

UNITED STATES OF AMERICA
NATIONAL TRANSPORTATION SAFETY BOARD
OFFICE OF ADMINISTRATIVE LAW JUDGES

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In the matter of: *
*
PUBLIC HEARING IN THE MATTER OF *
THE ISSUES ON EMERGENCY MEDICAL * Docket No.: SA-530
SERVICES HELICOPTER OPERATIONAL *
SAFETY *
*
* * * * *

NTSB Board Room and Conference Center
490 L'Enfant Plaza
Washington, D.C. 20024

Wednesday,
February 4, 2009

The above-entitled matter came on for hearing,
Pursuant to Notice at 8:30 a.m.

BEFORE: ROBERT L. SUMWALT, Chairman
LORENDA WARD, Hearing Officer
TOM HAUETER
VERN ELLINGSTAD
DAVID MAYER

APPEARANCES:

Technical Panel:

DR. LOREN GROFF
JEFF GUZZETTI
AARON SAUER
TOM JACKY
JIM CASH

KEITH HOLLOWAY, Public Affairs Specialist

Parties to the Hearing:

CRAIG YALE, Air Methods
SANDY KINKADE, Association of Air Medical Services
RAYMOND DAUPHINAIS, CareFlite
LOUIS R. BELL, CareFlite
HOOPER HARRIS, Federal Aviation Administration
MATT ZUCCARO, Helicopter Association International
GARY SIZEMORE, National EMS Pilots Association
AL DUQUETTE, Professional Helicopter Pilots
Association(PHPA)/Office of Professional
Employees International Union(OPEIU), AFL-CIO

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P R O C E E D I N G S

(8:30 a.m.)

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2
3 CHAIRMAN SUMWALT: Good morning. This hearing will
4 please reconvene and I'd like to call it to order. From an
5 administrative point of view, I would like to say that we would
6 prefer that people not eat and drink in the board room. However,
7 we do have a conference room outside of this auditorium room but
8 inside of security with a live video feed in there, so if you
9 would like to go out and grab a snack or something, that would be
10 a good place to do that, so we would appreciate your cooperation
11 there.

12 I am excited about the next few days. I think yesterday
13 was a very productive day. I do want to make the point that this
14 hearing is just the very beginning of the process. This is not
15 the be-all-to-end-all. It's not that on Friday we're going to
16 slam the gavel down and that's going to be the answer to
17 everything.

18 This is a fact finding mission. We are here to collect
19 factual information so that the Board and staff can go back and
20 begin the analyses on which way to proceed, but I don't want
21 people to think well, there wasn't enough information asked on
22 that question or something like that. We are here to collect
23 facts and this is just the very beginning and that's the point I
24 wanted to make there. Our first panel this morning will be on
25 Patient Transport Request Processes and we will look at issues

1 such as procedures for patient triage, flight request,
2 inter-facility transports, medical necessity, scene landing zone
3 setup procedures, early activation and auto-launch training and
4 communication.

5 Before I turn it over to our hearing officer,
6 Ms. Ward, part of what she does is to place the witnesses under
7 oath, but she also qualifies the witness and what you hear is the
8 witness basically giving their name and their title. However,
9 there is more to being qualified than just having a name and a
10 title. The hearing officer takes into account the information in
11 the bios of each of the witnesses to make sure that they are
12 technically qualified. Ms. Ward, I will now turn it over to you.
13 If you would please place under oath and qualify the witnesses.

14 HEARING OFFICER WARD: Thank you, Mr. Chairman. Could I
15 have the witnesses please rise? Please raise your right hand.
16 (Witnesses sworn.)

17 HEARING OFFICER WARD: Thank you. All right,
18 Chief Burkhammer, can you please state your name, your title and
19 organization you're with?

20 CHIEF BURKHAMMER: Good morning. My name is
21 Carlton Burkhammer, Battalion Chief, Fairfax County Fire and
22 Rescue here in Fairfax, Virginia.

23 HEARING OFFICER WARD: And Dr. Hankins.

24 DR. HANKINS: Dr. Dan Hankins. I'm a consultant in
25 emergency medicine at Mayo Clinic and Medical Director for Mayo

1 Clinic Medical Transport.

2 HEARING OFFICER WARD: Thank you. And then
3 Dr. Davidoff.

4 DR. DAVIDOFF: Hi, good morning. Dr. Jack Davidoff,
5 Chief Medical Director for Mercy Flight Central and current
6 president of the Air Medical Physicians Association.

7 HEARING OFFICER WARD: Thank you, gentlemen.
8 Mr. Chairman, these witnesses have been qualified.

9 CHAIRMAN SUMWALT: Thank you, Ms. Ward. I'd like to
10 turn it over to the Technical Panel. Dr. Loren Groff, if you
11 would please introduce the technical panel that will be assisting
12 you.

13 DR. GROFF: Thank you, Mr. Chairman, and good morning.
14 I'd like to start by introducing the rest of my tech panel
15 members. To my left is Mr. Aaron Sauer, to my right is
16 Dr. Mitch Garber and to my far right is Dr. Evan Byrne.

17 TECHNICAL PANEL QUESTIONS

18 DR. GROFF: As you mentioned, the subject of this panel
19 is the patient transport request process and related training and
20 guidance and procedural issues. One of the distinctions that can
21 be made in the transport requests or in patient transport is
22 between scene response and inter-facility transfer. I'd like to
23 begin my line of questioning on the topic of scene response and
24 I'll direct those questions to Chief Burkhammer.

25 Chief Burkhammer, good morning. Yesterday we heard

1 discussion of various models of air medical services. Just by way
2 of background and for the benefit of those here listening, could
3 you please describe Fairfax County's air medical services?

4 CHIEF BURKHAMMER: The air medical services in Fairfax
5 County predominantly is government run. It provides from the
6 Fairfax County Police Department. They provide two helicopters
7 with two caregivers and then we use a community based program,
8 PHI Virginia is our -- predominantly, our backup to the county and
9 they have a nurse/paramedic team configuration.

10 DR. GROFF: So primarily, you use your own helicopter,
11 your own equipment, but when you have need to have backup, you do
12 use a community based service, that's correct?

13 CHIEF BURKHAMMER: Yes. There's roughly five to six
14 different programs here locally, but due to the proximity, we use
15 mainly the Fairfax County police and a couple of the aircraft from
16 PHI.

17 DR. GROFF: All right, thank you. To start, I'd like to
18 talk about how a request for a scene response originates and maybe
19 to do that, let's set up a scenario. Let's say I'm driving down
20 the highway and I witness a serious motor vehicle accident and I
21 pull out my cell phone and call 911. Can you talk me through the
22 process of how that would result in a request for patient transfer
23 and beyond that, maybe the request for air medical services?

24 CHIEF BURKHAMMER: Sure. It does start with you
25 dialing 911 and your description of the scene. In our county and

1 most of the dispatch centers across the country, the call taker is
2 trained to obtain additional information. Some of the information
3 that they would be listening for that would, you know, pre-alert
4 the aircraft or auto-launch the aircraft would be auto accidents
5 with rollovers, with entrapment, any type of penetrating injury;
6 shootings, stabbings, severely burned patients, falls more than 20
7 feet for an adult, things of that nature. That would start the
8 process. As units are being dispatched, ground units are being
9 dispatched to that location, they would pre-alert the nearest
10 aircraft.

11 The only type of auto-launch we use in our county is for
12 penetrating injuries, shootings and stabbings, and the thought
13 process on that is even if it's not used for the medevac, the
14 police aircraft would be used for the pursuit of the bad guy. If
15 the aircraft is not pre-alerted based on the information given to
16 the first responders, they can go ahead and ask for the aircraft
17 to be pre-alerted. And then once the units arrive on-scene, we
18 have a pretty detailed protocol when you can use the aircraft, but
19 usually the senior medical provider on the scene, the medical
20 officer or supervisor would call for the aircraft.

21 DR. GROFF: Okay, I want to get back to the discussion
22 of auto-activation and auto-launch, but can you talk to -- you
23 mentioned they have sort of training and protocols that they
24 follow. Can you talk about the training and who makes that final
25 decision as to whether to send air, ground? You mentioned the

1 senior medical personnel responding is that -- like, let's say is
2 that an ambulance?

3 CHIEF BURKHAMMER: Really, in Fairfax County, any fire
4 and rescue or law enforcement officer can call for the helicopter.
5 In Fairfax County, we have a paramedic on every transport unit and
6 engine company, so you're going to get multiple paramedics on
7 every event. There are some cases where the law enforcement
8 officer may arrive first, very rarely, and they may ask for the
9 aircraft. A good example would be an officer wounded, officer
10 struck by a car on the beltway, something like that. There's many
11 times the aircraft is placed on pre-alert and even maybe auto-
12 launched and they're turned around.

13 DR. GROFF: Okay. We heard discussion of EMS services
14 having protocols. We have a copy of Fairfax County protocol and
15 Mr. Deats, if you could bring up Exhibit 6(a) and we'll just start
16 with Page 1 and Chief Burkhammer, if you could kind of just talk
17 me through what this protocol is and how it's actually
18 implemented.

