} Air Dispatcher Training Should Make EMS Flights Safer, supra note 181.
\textsuperscript{193} Id.
\textsuperscript{194} Id.
\textsuperscript{196} See id. at 28–29.
\textsuperscript{197} Id. at 29.
\textsuperscript{198} Id.
touch with the health care provider as early in the decision-making process as possible would likely prevent some of the perceived misuse of HEMS flights.\(^\text{199}\)

Participants also agreed that pursuing technology such as satellite tracking and visual weather displays would enhance the safety of HEMS operations.\(^\text{200}\) However, the majority of experts were opposed to measures that would "formalize" dispatch procedures.\(^\text{201}\) Moreover, the FAA stated that such procedures would not be pursued at the time.\(^\text{202}\) Panelists of the summit generally agreed that better training, rather than formalized dispatch, was the answer to enhancing safety.\(^\text{203}\) According to the panel, a formalized dispatch system, perhaps similar to that of the airlines, was neither cost effective nor in the interest of enhancing safety.\(^\text{204}\)

The NTSB obviously disagrees with the panel of experts cited above.\(^\text{205}\) The Safety Board asserts that "[a]n effective dispatch combined with a flight risk evaluation program . . . enhances the safety of these often-difficult missions."\(^\text{206}\) A system that features a dispatcher knowledgeable in "operations, weather, maintenance, and flight-following" would be an asset to EMS flight operations.\(^\text{207}\) A person possessing this knowledge would be able to advise the flight crew on the changing elements of a flight and possibly instruct the pilot on whether to continue or abort a mission.\(^\text{208}\) The Safety Board stresses that part of the importance of such a position is having a member of the operation who is detached from the urgency and emotion of the situation.\(^\text{209}\) The NTSB makes clear that the FAA should impose formalized dispatch procedures as a requirement,\(^\text{210}\) and not merely issue a non-binding advisory.

\(^\text{199}\) See TradingMarkets.com, supra note 25.
\(^\text{200}\) Cockerill et al., supra note 195, at 29.
\(^\text{201}\) Id.
\(^\text{202}\) Id.
\(^\text{203}\) Id.
\(^\text{204}\) Id.
\(^\text{205}\) See NTSB Special Investigation Report, supra note 2, at 7–10.
\(^\text{206}\) Id. at 8.
\(^\text{207}\) Id. at 9–10.
\(^\text{208}\) Id.
\(^\text{209}\) Id.
\(^\text{210}\) Id. at 10.
D. Terrain Awareness and Warning Systems

Terrain Awareness and Warning Systems (TAWS) are instruments designed to aid pilots in predicting what lies ahead of them as they fly.\textsuperscript{211} Two studies provide useful background on TAWS and their applications: Development and Testing of an Advanced Terrain Awareness and Warning System (Study 1) and Rotary Wing Terrain Awareness Warning Study (Study 2). Several types of TAWS have evolved over the years and can allow for more accurate warnings for operators as they approach potentially dangerous terrain.\textsuperscript{212} A Ground Proximity Warning System (GPWS) displays terrain data along with weather, air traffic, and other flight data on an aircraft's multifunction display.\textsuperscript{213} Also described as active or passive sensor technology,\textsuperscript{214} terrain data in a GPWS is captured via a "lookdown" sensor and is used to determine altitude and slope of the terrain immediately beneath the aircraft and to predict what lies ahead.\textsuperscript{215} The Enhanced Ground Proximity Warning System (EGPWS) evolved from the GPWS and makes terrain predictions based on a terrain database that has been previously loaded into the system.\textsuperscript{216} With the EGPWS the pilot receives earlier warnings, but the warnings are only as accurate as the database.\textsuperscript{217} The Ground Collision Avoidance System (GCAS) uses a terrain database as well, though it does not incorporate other information into a multifunction display like the GPWS and EGPWS.\textsuperscript{218}

Study 1 discusses the fact that most TAWS are designed for larger commercial aircraft where federal regulations require


\textsuperscript{212} Id.

\textsuperscript{213} Id.