19 CHIEF BURKHAMMER: This protocol is in our EMS manual.
20 We have a protocol for just about every type of injury that one
21 provider could encounter. This, the air medical transport
22 protocol, it was developed after researching the Air Medical
23 Physicians Association's information and the National Association
24 of EMS Physicians. One thing about our protocol that is maybe
25 different than other parts of the United States, we discourage the

1 use of air medical transport solely based on the mechanism of
2 injury, meaning if you look 20 years ago, we used the aircraft on
3 just about every accident where it was a rollover, there was a
4 patient ejected, there was a death in the car, pedestrian struck,
5 you know, things of that nature. We've learned, our county, we
6 have learned that due to new development in vehicle construction,
7 the use of air bags, the use of helmets on motorcycles, seat
8 belts, crumple zones, that we're seeing a lot of people walk away
9 from these bad accidents and so in our protocol, we ask you to
10 look at the mechanism of interest to stir your suspicion, but then
11 as you look through the protocol there's nine different types of
12 injuries or illnesses that we want you to add.

13 So you have to have the mechanism of interest and then
14 we want you to have one of the following before you use the air
15 medical transport. Pretty common, compromise the airway, you
16 cannot maintain it and again, that's one reason we use the air
17 medical transport.

18 Those providers, our providers on the ground cannot do
19 rapid sequence induction or surgical -- so we use the aircraft for
20 that. Again, any respiratory distress or failure, any signs or
21 symptoms of shock. And again, you have to have this plus the
22 mechanism of injury -- score of 10 or less. Once you get, again,
23 that refers to the mental state of the patient. Once you get
24 below 10, below eight, those are candidates for intubation. Loss
25 of consciousness more than five minutes, major amputations and

1 when we say major, we mean entire limbs, legs, arms, you know,
2 we're not looking at digits, toes and fingers. Signs and symptoms
3 of a spinal cord injury and then pelvic instability and then we
4 talk about major long bone fractures, we're talking about your leg
5 bones and the bones in your arm, so we ask you to look at the
6 mechanism of injury and then you have to have one of these other
7 nine before you can use the aircraft.

8 DR. GROFF: So is this something that -- is this used in
9 training or is this something that's used as, let's say, like a
10 checklist that they would carry with them, the various personnel
11 would have with them and actually step through that and come up
12 with a score or something like that?

13 CHIEF BURKHAMMER: The protocol we have, our protocols
14 are updated every two years. The provider is tested on the
15 protocols every two years. We have four continuing education
16 sessions every year where these protocols are reiterated. And
17 then when we get good data, you know, we communicate that to the
18 provider through monthly newsletters, e-mails and through their
19 supervisors. I mean, more than just the air medical transport,
20 but all the other protocols, provide feed back, are you making the
21 right decisions, is there room for improvement.

22 DR. GROFF: All right, thank you. Is that an all or one
23 decision when you send air, when you decide to send air, there's
24 also ground to ambulance support there. Let's say if you call for
25 air and they're not available, they don't then launch an

1 ambulance, is that true?

2 CHIEF BURKHAMMER: I think in our county -- and again,
3 our county is very urban and I can't speak for the rural parts of
4 America which most of America is rural, but very rarely will an
5 aircraft land on a scene in Fairfax County where there won't be
6 multiple fire and rescue units including transport units. One
7 thing we have noticed with the auto-launch is we find that the
8 aircraft is there before we're ready and the aircraft, we used to
9 auto-launch it on more than just a penetrating trauma and what we
10 found is the aircraft's overhead, wanting to land, wanting an LZ
11 report and we were playing catch-up and we could look at it and we
12 could listen to the audio tapes and everybody seemed to be in a
13 hurry, you know, the aircraft wanted to get on the ground, there's
14 unit en route to set up the LZ and we think that that was rushed.

15 Now, when we auto-launch the aircraft, we dispatch a
16 separate suppression unit, engine truck or heavy rescue and their
17 sole task is to set up the LZ, so if you get shot in Fairfax
18 County tomorrow, you're probably going to get two engine
19 companies, a medic unit and an EMS supervisor and that sole second
20 engine company, they're going to immediately go to the nearest
21 landing zone and set it up. If they don't need the aircraft, they
22 go in-service, but we were finding we were playing catch-up and in
23 my background as a flight paramedic doing auto-launch, we also
24 felt that we were getting the scene long before the LZ was being
25 established and we're circling around and burning fuel and

1 everybody seems to be getting in a hurry and sometimes the persons
2 setting up the LZ appear to be rushed and that's something we
3 don't want. If you're rushed, there's room for error.

4 DR. GROFF: And just for my clarification, auto-launch
5 is, in certain situations, when the injury is severe enough or the
6 condition is critical enough that it automatically triggers the
7 launch of an air medical helicopter, is that correct?

8 CHIEF BURKHAMMER: And usually that's only based on the
9 layperson dialing 911.

10 DR. GROFF: Okay.

11 CHIEF BURKHAMMER: I'm sure this is a very effective
12 tool. And other parts of the United States, especially when you
13 look at some of these programs, you know, fly 60 miles to a
14 location. We found, in Fairfax County, which is a small
15 county -- 400 square miles, a lot of people, a lot of traffic --
16 but the flight times, you can probably be in Fairfax County
17 anywhere under 12 to 15 minutes by air, so --

18 DR. GROFF: All right, thank you. And final question,
19 you mentioned scene setup, LZ setup. One of the particular risks
20 for scene response is landing at unimproved sites. Who is
21 responsible for setting up an LZ?

22 CHIEF BURKHAMMER: Every person that's hired by the
23 county, during recruit school, they're -- we developed our own
24 PowerPoint program based on information from the National EMS
25 Pilots Association. Each recruit is given that four hour class.

1 At the end of the class, the police helicopter is based at our
2 fire academy, they practice loading the aircraft, practice setting
3 up the LZ and then four times a year we'll have the aircraft that
4 we rarely use, Park Police, Maryland State Police, MedStar and
5 PHI, they come and they land all the aircraft and we go over
6 proper patient loading and things like that. Again, we have a
7 detailed -- how to establish a landing zone.

8 I think we could do a little bit better job -- looking
9 at some of our documentation, I think we could do a better job of
10 when not to call for the helicopter and it may be touchy, but one
11 item that I would like to look at, if you're at the landing zone
12 and you're encountering icing or heavy snow, heavy rain, heavy
13 thunder and lightning, well, you make the decision to cancel the
14 helicopter instead of maybe the pilot getting airborne and making
15 that decision. So I think there's room for us to improve and some
16 better judgment, but we have -- the police department also has a
17 protocol that we use when they set up the LZ, so hope I answered
18 your question there.

19 DR. GROFF: I'll move on to Dr. Hankins and shift gears
20 a little bit and talk about the inter-facility patient transfer
21 and again, just for way of background for everyone's knowledge,
22 can you just provide a little bit of a description of Mayo's air
23 medical services program?

24 DR. HANKINS: Actually, we have an integrated system
25 that includes ground 911 for 11 cities in Minnesota, Wisconsin.

1 We do fixed wing and we do rotor wing and we have four
2 helicopters, three of which are IFR and night vision goggles. As
3 of the end of 2008, I think our emergency communication center put
4 out 79,000 call numbers, so as far as the whole system goes. So
5 we basically do the whole gamut from 911 calls up to critical care
6 air.

7 DR. GROFF: All right, thank you. Let's do the same
8 sort of scenario setup here. What's a typical scenario in which
9 an inter-facility transfer may be called for?

10 DR. HANKINS: Well, one of the most common ones, for
11 instance, nowadays is something called a STEMI which is an
12 ST-Elevation Myocardial Infarction, which is basically you've done
13 damage to your heart. Those are very time dependent emergencies.
14 It does require air because you want to try and get them to the
15 cath lab as fast as you can in order for them to get an angiogram
16 and percutaneous intervention with a balloon or a stent and so
17 that would be a very common referral.

18 DR. GROFF: So just to clarify, you're moving them to a
19 location where they can get a higher level of care, is that
20 correct?

21 DR. HANKINS: Well, basically, the helicopter is taking
22 tertiary care out to a primary care scene or hospital and so we're
23 bringing the crew out who is used to critical care with multiple
24 drips, multiple drugs and things like that, and bringing them back
25 to where they can get an angiogram and a stent.

1 DR. GROFF: And who is responsible for making the
2 request for transfer, who takes that responsibility?

3 DR. HANKINS: Well, I think one of the things that needs
4 to be clear, which I'm not sure was clear yesterday, is there's a
5 major difference between inter-facility transports and scene
6 transports. Inter-facility transports are really totally governed
7 by the federal law called EMTALA which was touched on yesterday.
8 Emergency Medicine Treatment and Labor Act of 1986 is what EMTALA
9 is, so basically it says that you have to stabilize someone to the
10 maximum of your ability before you transfer them. Sometimes the
11 small hospitals can't stabilize them, so they have to send them as
12 they are and they need someone of a higher level of care to
13 transport that patient to the tertiary center.

14 DR. GROFF: So by way of clarification, the federal law,
15 the federal guidance is -- refers to the level of care provided,
16 but not necessarily the means of transport?

17 DR. HANKINS: Well, EMTALA is kind of a very broad law
18 in the sense, for instance, it's the -- we're the only physicians,
19 emergency physicians, who are obligated by federal law to see
20 everybody because of EMTALA. It says that you have to stabilize
21 someone to the maximum of your ability and that you have to make
22 sure that during transport that you've minimized their chance to
23 deteriorate. So basically, EMTALA deals with screening, medical
24 screening, and emergency situations and if you realize you can't
25 take care of this patient, what do you need to get him on to a

1 higher level of care. And yesterday they touched on this being a
2 decision by the sending physician when actually it's more of a
3 mutual decision between the sending physician and the receiving
4 physician, so it's a physician-to-physician interaction and the
5 people in the tertiary center are usually more expert at
6 transport, so it can really make suggestions in discussion with
7 the sending physician about what the best method of transport is
8 to avoid any deterioration during the transport.

9 DR. GROFF: And when are the flight crews called in to
10 this? How do they relate to that decision, if at all?

11 DR. HANKINS: Well, if you take a typical, since we've
12 talked about STEMI, take a typical STEMI from, say, a hospital 45
13 miles away. The call usually comes in to -- we have a phone room
14 in the emergency department which is our referral center, place
15 where the calls come in to. It's an experienced emergency nurse
16 who knows the system very well as far as where they're going to go
17 in the hospital, what kind of transportation's available and the
18 nurse works in conjunction with our emergency communications
19 center, which is the dispatch center, to determine okay, what's
20 the best mode of transportation, is the helicopter available, why
21 don't you get the helicopter going towards the hospital involved.
22 And so the flight crew really is not involved directly with inter-
23 facility transport as far as is it appropriate transport or
24 whatever. It's really done under medical guidelines because
25 really strong medical oversight is what you need for inter-

1 facility and scene transports, as far as that goes.

2 DR. GROFF: So we've heard various discussion of sort of
3 a need to isolate the flight crew from any real knowledge of what
4 the case is that they're transferring so that they don't feel any
5 particular pressure to travel. At Mayo, do you have any
6 procedures, steps that you take to ensure that separation?

7 DR. HANKINS: I think it's more isolate the pilot from
8 the decision because the pilot cannot be affected by the fact that
9 there is a high-risk OB out there that's ready to deliver and
10 can't be affected as far as the weather decisions go based on that
11 scenario, so the pilot's isolated from the scenario but the
12 medical crew may be aware that something's going on because they
13 need to know if they got to take any special equipment on the ship
14 that we don't usually transport.

15 DR. GROFF: So is there a particular mechanism, do they
16 -- is it just a matter of procedure, you don't tell them or are
17 they isolated in some way that they --

18 DR. HANKINS: The pilot doesn't know. What happens is a
19 page goes out and it goes out by radio that there is an inter-
20 facility transport from Decorah, Iowa, let's say. So then the
21 pilot can do the weather check and then the flight team can then
22 contact emergency communications center as far as okay, what kind
23 of a run do we have, do we need anything special, a balloon pump,
24 for instance, or something like that.

25 DR. GROFF: All right, thank you. I also understand

1 that at Mayo you have a fairly active program to review the
2 utilization of services on a regular basis, is that correct?

3 DR. HANKINS: Yes. Actually, all flight records are
4 reviewed by medical direction. There are three of us who share
5 medical direction for air, ground and emergency communications and
6 all of the air runs are scrutinized by medical direction for
7 appropriateness. But we also have a system that integrates pilot
8 input, safety, patient care and patient outcome, which is a
9 computerized system that looks at all of the various elements to
10 put them together as far as QA goes.

11 DR. GROFF: And I think, Mr. Deats, if you could bring
12 up Exhibit 6(c), the second page of that. You've provided an
13 exhibit here with just an example of -- you mentioned the software
14 application to review utilization. And while we're waiting, is
15 that -- how often is that utilization done? Excuse me, it's 6(g).

16 DR. HANKINS: It's done on every run.

17 DR. GROFF: Oh, after run?

18 DR. HANKINS: Right.

19 DR. GROFF: Okay.

20 DR. HANKINS: So basically, you could go back and look
21 at, for instance --

22 DR. GROFF: Let's go to the second page.

23 DR. HANKINS: So all this information's put in -- and
24 because of my eyes, I have to look at my copy here -- so all of
25 the information's put in by the pilot, the crew, whether the

1 follow-up letter was sent, whether there were any things that
2 might pertain to CAAMS-type procedures -- we're a CAAMS accredited
3 program -- if medical control was used. So we can go back, for
4 instance, and look at any of our runs or group of runs and say was
5 medical control used for STEMI's ever or were appropriate drugs
6 used, what was the discharge rate from the emergency department or
7 within 24 hours from the hospital, so all kinds of data -- or
8 whether -- how many flights were aborted because of weather, did
9 they run into icing conditions, et cetera, and there's also --
10 this also includes the debriefing, crew debriefing, afterwards
11 with the pilot and the medical crew.

12 DR. GROFF: And Mr. Deats, if you could just page
13 through that just to give an idea of what's involved in that
14 software application, the different pages, medical review.

15 DR. HANKINS: On the previous slide, you noticed there
16 was a check box, for instance, that requires further review.
17 There was some outlier because medical directors are always
18 interested in outliers, outliers are what give me sleepless nights
19 and so, you know, did they take four times to intubate the
20 patient, four attempts, were they unable to get baster (ph.)
21 access, things like that.

22 DR. GROFF: And based on your review, can you make any
23 kind of statement about what your over-triage or under-triage
24 experience has been?

25 DR. HANKINS: Well, it depends on what you're looking

1 at. One of the slides here did indicate that -- and this was just
2 for a short time period -- did indicate that our over-triage rate
3 was about 3 percent and that's people who are discharged from the
4 hospital within 24 hours. But if you think about it, things now
5 are not what they were 20 years ago. So people that are
6 discharged from the hospital now within 24 hours who were very
7 appropriate helicopter transports and a good example might be an
8 acute coronary syndrome where they have unstable angionim (ph.),
9 so they have heart problems but they're not doing damage to their
10 heart, we will "cool them down" in the emergency department with
11 medications, do serial blood tests on serial cardiograms, do a
12 tread mill or assisted -- scan in the morning and send them home,
13 so they're out within 24 hours, but they've had all the
14 appropriate things done and it was a very appropriate thing to
15 transport into a tertiary center.

16 DR. GROFF: So just to clarify, you said about 3
17 percent?

18 DR. HANKINS: About 3 percent over-triage. In this
19 particular set of slides, which was an example that Jeff Sterns
20 set up.

21 DR. GROFF: Okay.

22 DR. HANKINS: If you look at over-triage, for instance,
23 from our trauma flights, it depends on whether you include the
24 people that acutely intoxicated or not. Acutely intoxicated
25 patients actually up the over-triage significantly, so our over-

1 triage for scene flights where they're not intoxicated, if we take
2 those people out, it's about 17 percent. And if you include the
3 alcohol patients, I think it's about 10 percent higher. So there
4 are a lot of things that go into this decision. If someone who is
5 unconscious on a ski hill somewhere -- we do have skiing in
6 Minnesota, though it's not very high -- someone who is unconscious
7 on a ski hill somewhere un-witnessed, you don't know if he ran
8 into a tree, if he had a stroke, if he got run over by another
9 skier, he's just on the hill unconscious, so that's an appropriate
10 helicopter transport, but he may be just intoxicated, you know,
11 his -- .35 because he had four bottles of Yegameister (ph.) or
12 something like that. But that's not an inappropriate transport.
13 I mean, that's someone who may even be discharged from the
14 emergency department to detox, for instance, which I've done, but
15 it was an appropriate transport.

16 DR. GROFF: Okay. Thank you very much. And a lot of
17 issues there, but in the interest of time, I'd like to move on to
18 Dr. Davidoff. You're representing AMPA here and that capacity
19 have sort of a national perspective and some questions related to
20 that. First, I'd like to step backward and ask a question that
21 may seem obvious, but could you discuss what are the benefits of
22 air transport versus ground transport?

23 DR. DAVIDOFF: Well, there's multiple benefits.
24 Certainly, the obvious is that it can get into places sometimes
25 that an ambulance that can't get to quite easily. Sometimes it is

1 faster than transporting by ground. We've certainly proven that
2 the out-of-hospital time, say, in an inter-facility, which is a
3 dangerous time, in my opinion. When I'm transferring a patient,
4 I'm very comfortable having them with me although I may have
5 limited resources. When they leave my care and they're now out
6 either on the road or in the air, they're out of hospital, there's
7 limited resources available to them other than the crew caring for
8 them.

9 The out-of-hospital time, by flight, is significantly
10 less, maybe by half, than it would be if they're going by ground.
11 So if I have a very unstable patient, I know that I can get them
12 as stable as possible, get them into an aircraft and keep them in
13 the air for a limited amount of time, get them to the receiving
14 facility and that way they're back in the hands of physicians and
15 all the resource available for them so the out-of-hospital time is
16 very significant.

17 Most of the aircraft that we're talking about have a
18 higher level of training. They've got a nurse, a respiratory
19 therapist, a paramedic, various combinations of those crews, or
20 physicians in some cases. So you're going to have a higher level
21 of training, more procedures. Most of these aircraft personnel
22 are trained to deal with sick people, that's really their
23 specialty. They have more in the way of pharmacology, they've got
24 more drugs available to them to treat the patient, more
25 procedures, more advanced procedures, typically more advanced

1 equipment, higher level ventilators, monitors, et cetera. So
2 those are really some of the obvious reasons for utilizing air
3 medicine over ground.

4 DR. GROFF: So you said something there that I felt was
5 interesting. You said sometimes faster. Can you elaborate on
6 that? When might -- are there situations when traveling by air
7 may take longer?

8 DR. DAVIDOFF: Yes. If you load a patient to a
9 helicopter and the crew needs to do lifesaving procedures that the
10 ground crew would not be able to do, it may actually take longer
11 from the time the patient's loaded into that aircraft to get to
12 the receiving hospital versus loading into an ambulance where
13 those procedures aren't available. The thing is, hopefully that
14 patient's arriving in better shape than they would've if they'd
15 gone by ground.