\textsuperscript{214} Barnhart & Engel, supra note 105, at 9.A.1-4. An active sensor system illuminates the terrain ahead of the aircraft with electromagnetic radiation and processes the information that is reflected back to determine the terrain's features and warn the crew of obstacles that may lie ahead. Id. Active sensor systems may utilize laser or radar based technology. Id. at 9.A.1-3. Passive sensor technology uses Forward-Looking Infrared (FLIR) sensors to image obstacles and terrain ahead of the aircraft without emitting an electromagnetic signal; an obvious tactical benefit for applications in military helicopters. Id.

\textsuperscript{215} See Qu, supra note 211, at 5.

\textsuperscript{216} Id.

\textsuperscript{217} Id.

\textsuperscript{218} Id.
their use.\textsuperscript{219} The size and cost of such systems makes their use “impractical for smaller, general aviation aircraft.”\textsuperscript{220} The development of reliable, compact, and affordable TAWS is certainly something that is needed, and not just in the field of EMS flight operations, since 86\% of all accidents occur with general aviation aircraft, and 16\% of fatalities involve controlled flight into terrain (CFIT).\textsuperscript{221} CFIT occurs when an aircraft, under the control of the pilot, unintentionally flies into terrain, water, or other structures, typically with no prior warning.\textsuperscript{222}

The discussion of TAWS in Study 2 focuses on aspects that are unique to helicopter flight.\textsuperscript{223} Though the instances described by this study primarily deal with military applications, much of the analysis proves to be similar to the field of HEMS operations. Military helicopters operate regularly at low altitude both on and off shore.\textsuperscript{224} These operations typically involve taking off from and landing on flight decks, search and rescue operations, and tactical and non-tactical operations in environments over land where trees, wires, and other obstacles pose a risk to the success of the mission and safety of the crew.\textsuperscript{225} And at high altitudes over land, mountainous terrain comes into play.\textsuperscript{226}

In comparing the various types of TAWS, the authors of Study 2 describe the TAWS that utilize digital database systems as “relatively mature technology,”\textsuperscript{227} although they, too, recognize that the key issue with digital databases is “data accuracy.”\textsuperscript{228} “Elevation accuracy and post location accuracy [e.g. location of electrical towers] are essential elements to generating as many saves and as few nuisance warnings as possible. . . .”\textsuperscript{229} After performing various test scenarios while in flight, the study concludes that digital database TAWS technology “exhibited good potential for predicting the presence of terrain and obstacles while oper-

\begin{itemize}
  \item \textsuperscript{219} Id.
  \item \textsuperscript{220} Id.
  \item \textsuperscript{221} See id. at 5–6.
  \item \textsuperscript{223} See Barnhart & Engel, supra note 105, at 9.A.1.
  \item \textsuperscript{224} Id. at 9.A.1-2.
  \item \textsuperscript{225} Id.
  \item \textsuperscript{226} Id.
  \item \textsuperscript{227} Id. at 9.A.1-3.
  \item \textsuperscript{228} Id. at 9.A.1-4.
  \item \textsuperscript{229} Id.
\end{itemize}
ating in the TERF [terrain flight] environment."\textsuperscript{230} Though the study points out that significant development is needed for "tactical operations,"\textsuperscript{231} it is important to remember that such development is probably not needed for the majority of HEMS operations.

The conclusions Study 2 reached on active and passive sensor technology were somewhat less favorable.\textsuperscript{232} Active sensor was deemed to have "good potential for detecting terrain and limited potential for detecting obstacles."\textsuperscript{233} Obviously, the detection of obstacles is key to HEMS missions, which often call for landing on urban streets or hospital rooftops in close proximity to man-made obstacles. Further, active sensors pose space, weight, and integration issues, as does the required mounting equipment on the nose of the aircraft.\textsuperscript{234} As for passive sensor technology, though the study revealed some long-term potential, current applications were deemed as falling short of the necessary ranging capabilities for low-altitude terrain flight.\textsuperscript{235}