16 DR. GROFF: So you mentioned that the capability of the
17 -- say the equipment on board and the drugs and things like that
18 are higher with the helicopter and the qualifications of the
19 medical personnel are often higher. Would it be possible to have
20 a ground ambulance that had the same elevated level of capability?

21 DR. DAVIDOFF: Yes. And there certainly some ground
22 services that have those capabilities, but they are restricted in
23 the area that they can cover. We can cover much larger areas with
24 less helicopters than you would have to have ambulances, so
25 there's still an advantage to having a vehicle that can cover

1 greater distances in less time.

2 DR. GROFF: So I guess with that said, what are the down
3 sides? Why be concerned in reducing the amount of helicopter
4 utilization? Are there negatives associated with using air?

5 DR. DAVIDOFF: You're asking me that question and I
6 would say no, there are no negatives to using air as long as the
7 air is properly utilized.

8 DR. GROFF: So are there situations when air could be
9 detrimental traveling by air?

10 DR. DAVIDOFF: If the aircraft is properly equipped,
11 properly piloted, properly trained people in the back, I do not
12 believe that there is a detriment to flying a patient.

13 DR. GROFF: Are there any medical conditions that would
14 be inappropriate to transport someone by air?

15 DR. DAVIDOFF: Typically not. Most of the medical
16 conditions that we deal with we can work with in some way. There
17 are some patients that need to fly at lower levels. If you're
18 talking about fixed wing, the cabins are pressurized. There are
19 certain things that need to be done ahead of time to prepare a
20 patient for flight, but I do not believe that there's any
21 detriment to flying any of our patients.

22 DR. GROFF: Okay, thanks. There is a lot of -- sort of
23 expanding on that, there is a lot of discussion in the literature
24 on triage, reviewing -- is that really the same thing --
25 utilization of helicopters, is that the same thing as the medical

1 triage or are those actually separate issues?

2 DR. DAVIDOFF: It's part of the medical triage chain.
3 Certainly, the patients that are going to end up flying are your
4 most acute patients or highest acuity patients and there are
5 patients that you may see initially at an outlying hospital that
6 you immediately realize you're going to need to fly because of the
7 acuity of their medical conditions.

8 DR. GROFF: So in that case, how do you plan for or how
9 do you compensate when medical transportation is not available,
10 what happens then if --

11 DR. DAVIDOFF: If air medical transportation is not
12 available?

13 DR. GROFF: Air medical, excuse me.

14 DR. DAVIDOFF: There are ground services that can
15 provide somewhat similar services and it depends on region. You
16 have to keep in mind, Fairfax County and Rochester, Minnesota and
17 Rochester, New York, things are very different and this is very
18 regionalized and that's one thing that some people have a
19 difficult time understanding. You may have an excellent ground
20 mobile intensive care unit or mobile critical care service that
21 can do everything that the most advanced air service can do short
22 of diminishing the out-of-hospital time and that would certainly
23 be the backup if weather were bad or the air medical service was
24 not available. There are other regions where no such service
25 exists. You may have an advanced life support service that comes

1 nothing close to critical care service, in which case when you're
2 transporting with that service, you're really transporting with a
3 lower level of care than you want to. In New York, for example,
4 paramedics cannot transport blood or blood products so if you have
5 a trauma patient or a medical patient that needs transfusion or
6 blood products, if you try to transport them by ground, you need
7 to try and provide another provider, a nurse or a physician, and
8 with resources as limited as they are in most of these little
9 hospitals, that's very difficult.

10 DR. GROFF: Okay, thank you very much. Mr. Chairman,
11 that concludes my questions.

12 CHAIRMAN SUMWALT: Thank you. We'll now go to the
13 parties and yesterday we ended, I believe, with the FAA, so today
14 we'll start with the HAI.

15 PARTY QUESTIONS

16 MR. ZUCCARO: Thank you, Mr. Chairman. Some quick
17 questions. Chief Burkhammer, I was wondering, I just wanted to
18 confirm, there is a central dispatch in Fairfax County that
19 handles all the 911 calls that goes through that one dispatch
20 unit?

21 CHIEF BURKHAMMER: Yes, sir. You're correct.

22 MR. ZUCCARO: Okay. And if I understood the protocols
23 as to how the helicopter's called, if a helicopter transport is
24 requested, it sounded like the steps were based on certain medical
25 contingencies that could be an auto-launch if the initial call

1 indicated that that would be required and that the aircraft would
2 just launch to the scene and get on its way?

3 CHIEF BURKHAMMER: Yes, sir. It would be launched as
4 they're dispatching the fire and rescue units.

5 MR. ZUCCARO: Okay. And then if, in fact, the
6 auto-launch wasn't automatically triggered by the system, then the
7 dispatch would make a request to the Fairfax County police
8 department for a helicopter, if they determine later that they
9 needed one?

10 CHIEF BURKHAMMER: Yes. Normally, very rarely will we
11 get on-scene and have not pre-ordered the aircraft or it's already
12 en route. I mean, we usually get very good information from our
13 dispatchers and we're really very rarely blindsided when we arrive
14 on-scene and find something other than what we were dispatched
15 for.

16 MR. ZUCCARO: Okay. And then if, perchance, the need
17 warrants or the Fairfax County police department helicopters are
18 tied up on other missions or for some reason not available, then
19 the dispatch goes to the backup provider and that was PHI Air Med,
20 you said?

21 CHIEF BURKHAMMER: Yes. And again, that's very rarely.
22 I mean, over the last 20 years we went from -- patients
23 transported in Fairfax County has dropped over 70 percent. So
24 basically, you know, we made the decision not to transport
25 mechanism-only patients, so the flight volumes are very low

1 already. There was a time when we had multiple aircraft based in
2 Fairfax County. At the time it was Air Methods, had an aircraft
3 based at Fairfax Hospital and it was real easy to call Fairfax
4 County police or AirCare and now Fairfax County police is the only
5 aircraft based in Fairfax County, so we got to look at what's the
6 dispatch, what's the time by ground and we kind of know the areas
7 that would benefit by air medical transport using an aircraft
8 that's not based in Fairfax County. And we look for those
9 triggers that you're waiting on-scene 12 minutes for an aircraft
10 when you could've been at the hospital in 15, so we monitor those
11 times very carefully.

12 MR. ZUCCARO: Right. I'm trying to get an accurate
13 picture of what's involved in the aircraft and the way it's set
14 up. If I understood it, the Fairfax County police department's a
15 multi-tasking aircraft? It does law enforcement as well and --

16 CHIEF BURKHAMMER: Yes, it does search and rescue, and
17 air medical transport.

18 MR. ZUCCARO: Oh, okay. And is it actually set up so
19 that its ready to go or do they have to go through some kind of a
20 conversion of the aircraft when they get an air-evac call or --

21 CHIEF BURKHAMMER: The only conversion that we see is
22 it's a Bell 407.

23 MR. ZUCCARO: Right.

24 CHIEF BURKHAMMER: They have to drop that front seat to
25 accommodate the patient loading.

1 MR. ZUCCARO: Okay. And so the aerial patrol officer
2 that's riding with the pilot is also a paramedic?

3 CHIEF BURKHAMMER: Yes. There's a pilot and two
4 paramedics.

5 MR. ZUCCARO: Okay. So it's not set up like, I guess, a
6 dedicated aircraft DMS would be with the equipment and the flight
7 nurse and --

8 CHIEF BURKHAMMER: Well, I think it is a dedicated
9 medical aircraft. It does not have a nurse.

10 MR. ZUCCARO: Okay.

11 CHIEF BURKHAMMER: There are many programs using the
12 Bell 407 and it's configured the same.

13 MR. ZUCCARO: Oh, it's configured the same as like the
14 PHI aircraft that's doing the MS with all the equipment and
15 everything?

16 CHIEF BURKHAMMER: Yes.

17 MR. ZUCCARO: Oh, okay. Great. All righty. Well,
18 thanks. That's all I had for that one. And I did have a
19 question, Dr. Hawkins (sic). I just wanted to confirm, you noted
20 about the pilots being isolated from the medical information when
21 the calls come in and I'm assuming you support that philosophy?

22 DR. HANKINS: Absolutely. Because I think that they've
23 got to make their decision on weather based on the facts because
24 we have very good weather data and they cannot -- no, they can't
25 let the nature of the mission affect their decision about flying.

1 MR. ZUCCARO: Okay, great.

2 DR. HANKINS: Because we have the ground ambulance,
3 also, that's always an option for us. We can always send the
4 flight crew by ground.

5 MR. ZUCCARO: Yeah, absolutely. I noticed the comments
6 about the medical staff reviewing that reporting program which
7 really looks very good and I think the primary issue, I understood
8 you were looking for things such as the medical necessity for the
9 flight and the medical protocols during the flight and then you
10 mentioned that you also review aeronautical information relative
11 to weather cancellations of flights. What is actually involved
12 that the medical staff is reviewing in terms of the flight
13 operations of the flights and like, let's say if you're looking at
14 how many times a flight was cancelled due to weather, what are you
15 actually looking at and what are you trying to derive from that
16 review?

17 DR. HANKINS: That's actually more of an administrative
18 thing in the sense that we can decide well, do we have the right
19 aircraft and we turn down -- weather because obviously weather's
20 an issue in Minnesota.