V. ANALYZING THE NTSB'S MOST WANTED

A. SHOULD REGULATORS TAKE MORE PRECISE ACTION?

Simply put, yes, regulators should take more precise action and implement tougher measures with respect to HEMS flight operations. Unless action is taken to decrease the level of risk associated with HEMS operations, accidents and fatalities will continue at their current rates. Emergency medical aviation is an extraordinary field in which pilots and crew members are often asked to fly into dangerous situations and subject themselves to extraordinary risks. Those crew members, however, should not be asked to make split-second decisions without operational protocol that is both clearer and safer. Moving forward, all HEMS operations should have the tools necessary to operate safely. The decision of whether or not specific tools are necessary should not be left solely to the same decision makers who must evaluate the business aspects of an operation. Running a cost-effective HEMS operation and running a HEMS operation that puts safety above all other aspects of the business

\textsuperscript{230} Id. at 9.A.1-9 (emphasis added).
\textsuperscript{231} Id. at 9.A.1-10.
\textsuperscript{232} See id. at 9.A.1-11–12.
\textsuperscript{233} Id. at 9.A.1-11 (emphasis added).
\textsuperscript{234} Id.
\textsuperscript{235} Id. at 9.A.1-4.
are not necessarily business models that are synonymous with one another. The regulatory bodies charged with oversight of this industry, the NTSB and the FAA, along with Congress, have the ability to immediately impact the industry with respect to safety. Restrained, yet well-placed, meaningful regulation, will reduce the risks associated with HEMS operations and save lives.

1. Require All HEMS Flights to Operate Under Part 135

Requiring all HEMS flights to operate under Part 135 appears as the first item on the NTSB’s Most Wanted List (as it relates to HEMS operations) for good reasons.\textsuperscript{236} A requirement that HEMS operators conduct flights in accordance with Part 135 would likely be the quickest, most cost-effective way of improving HEMS safety and reducing accidents. While in flight, a HEMS mission would be required to follow the more stringent standards of Part 135 for weather, visibility, minimum altitude, and the like. It is important to qualify that HEMS operators are currently required to operate under Part 135 while patients are on-board. A rule of this nature would simply extend the Part 135 requirement to the inbound or outbound legs of an EMS mission, when a patient is either not yet on-board or has already been received by a hospital. Thus, the only change for HEMS operators from how they are currently allowed to operate would be that they must operate under Part 135 on the legs of the mission for which a patient is not on-board.

Though it has taken some time, to the FAA’s credit, it will require all HEMS operators to comply with Part 135 weather minimums beginning in late February 2009. But if the goal is safer operations, why has the FAA stopped at only including the Part 135 weather minimums? HEMS operators will still be allowed to operate under the more liberal requirements of Part 91 in an area that certainly has a huge effect on safety—crew rest. For example, a crew can set out on a mission or series of flights that end with a patient drop-off. If the crew has reached its maximum duty time of fourteen hours, they would not be allowed to continue to fly under Part 135. However, Part 91, which has no limitation with respect to duty hours, would allow the crew to continue to fly as long as patients are not on-board. In essence, the regulations will require HEMS flights to operate under the more stringent terms of Part 135 with respect to weather minimums for all legs of a HEMS mission, but will allow

\textsuperscript{236} See NTSB, Most Wanted Transportation Safety Improvements, \textit{supra} note 1.
a fatigued crew to operate the aircraft as long as no patient is on-board. It would certainly be well reasoned for the FAA to extend all sections of Part 135 that HEMS operators currently operate under for flights with patients on board, to flights when only crew members are on-board.

2. Require Flight Risk Evaluation

From a logical perspective, it seems obvious that before assuming the inherent risks of a venture, one would first weigh those risks against the probability of various outcomes. Applying this principle to EMS flight operations, certain questions again seem obvious. Where are we going? How far must we travel? Where will we land? Will the weather at the point of take-off, at the destination, and en route permit our mission to continue? This idea, however, is foreign to some operators in the HEMS industry as evidenced by its inclusion on the NTSB’s Most Wanted List.\(^{237}\)

The questions above seem almost trivial, yet flight risk evaluation involves little more than answering a number of questions associated with a given flight and applying those answers in a way that measures the risks of the mission. As mentioned previously, an AMPA study cited in the NTSB’s 2006 special investigation report states that “an effective flight risk evaluation program acknowledges and identifies threats, evaluates and prioritizes the risks, considers the probability that a risk will materialize, and mitigates loss.”\(^{238}\) Simple? Yes. And the answers to the questions above would certainly aid in the assessment of flight risk. When the answers are applied to the experience of the crew and the type and condition of the aircraft, a clearer picture of the inherent risks of a mission develops.

The NTSB points to a risk management program put in place by HEMS operator Intermountain Health Care (IHC), after a 2003 Salt Lake City accident, as one model for success.\(^{239}\) The IHC model begins with pilots filling out a risk matrix as their shift begins.\(^{240}\) When a call is received the pilot answers the remaining questions, completes the matrix, and calculates the flight risk.\(^{241}\) The pilot must obtain increasing levels of approval

\(^{237}\) See id.

\(^{238}\) NTSB Special Investigation Report, supra note 2, at 4.

\(^{239}\) See id. (discussing the Salt Lake City accident in Section IV.B.).

\(^{240}\) Id.

\(^{241}\) Id.
prior to accepting the mission, depending on the level of risk associated with the flight—low, medium, or high.\textsuperscript{242} The dispatcher, too, must agree to accept the mission.\textsuperscript{243} This system keeps one person from being the sole decision maker when it comes to accepting a mission.\textsuperscript{244}

Much like requiring all segments of EMS flights to operate under Part 135, requiring the implementation of flight risk evaluation procedures need not be an expensive undertaking. While the ideas surrounding and methods for carrying out these procedures would certainly vary in degrees of complexity, operators can begin some form of evaluation procedure immediately. The questions need not be daunting and the formula or matrix for evaluating the risk need not be overly involved. Nor is an expensive array of complex weather equipment necessary. Operators can utilize both government and private weather forecasting and analysis. The goal is to gather information concerning various elements of each EMS mission and apply a set of predetermined standards that will help crew members decide whether or not a mission should be attempted. This removes the emotion and urgency associated with a call for the crews' services. Ideally, flight risk evaluation should be a part of formalized dispatch procedures.

3. Require Formalized Dispatch Procedures

Experts have generally been opposed to formalized dispatch procedures.\textsuperscript{245} And, when the dispatch system of the airlines is generally used as a descriptive benchmark, who can argue with them?\textsuperscript{246} However, surely a solution exists that does not bring to mind the inevitable hassle and delays associated with the antiquated method in which commercial flights are dispatched. First, most would probably agree that the system of dispatch used by the airlines was not originally designed to handle the number of commercial flights that are typical today. And second, EMS flights would likely never approach a level of regularity comparable to commercial airline flights. EMS flights, especially in large metropolitan areas, could benefit from formalized dispatch procedures.

\textsuperscript{242} Id.
\textsuperscript{243} Id.
\textsuperscript{244} Id.
\textsuperscript{245} See Cockerill et al., supra note 195, at 28–29.
\textsuperscript{246} See id.
4. **Set a Realistic Date for Mandatory Use of TAWS**

Without a doubt, requiring the installation and use of TAWS in EMS helicopters is the most expensive of the recommendations on the NTSB’s Most Wanted List. It would be unrealistic to expect all HEMS operators to comply with such a requirement overnight. However, just because such compliance is not immediately possible does not mean that the industry should not work towards the goal of having a TAWS in every EMS aircraft. The NTSB has recommended the use of TAWS for HEMS operations, and the FAA has worked with industry groups to determine a set of standards for the application of TAWS in helicopters. Now is the time for the FAA to begin requiring the use of TAWS, and it can do so on a timeline that considers the economic strain on HEMS operators.