21 MR. ZUCCARO: Yeah.

22 DR. HANKINS: Are we turning down a lot of flights
23 because of icing or weather and do we need a different kind of
24 ship. For instance, we're looking at deicing technology for one
25 of our future aircrafts which would be very useful in Minnesota,

1 so it's more for that kind of thing rather than -- we're not
2 making aeronautical decisions. Medical people aren't making
3 aeronautical decisions.

4 MR. ZUCCARO: The other thing I wasn't sure, do you own
5 the aircraft or an operator operates them for you?

6 DR. HANKINS: We have four aircraft right now. Our
7 second 145 actually leaves Dallas tomorrow.

8 MR. ZUCCARO: Oh, okay.

9 DR. HANKINS: And the other three are leased through
10 Omniflight.

11 MR. ZUCCARO: Oh, okay. Now, when you're doing those
12 reviews and you're doing things like the weather cancellations or
13 other operational issues, is the operator and pilots involved in
14 those meetings or --

15 DR. HANKINS: Yes.

16 MR. ZUCCARO: -- reviews?

17 DR. HANKINS: Yes. Our safety committee is integrated
18 with dispatch, mechanics, pilots, medical people, physicians.

19 MR. ZUCCARO: Yeah, great. But am I correct, it sounds,
20 the way you were describing it, it sounded like you're reviewing
21 the aeronautical issues such as weather cancellations and other
22 things, actually towards a potential enhancement of safety in
23 terms of equipment and procedures --

24 DR. HANKINS: Right.

25 MR. ZUCCARO: -- to see if you can make it better?

1 DR. HANKINS: Correct.

2 MR. ZUCCARO: Okay, great. Well, thank you very much.
3 Those are my questions.

4 CHAIRMAN SUMWALT: Thank you, Mr. Zuccaro. We now go to
5 PHPA.

6 MR. DUQUETTE: Thank you, Mr. Chairman. And all our
7 questions have been answered that we had prepared for, so we have
8 no questions for this panel at this time.

9 CHAIRMAN SUMWALT: Thank you. AAMS.

10 MS. KINKADE: Good morning. Chief Burkhammer, does
11 Fairfax County, the helicopter, do they inter-facility transports?

12 CHIEF BURKHAMMER: No, they do not. There has been
13 occasion that they would do an inter-facility transport from a
14 facility in Fairfax County to Fairfax Hospital, but with the
15 amount of helicopters in the metro area, I don't think that's been
16 done in the last two or three, four years.

17 MS. KINKADE: Okay.

18 CHIEF BURKHAMMER: But at the time, you know, 15 years
19 ago when the resources were limited, yes, they would and if you
20 remember that program, it was a joint venture with Fairfax
21 Hospital where they provided a flight nurse and a flight paramedic
22 and they did everything. They reached out to other counties when
23 the volumes picked up and they were missing flights in their own
24 county and police missions, that's when Fairfax Hospital decided
25 to purchase their own aircraft.

1 MS. KINKADE: Great. When you were talking about some
2 things you'd like to see changed in the future, you talked about
3 having the division that's responsible for the landing zone maybe
4 cancel a flight if it seemed like the weather conditions were
5 deteriorating. Is there anything that would prevent them from
6 doing that now if they got to a scene and realized that the
7 weather was different or was deteriorating for them just to call
8 and say cancel the helicopter because the weather is worse than we
9 initially thought it would be?

10 CHIEF BURKHAMMER: You know, I think historically, we've
11 let that decision on the pilot to make and I'm not confident
12 that's the right decision. Why even put the pilot in that
13 position when you know, you're there, and the weather is
14 questionable.

15 Again, the pilot has more knowledge, more experience
16 dealing with the weather, but he or she is not on-scene and it
17 kind of brings up a topic that was discussed yesterday, helicopter
18 shopping, and in our county, our rule is if the county police turn
19 it down due to weather, they are in the county. We don't call
20 anybody else. And before, when there was an aircraft based at
21 Fairfax, we could call there, hey, can you check the weather, but
22 we don't -- they turn a flight down due to weather, we don't call
23 anybody else, so --

24 MS. KINKADE: And I appreciate that. I guess I still am
25 a little confused why -- I understand the pilots have, you know,

1 they'll make a decision based on the information that they have in
2 front of a computer and et cetera, but if there's somebody on the
3 ground that notices the weather's worse, I can't imagine that they
4 wouldn't want to hear from you guys saying you know, we're a
5 little concerned and here's the report. It's still up to the
6 pilot, but they might just offer that information as additional
7 information.

8 CHIEF BURKHAMMER: I mean, two nights ago the visibility
9 was very low and I hear a unit asking go ahead and start the
10 helicopter and I'm like what are you thinking, and you also got to
11 realize that we have all these multiple programs approaching us
12 and we're IFR, we have an inclement weather package, we can do
13 this, we can do that, you know, we can do things that your
14 helicopter cannot do. And I know the benefits of having an IFR
15 equipped aircraft. I think those benefits are very limited when
16 you're in a small county like we are and when we're so close to
17 the receiving facility.

18 I'm sure there's huge benefits, but not in Fairfax
19 County and I'm not sure who to blame on the helicopter shopping,
20 but it is difficult when you go to the 911 center and you see all
21 these phone numbers, hey, they sent us all these phone numbers and
22 they're all tacked up there and the people in need, you know, hey,
23 we'll start calling these numbers when our aircraft can't do it
24 and we've stopped that. But I think what you're asking, if you
25 look around, I don't see any protocols in the nation that when you

1 look at a fire and rescue protocol that it gets that detailed.
2 You know, here's when you should call for the aircraft. You know,
3 other than the medical reasons, there's really no reason don't
4 call for the aircraft. I think, speaking for Fairfax County, we
5 could do a better job defining when not to call for the aircraft
6 and some other things. I think we have a very good, a very well-
7 designed protocol when we're calling for the helicopter, when
8 we're setting up the landing zone, you know, the aircraft -- all
9 the aircraft around us that we use, use night vision goggles.

10 We're very good when we use the white light versus the
11 red lights, the devices we set up for the LZ, it's a very detailed
12 report, when we talk to the pilot and when they're on final, there
13 is no traffic allowed on the channel. And I think that's very
14 well-defined, but you know, we've not had a crash but there's
15 always room for us to do better.

16 MS. KINKADE: Thank you. Dr. Hankins and Dr. Davidoff,
17 this is really for both of you. How do you train your physicians
18 and/or the first responders in your area for how to make the
19 appropriate request for your services?

20 DR. HANKINS: We have a very active program we call
21 MOST, which is -- safety training and this actually combines how
22 to set up a landing zone, what are the criteria to call the
23 helicopter and things like if the helicopter has an incident how
24 do you shut it off. And we are very active with doing this.
25 We've done it for first responders, law enforcement in 15 counties

1 in Minnesota, the ones we do auto-launch in, and five counties in
2 Wisconsin. And this is an hour or two program. If we can, if
3 it's available, we'll get the helicopter out so they can see the
4 helicopter and get a little familiar with it, how to approach it,
5 so we have a very active education program ongoing.

6 DR. DAVIDOFF: Thank you for answering that question
7 because I was hoping someone would bring it up. Outreach, I
8 think, is a very important part of what air medical services do
9 and I'm not aware of an air medical service that doesn't do
10 outreach, certainly, it's going to vary from service to service.
11 Our outreach goes out to not only the first responders, the fire
12 department and EMS folks, but also to the hospitals that we
13 service. The training varies depending on where we're going, but
14 the training involves safety, setting up a landing zone. It does
15 included when to call and when not to call for the helicopter.

16 We do a different type of training with the hospitals,
17 the community hospitals who are sending patients with us. Again,
18 what's an appropriate use of our helicopter; what isn't. And then
19 we also do training at the receiving hospitals which is a lot of
20 setting up an LZ even though it's a standard LZ, but still there
21 are safety things about not approaching the helicopter, et cetera.

22 And also, since we work with the transfer centers at
23 these receiving hospitals, we try to work with them as far as
24 what's good utilization and what's not and we've seen good results
25 in our utilization numbers because of the training that we do.

1 MS. KINKADE: And maybe from a national perspective and
2 if we need to go back to Mayo's perspective, we can. Dr. Wedel
3 talked about, from her perspective yesterday, how they really get
4 back to the hospitals that have requested them and help educate,
5 you know, appropriate use. This was the condition of your patient
6 when we got them, this is what was done, maybe next time we can do
7 something different. Would you say that's a national approach
8 that's there good communication between the tertiary and the
9 sending facilities from physician to physician?

10 DR. DAVIDOFF: I would have to say it's probably
11 variable region to region. We see differences in communications
12 in just different counties that we work with and different trauma
13 centers. We have a very good relationship with a few and some
14 others a little more difficult to get information from or to let
15 us in to do the training. I would pass that along to see if
16 others agree.

17 DR. HANKINS: I agree with Jack. I mean, it's very
18 variable. Some relationships are very good and some aren't and
19 I'm not sure I understand why.

20 MS. KINKADE: Okay. We're out of time. We'll go ahead
21 and move on.

22 CHAIRMAN SUMWALT: Thank you. NEMSPA?

23 MR. SIZEMORE: Thank you, Mr. Chairman, panel.
24 Mr. Burkhammer, you talk about two criteria, auto-launch and
25 pre-launch and just to clarify that a little bit, neither one of

1 those the aircraft is self-activating are they?

2 CHIEF BURKHAMMER: No. You're correct. They are being
3 requested by either the 911 center or the provider.

4 MR. SIZEMORE: Okay. And for instance, in an
5 auto-launch situation, does the pilot still have adequate time to
6 do all of his pre-flight duties or is he expected to be off the
7 ground quicker because it is an auto-launch situation?