A well-planned, methodical implementation of this technology will ensure that future EMS flights have the tools necessary to operate safely. First, the FAA should require that all new aircraft purchased for use by EMS operators include a TAWS. Next, the FAA should require that all pre-owned aircraft purchased by EMS operators be outfitted with a TAWS. These first two steps ensure that only those willing to make the capital outlay required for new or pre-owned aircraft will be burdened by the costs of these systems, which should cause fewer shock waves in the industry. Slowly, as operators replace their aircraft, TAWS systems will become more and more common. The last step should be to set a future date for which a TAWS will be required in order to operate an aircraft for EMS purposes. Industry participants would be consulted in regards to a realistic date of total compliance. By using a concise, methodical approach, each year the FAA would require that older aircraft be equipped with TAWS or removed from service. A strategy like this would avoid shocking the industry all at once with exorbitant costs, yet ultimately all EMS aircraft would be in compliance and the industry would operate in a safer manner because of this technology.

**B. Conclusion**

EMS flight operators provide a valuable service to patients in need of urgent care and will continue to do so for the foreseeable future. When other modes of transportation are not necessarily a practical option, EMS flight operators can transport

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247 See NTSB, Most Wanted Transportation Safety Improvements, *supra* note 1.
critically-ill and injured patients between medical centers, from rural, outlying, and isolated areas, and from congested urban cities. The men and women who have chosen this profession cannot be expected to consistently isolate themselves from the urgency and emotion that is inherent to this field. They should not be forced or allowed to stay on duty for unreasonably extended periods. Pilots should not be given such broad discretion concerning VFRs or weather minimums, that they are unable to make sound decisions regarding the safety of their passengers and crew. Finally, they should not be the sole decision maker regarding flight parameters, especially when weather and flight information can be communicated easily and quickly by other members of an EMS flight operation. The professionals who risk their lives on a daily basis to respond to the needs of others deserve a level of regulatory oversight that will ensure they operate in the safest manner possible.

The NTSB has made the appropriate recommendations more than once, and it is time for those recommendations to be implemented.249 The FAA must carry out its statutory duty to improve safety and prevent accidents by implementing the NTSB’s recommendations.250 When it comes to regulating the safety of EMS flights, the FAA must move beyond issuing advisories and guidance. They must do what is necessary to make the NTSB’s recommendations mandatory.

By making the recommendations on the NTSB’s Most Wanted List mandatory, the FAA will make EMS flights safer and thus save lives. To summarize, the FAA should first require all segments of an EMS mission to operate under Part 135 for weather and visibility requirements, and the corresponding crew rest and duty time requirements. Second, the FAA must require EMS operators to implement flight risk evaluation programs. As mentioned previously, these first two items can be implemented fairly quickly, and the operational impact and cost would be negligible. Next, the FAA should move to require formalized dispatch procedures. Requiring formalized dispatch will help to avoid using EMS flights unnecessarily. Moreover, by having a member of an EMS flight crew who is removed from the urgency and emotion of the situation, providing up-to-the-minute weather reports and flight data, EMS flights will be notably safer. Finally, the FAA should take steps to begin requiring the use of

249 See NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
TAWS in EMS aircraft. Though this final recommendation is probably best integrated gradually, beginning the integration immediately is certainly not premature.

The FAA has the authority to implement the changes recommended by the NTSB and can do so as soon as it feels the safety of EMS flight operations warrant the measures recommended. Though congressional action is on the horizon, it is not necessary. The FAA has already been granted the statutory authority to require that HEMS operators meet these measures. Further, possible congressional action should sound an alarm within the ranks of the FAA and alert the Agency that it is moving far too slowly. Legislators ultimately want the phone calls from concerned citizens to cease with their safety concerns met. The FAA can meet these concerns by carrying out the recommendations of the NTSB. The goal here is not to provide regulatory “red-tape” or burden an industry with administrative oversight. The goal, quite simply, is to improve EMS flight operations so that regulators, operators, and consumers are equally confident in the safety of these flights.

251 See NTSB, Most Wanted Transportation Safety Improvements, supra note 1.
254 NTSB, Most Wanted Transportation Safety Improvements, supra note 1.