8 CHIEF BURKHAMMER: You know, I'm not the pilot there but
9 safety would come first. I mean, auto-launch is just like a
10 request, hey, we're requesting you for a flight and it would be up
11 to the pilot to make that decision.

12 What we have found by pre-alerting the aircraft, we know
13 before we get on the scene that hey, the weather is -- the
14 aircraft's not available, so we know even before we get on the
15 scene we have to make decisions to go by ground, so that's a very
16 useful tool and I know our pilots, they status the weather and
17 dispatch can tell you right off the bat, you know, the weather's
18 red, no aircraft available, and again, we're not calling anybody
19 else.

20 MR. SIZEMORE: Okay. And the next question, since you
21 are a multipurpose aircraft in that you do law enforcement
22 missions and so forth as well, do you all have a sequence or
23 whatever so that if the aircraft happens to be on a routine patrol
24 or something, you need it for medevac, will they automatically
25 divert it to your medevac?

1 CHIEF BURKHAMMER: You're absolutely right. The first
2 priority is in-county medevacs, the second is in-county law
3 enforcement missions.

4 MR. SIZEMORE: Okay. And you talked a little bit about
5 the changeover. Do they do that on the scene or do they have the
6 capability, I guess, to change it from a law enforcement
7 configuration to an EMS configuration on the scene or do they have
8 to go to a hangar?

9 CHIEF BURKHAMMER: It's kept at the Night Sun (ph.) at
10 all times. The only time that -- and again, I'm not assigned to
11 that unit. The only time I see them adding something is it's a
12 water rescue, a -- net or something like that is when they add
13 something to it.

14 MR. SIZEMORE: Okay. You talked a little bit about
15 scenes, as well. Do you all use pre-designated scenes?

16 CHIEF BURKHAMMER: Our county is broken up into
17 fireboxes and each firebox has a landing zone. Each landing zone
18 has been visited by a representative from the helicopter unit and
19 the fire department, pictures have been taken, manuals have been
20 developed, it's been put in a binder.

21 I'm not sure if I'll call it successful, meaning we have
22 an accident on Interstate 95 but the pre-designated landing zone
23 is three miles away in an elementary school parking lot, so the
24 common LZs that we go to -- and like I said, most of the LZs, I
25 would have to say, are on divided highways or 66, I95 and you

1 really can't have a pre-designated landing zone there, but I think
2 we have 300 and some pre-designated landing zones, so --

3 MR. SIZEMORE: Okay. And if you use a non-designated LZ
4 and I don't know if you do or not, but how much emphasis is placed
5 on the safety of that LZ by the engine company you say that would
6 roll out to establish that landing zone?

7 CHIEF BURKHAMMER: I think we do that very well. I
8 mean, there's different -- we have four people per engine truck
9 rescue. Each person has a different assignment. Again, like
10 establishing the LZ, we're given a tactical channel, no one else
11 is talking on that. We assign a guard, we have ongoing
12 conversations with the pilot before they -- or whoever's taking
13 the LZ report. We have a discussion with the pilot before he
14 takes off, there's good radio communication. I think we do that
15 very well. And again, just like anything else, we have such a
16 relationship with them. We're going to hear about it if there's
17 room for improvement and being a police officer, they're not going
18 to be afraid to tell us that there's room for improvement, so --

19 MR. SIZEMORE: Okay, very good. Thank you.
20 Dr. Hankins, you mentioned your quality assurance or your quality
21 initiative program. Is there a loop closure on that and
22 basically, just a brief idea how long it takes for loop closure to
23 come back and talk about those problems that have been identified?

24 DR. HANKINS: Well, I'm most familiar with the medical
25 loop closure. We have a very active QA as far as loop closure

1 goes, as part of CAAMS accreditation, for both medical issues and
2 aeronautical issues. There's a very active safety committee,
3 which I said is multi-disciplinary. So we place a lot of emphasis
4 on closing the loop. Medical issues, we try and close the loop
5 within, depending on what the problem is, within days to weeks.

6 MR. SIZEMORE: Okay. What about aviation issues?

7 DR. HANKINS: Well, the safety committee meets monthly,
8 so I think they try and resolve issues certainly within, again, a
9 few weeks.

10 MR. SIZEMORE: Okay. And for Dr. Hankins and
11 Dr. Davidoff, we've heard several things about -- and this is some
12 of yesterday's testimony, as well -- that EMATALA and one of the
13 things that was said basically was that patient needs to get out
14 of a rural setting to a tertiary care center and that kind of
15 thing. Who retains the medical responsibility for the patient
16 once you decide to transport?

17 DR. HANKINS: Well, the way I've always looked at it is
18 if they're sending the patient in by the local ambulance, they
19 have -- they're the oversight for that patient. If I'm sending
20 one of my vehicles out either air or ground, then once that
21 patient is on my vehicle, that's my responsibility.

22 DR. DAVIDOFF: And I would agree. It is somewhat of a
23 gray zone. I believe, technically, the sending physician's
24 actually responsible for the patient until they arrive at the
25 receiving facility, but certainly when they're in one of my

1 vehicles, myself or one of the other medical control physicians
2 takes over the responsibility and we're most familiar with what we
3 have available to treat that patient with.

4 MR. SIZEMORE: Okay, thank you. Mr. Chairman, that's
5 all the questions.

6 CHAIRMAN SUMWALT: Thank you, Mr. Sizemore. Air
7 Methods.

8 MR. YALE: Thank you, Mr. Chairman. Just a few
9 questions. Chief Burkhammer, your program is characteristic of an
10 urban close-in program to a major metropolitan area with multiple
11 facilities, correct?

12 CHIEF BURKHAMMER: Yes, sir.

13 MR. YALE: And isn't it not necessarily characteristic
14 of middle America, western states, more rural type of areas, there
15 are differences as a result of those options and available
16 facilities, correct?

17 CHIEF BURKHAMMER: Yes, you're absolutely right. I
18 would not compare of use our protocol as a model for rural America
19 or areas that don't have the resources, both fire and rescue, air
20 medical and the hospitals that we have.

21 MR. YALE: Yeah. Thank you, sir. I was just trying to
22 figure it out maybe a little more from a question that Gary had
23 asked you and that was the idea of the pre-designated landing
24 zones. I think I was hearing you say that you have them, good
25 idea when it works but doesn't work a lot of the time, is that

1 what you were saying?

2 CHIEF BURKHAMMER: Exactly. Meaning I'm at a location,
3 I could be in a huge football field for a football injury, but for
4 this firebox, this is not the right football field.

5 MR. YALE: Right.

6 CHIEF BURKHAMMER: I need to drive two miles to the
7 other high school and use that football field, so -- and people,
8 you know, when you're dispatched to call the firebox, it'll show
9 where the LZ is, so this is the LZ. Well, no, we're already in a
10 good landing zone, so I think you got to use good common sense.
11 The good thing about the pre-designated landing zones, we've been
12 out there and we go out there, we know what it looks like, we have
13 pictures of it, but it doesn't always work as designed and it's a
14 guideline.

15 MR. YALE: Thank you, Chief. I'd also like to follow
16 up, if I may, Gary, on another one of your questions here just
17 real quickly to Dr. Hankins and Dr. Davidoff and that is the
18 question about does an auto-launch, if you choose to use that
19 process, short circuit the pilot's ability to do the pre-flight or
20 in any way do the normal safety checks that you would do under
21 other requests before taking a transport?

22 DR. DAVIDOFF: I would say absolutely not. To the pilot
23 it's a launch. They don't know whether it's been a request or
24 not. They are told that they have a launch request and they're
25 going to go through the same weather checks, same safety checks.

1 I would hope that it would be the same throughout the industry.

2 DR. HANKINS: Actually, I was going to start with the
3 same words, absolutely not.

4 MR. YALE: Thank you. Couple other quick questions, if
5 I may. I want to delve into this idea of sort of the differences
6 in the level of care. Dr. Davidoff, you brought this up, the idea
7 that all transport sources do not have the same level of care or
8 capability that's involved. Do most communities in non-urban
9 areas have, for example, critical care ground transport
10 capabilities equal to that of an air ambulance?

11 DR. DAVIDOFF: Within my regions, I would say no.
12 Certainly, some regions have very good critical care grounds, some
13 are hospital based, some are private, some are municipal. In my
14 region, though, we've got very limited critical care ground. They
15 do limited numbers of transports, they have limited personnel. So
16 the answer really is it's variable from region to region and in my
17 particular area, no. And when I can't fly someone, there may be a
18 significant difference in the quality of care that they're going
19 to get.

20 MR. YALE: And because of the utilization of those
21 limited resources and areas, even where they have it is it
22 necessarily timely available?

23 DR. DAVIDOFF: It may take a considerable amount of time
24 by ground to get -- we're talking inter-facility.

25 MR. YALE: Right.

1 DR. DAVIDOFF: So yes, depending on weather, roads. I
2 work in some pretty rural areas and it may take quite some time
3 for that ground vehicle to get there; they're then going to be
4 tied up transporting that patient several hours, clean up, et
5 cetera. With an air medical service, critical care air medical
6 service, they can be there faster, have the patient to the
7 receiving hospital with less out-of-hospital time and ready to go
8 again before the ground service would even have arrived at the
9 receiving hospital.

10 MR. YALE: And a question for both doctors. Do you have
11 facilities that would be referral sources within your service
12 areas where your medical crew that goes out in your helicopter may
13 actually have more emergency medical experience and more emergency
14 medical capabilities than that referring hospital?

15 DR. HANKINS: Definitely. I would say sending tertiary
16 care out to a primary care center and I'm sure everybody in the
17 room that does air medicine has been in a situation where you go
18 out to the small hospital and the doctor disappears. Because the
19 air medical crew, they can put in chest tubes, they can intubate,
20 they can do ISI, all the things that most of the small hospitals
21 can't do.

22 MR. YALE: Similar experience with you, Dr. Davidoff?

23 DR. DAVIDOFF: Definitely so. A lot of times we're
24 called specifically to see a patient that needs an airway that the
25 sending hospital cannot manage, so we're coming in knowing that

1 that's what we're going to be doing for them.

2 MR. YALE: So in many cases, we're not talking about
3 necessarily getting the patient speedily to a facility that then
4 can eventually take care of their care, it's as you put it,
5 Dr. Hankins, bringing the critical care to those areas. Okay,
6 thank you. That's all the questions I have.

7 CHAIRMAN SUMWALT: Thank you, Mr. Yale. CareFlite.

8 MR. DAUPHINAIS: Thank you, Mr. Chairman.
9 Chief Burkhammer, your testimony also generated a lot of interest
10 at this table. If we missed it, I apologize. Does your service,
11 your county service, have a 135 certificate, are they public
12 aircraft or what's the status there?

13 CHIEF BURKHAMMER: Sir, I do not know. It's a program
14 run by the police department. I just honestly cannot tell you if
15 it's a 135.

16 MR. DAUPHINAIS: Okay. That's a fair answer.

17 CHIEF BURKHAMMER: The pilots and the crew are county
18 employees and I do not believe that there's a vendor that supplies
19 the mechanics for the aircraft.

20 MR. DAUPHINAIS: Okay. Well, thank you. I understand.
21 Does usually the second unit come out? I mean, I understand --
22 we've also done where we go to a scene and the LZ's not ready.
23 You send out that second unit dedicated to setting up that LZ.
24 Have you found that caused any delay?

25 CHIEF BURKHAMMER: No, that unit's dispatched as the

1 aircraft's being dispatched.

2 MR. DAUPHINAIS: Okay.

3 CHIEF BURKHAMMER: So as the aircraft is being
4 dispatched, there's a dedicated suppression unit, engine, ladder
5 truck or heavy rescue is dispatched solely for the aircraft and
6 they're put on a different radio channel.

7 MR. DAUPHINAIS: Okay. And in regard to your statements
8 about where you want it to improve and be able to turn the
9 aircraft back, Ms. Kinkade talked about it a little bit. Do your
10 paramedics on the scene currently have the ability to disregard an
11 aircraft for medical reasons? In other words, the call from
12 the 911 or the 911 call from the citizen is not accurate once your
13 ground paramedic gets there, the aircraft's been put on --

14 CHIEF BURKHAMMER: Absolutely. And I think if you look
15 at it, probably 75 percent of the time the aircraft's turned
16 around.

17 MR. DAUPHINAIS: Right. And so I guess trying to expand
18 on your wanting to improve it, couldn't the paramedics say yes, we
19 need an aircraft but guess what, it's kind of foggy out here or
20 whatever it may be, not taking away from the pilot command
21 authority, but just relaying that additional information?

22 CHIEF BURKHAMMER: Yes. I think there's some conditions
23 -- if it's occurring on the scene, again, Fairfax County, we're
24 bordered by two major airports, we have good weather reporting,
25 but there are certain situations that could be occurring on the

1 scene. The other night the visibility was -- I mean, they even
2 said on the radio, you know, extended ETA by the ground unit due
3 to fog. Well, that's a kicker there.

4 MR. DAUPHINAIS: Right.

5 CHIEF BURKHAMMER: Don't call the helicopter. And but
6 like I said before, sometimes you'll have somebody come in and say
7 well, my aircraft can do this and we can fly in inclement weather
8 and we have the "same inclement weather package that the Coast
9 Guard has so we can do this mission," and that may be true, but
10 maybe not when we're 20 minutes by ground to the trauma center,
11 you know.

12 MR. DAUPHINAIS: So you're a marketing target?

13 CHIEF BURKHAMMER: Yeah, I get a lot of popcorn at
14 Christmastime.

15 MR. DAUPHINAIS: Okay. We've talked about utilization
16 and over-utilization and stuff. What's your experience with your
17 triage on-scene and how are your protocols working on that? I
18 mean, do you get a lot of over-utilization?

19 CHIEF BURKHAMMER: We currently have -- there's three
20 different trauma committees, QA committees, at Fairfax Hospital.
21 They are an assigned center. We have our own QA people assigned
22 to those committees because they're never in the building, they're
23 always at the hospital in meetings, so we get very good feedback,
24 but I think we've done a lot on our own in the last 10 years of
25 decreasing the patients that need to be flown. We also looked at

1 -- again, our county's small. It's only 400 square miles, just a
2 whole lot of people. And I mean, we found that most of the areas,
3 you can get to the hospital by ground by the time it takes to set
4 up the pre-designated landing zone and get the patient to the
5 hospital, so the flight volumes have dropped, themselves. I think
6 when you look at less than 4 percent of the trauma patients
7 admitted to Fairfax Hospital from Fairfax County are brought in by
8 helicopter. Very low number.

9 MR. DAUPHINAIS: Thank you, sir. You've been very
10 gracious. I appreciate it.

11 CHIEF BURKHAMMER: Thank you.

12 MR. DAUPHINAIS: Dr. Davidoff, does the patient have the
13 ability to choose their medical provider?

14 DR. DAVIDOFF: To choose whether or not they're going to
15 go by air or their actual provider?

16 MR. DAUPHINAIS: Okay, yes.

17 DR. DAVIDOFF: If they have the capability of saying
18 that they don't want to fly, it's a good possibility they don't
19 need to fly and they do have that right and we've seen that
20 happen. In an emergency situation, I suppose they would have an
21 opportunity to say I would rather go with this provider than the
22 other, but you have now built in a long delay of care and again, I
23 think you'd have to try and decide whether or not this patient
24 still needs to go by air or if they can select another provider.
25 Now, if you have providers that are within the same distance,

1 that's not an issue. And certainly, there's the fixed wing side
2 of air medical transport where maybe 15, 20 minutes difference
3 wouldn't make a difference for them to decide they want to bring
4 someone in from another area maybe wouldn't make a difference, but
5 in a rotor emergent situation, I don't think they have a decision
6 who they're going to utilize or if they really can voice that
7 opinion maybe they shouldn't go by air and they should go by
8 ground.

9 MR. DAUPHINAIS: What about the inter-facilities, then?

10 DR. DAVIDOFF: If you have similar services, if you're
11 the sending physician, there's similar services, similar
12 capabilities, it's not going to create a delay, certainly then
13 that person can make a choice.

14 MR. DAUPHINAIS: Thank you for that segue to my next
15 question. How do you, as a physician, whether it's medical
16 control and I don't remember if you do ground medical control or
17 not, how do you know the abilities? You spoke earlier about
18 higher levels of care and capabilities of aircraft and crews. How
19 does a physician or even an EMS with a ground provider know the
20 abilities of the air medical programs in their area?

21 DR. DAVIDOFF: If you're involved with EMS as a
22 physician, I think it's part of your responsibility to know what
23 services and what capabilities are available. In my region, for
24 pretty much the past 15, 20 years there's really been one air
25 medical service other than for a short period of time when there

1 was a second service available. Now, we do have services that are
2 available to back up the primary service and again, I need to know
3 what those capabilities are. Some of them are law enforcement
4 services that do not have the same capabilities that my private
5 services have, in which case I would not want to substitute one of
6 them on some of my transports. But as being an EMS physician,
7 medical director, et cetera, it's part of your responsibility to
8 know what services are available and what their capabilities are.

9 MR. DAUPHINAIS: Okay. And how did you get that
10 information, anecdotally, phone calls to the services, is there a
11 central database within your region or state or national that you
12 can find out those capabilities?

13 DR. DAVIDOFF: There's multiple ways. Certainly,
14 working within the system, I guess by osmosis you pick up a lot of
15 that information. In New York state, for example, which I can
16 speak about best, we have the state emergency medical advisory
17 council or committee and those who sit on that are privy to
18 information like that. It's then broken down to 17 or 18 regional
19 EMS councils which would know their regions a little bit better
20 and then feed material back towards the state committee.

21 So working within my region, my four-county region, I
22 know it's available to those four counties. I know it's on the
23 periphery that we could bring in for additional services and then
24 certainly, I'd talk with the people from the neighboring REMACs or
25 regional emergency medicine advisory councils to know what their

1 services are available and then they want to know what we have in
2 our region. So there's multiple ways of finding out what's
3 available.

4 MR. DAUPHINAIS: And what about that rural hospital
5 doctor? I mean, do they have that ability, do they know how to do
6 that or is that part of the outreach program?

7 DR. DAVIDOFF: It's part of the outreach program but --
8 and the outreach program certainly is similar to a marketing
9 program.

10 MR. DAUPHINAIS: Right.

11 DR. DAVIDOFF: But they're going to get marketed or
12 approached by outreach people from the various services, the
13 ground and the air. Certainly, when you come to a hospital as an
14 emergency physician and you get oriented, one of the things you
15 get oriented to is who do you call, when do you call, how do you
16 call, at least, you're supposed to get that orientation. And part
17 of orientation at a community hospital is if you get in over your
18 head, this is the ground unit, this is the air unit and tell us
19 and we'll make the call for you.

20 MR. DAUPHINAIS: Okay. And Dr. Hankins, is your
21 experience about the same?

22 DR. HANKINS: It's very similar. We actually have a
23 medical direction consortium for the region of Minnesota that I'm
24 in, in which I'm the medical director for. Probably, if there's a
25 service out there, probably it's a medical director, so I know

1 what their capabilities are. And Minnesota only has VOS and AOS,
2 that's the only two license levels they have in Minnesota and I
3 know what the AOS services are in my region, so by default the
4 other ones are VOS. So we know what the capabilities are and it
5 just -- you know, once you get involved in the system on a state
6 basis or regional basis, you pretty much know what's going on in
7 your area.

8 MR. DAUPHINAIS: Well, what I'm hearing is there is no
9 one-stop -- I don't want to say shopping, but no one-stop location
10 to get that type of information for the public --

11 DR. HANKINS: Well, I think -- well, every state's
12 different as far as how their EMS administration is set up.
13 Minnesota, we have an EMS regulatory board and everything's on
14 their website as far as what the state allows, et cetera, so it is
15 available. And actually, most of the private and small hospitals,
16 the one that's going to give direction to a physician is going to
17 be the charge nurse and the ED.

18 MR. DAUPHINAIS: Okay. Thank you, gentlemen.

19 CHAIRMAN SUMWALT: Thank you. Your timekeeper was doing
20 a good job, Mr. Dauphinais. Thank you, thank you. FAA.

21 MR. HARRIS: Thank you, Mr. Chairman, and in the
22 interest of time, I'll keep this relatively brief. To
23 Chief Burkhammer, you mentioned that there were some sort of
24 penetrating injuries such as gunshot wounds and stabbing that
25 might precipitate an auto-launch because -- and I think, I don't

1 want to put words in your mouth, you mentioned that there was both
2 a law enforcement as well as an EMS interest in that kind of
3 response. Do I have that basically correct?

4 CHIEF BURKHAMMER: Yes, sir. You're correct.

5 MR. HARRIS: Great. Well, given that, do you have a
6 different set of risk management strategies for law enforcement
7 missions as opposed to EMS patient transport? In other words,
8 whether minima or any other risk contingencies or risk management
9 methodologies.

10 CHIEF BURKHAMMER: Sir, I can't speak for the police
11 helicopter unit. I would not know that.

12 MR. HARRIS: Okay, thank you. That's a correct answer.
13 You've met the requirement to speak truthfully and thank you, sir.
14 Dr. Hankins, I think you answered a question from Mr. Zuccaro
15 related to how the Mayo clinic operates and I understand that you
16 own and then also lease helicopters. Does Mayo actually hold its
17 own Part 135 operating certificate or do you contract with --

18 DR. HANKINS: No, we contract with a vendor for 135.

19 MR. HARRIS: Okay. You mentioned something that you
20 referred to as the strong medical oversight of the decision to use
21 ground versus air transportation, I believe you used those sorts
22 of terms, but could you give me a sense of how you interact with
23 your contracted Part 135 air medical transport provider? Or
24 vendor, rather, I suppose would be the right term.

25 DR. HANKINS: If we get a request for a flight, the

1 pilot's notified to do a weather check; the medical crew is
2 notified that there's a possibility of a balloon pump flight,
3 let's say, and then our dispatch talks to our vendor as far as
4 getting an operation control number.

5 MR. HARRIS: So then the vendor, the 135 operator, does
6 the aeronautical management of safety for that operation?

7 DR. HANKINS: Correct.

8 MR. HARRIS: Now, what's the feedback loop then, if they
9 make the decision that they can't fly or that there's a
10 requirement which you had not plumbed into your medical decision
11 making, such as a delay or a diversion that we can go to one
12 location but we can't go to the destination that you want but we
13 could go this other. Is there then a recalculation on the medical
14 leadership about what the available strategies are?

15 DR. HANKINS: Yes. In our dispatch center, we'll
16 actually send another helicopter or even a competitor from Twin
17 Cities to get -- because my mantra has always been -- it was kind
18 of alluded to yesterday, but I refine it a little bit, right crew,
19 right vehicle, right patient, right destination.

20 MR. HARRIS: And then using a second source, would you
21 share with that second source then, the reasons why your primary
22 system could not respond?

23 DR. HANKINS: Yes. And if it's for weather reasons, for
24 instance, we actually -- we're the Minnesota Air Medical Safety
25 Council and we have -- we use a website that talks about, I think

1 it's weatherturndown.com or something like that, that talks about
2 whether to turn down, so the other services know what it's a
3 weather turndown.

4 MR. HARRIS: All right, thank you very much. Thank you,
5 Mr. Chairman.

6 CHAIRMAN SUMWALT: Thank you. Are there any
7 clarification points from the parties? Mr. Sizemore.

8 MR. SIZEMORE: With your permission, I'd like to ask a
9 follow-on question.

10 CHAIRMAN SUMWALT: That would be fine.

11 MR. SIZEMORE: Okay. Dr. Hankins, Dr. Davidoff,
12 specifically, I know we've heard yesterday and we've heard you all
13 say today that you want to sanitize the pilot from patient
14 information. Is there some leeway given or is there something in
15 place that says, for instance, I'm called to take a flight, that
16 flight's going to involve a piece of specialty equipment or an
17 isolet (ph.) or whatever and is there something that's going to
18 allow me more time to re-plan what I'm going to do, knowing that
19 I'm going to have to do something like that so I can pre-plan my
20 fuels and my weight and balance and all that kind of stuff ahead
21 of time as opposed to being 100 percent sanitized from any of
22 that?

23 DR. HANKINS: I think once the pilot can do a weather
24 check, once he's done his weather check, then I think they can
25 talk about -- because our transitions are relatively quickly for

1 things like balloon pump and isolets.

2 DR. DAVIDOFF: We don't do a lot of the specialty
3 transports like Mayo does, however, I would agree that once the
4 weather and once the safety issues have been dealt with there
5 certainly has to be some communication, the weight of the patient,
6 certain things that may well factor into the flight. And again,
7 the pilot's in charge of that aircraft crew, patient safety, et
8 cetera, so there is some communication to submit at that point.

9 MR. SIZEMORE: Okay. So he's not penalized for saying
10 okay, I need to look at some other criteria here since we're
11 having to do this specialty transport?

12 DR. DAVIDOFF: Not that I'm aware of.

13 MR. SIZEMORE: Thank you. Thank you, Mr. Chairman.

14 CHAIRMAN SUMWALT: Thank you. Are there any more
15 clarification points? Mr. Zuccaro.

16 MR. ZUCCARO: Yes, just one quick one for Chief
17 Burkhammer. The basic concept of predetermined landing areas, is
18 that a concept that you support, just the theory of it?

19 CHIEF BURKHAMMER: Oh, absolutely. And I flew for 16
20 years as a flight paramedic and I developed pre-designated landing
21 zones throughout Virginia, West Virginia and as you move out into
22 those locations, as you increase the flight time, for instance,
23 going to Hardy County, West Virginia, it's a hundred miles away,
24 we can space out the landing zones because they're going to beat
25 us to those landing zones. For instance, that county may only

1 have 10 or 15, so they're going to be able to get to that landing
2 zone long before I get there, so I think the further out you are,
3 it does work and it decreases the decision making that the
4 providers have to make and as you move out into some of these
5 areas, it's a lot of volunteer, there's a delay for them getting
6 to the station, getting to the units and getting to the patient,
7 so I just found it didn't work as well in Fairfax County than it
8 did in Hardy County, West Virginia, so --

9 MR. ZUCCARO: Yeah, it would seem that in order to
10 improve the situation in your county, you'd have to develop more
11 potentially predetermined landing zones to get you closer to these
12 incidents because of the complexity and the nature of the area
13 you're in.

14 CHIEF BURKHAMMER: Yes. Let's say the firebox is four
15 or five square miles.

16 MR. ZUCCARO: Right.

17 CHIEF BURKHAMMER: I mean, there could be a hundred
18 places in there that you could land, so it's a good effort. We do
19 use pre-designated landing zones. There's a lot of places we go
20 to, the falls, water rescues, things like that, that we use the
21 same landing zones, but what we found was we were moving a patient
22 that was in a good zone three miles down the road to another zone
23 and decreasing the out-of-hospital time.

24 MR. ZUCCARO: So the concept's a good one, the
25 application --

1 CHIEF BURKHAMMER: Yes.

2 MR. ZUCCARO: -- is the magic --

3 CHIEF BURKHAMMER: It works.

4 MR. ZUCCARO: Yeah.

5 CHIEF BURKHAMMER: It does work.

6 MR. ZUCCARO: Okay. Thank you very much. Appreciate
7 it. Thank you, Mr. Chair.

8 DR. HANKINS: Mr. Chairman, may I comment on that?

9 CHAIRMAN SUMWALT: Well, I think the question's been
10 answered.

11 DR. HANKINS: But there's a difference, I think. The
12 reason we use pre-designated landing zones is for intercepts of
13 ambulances rather than for going to a scene. If you have an
14 ambulance, it would be -- an ambulance that's heading in towards
15 the tertiary care center, the patient's in trouble, it's a place
16 where they can meet and be safe.

17 CHAIRMAN SUMWALT: Thank you. Any other follow-up
18 points? Okay, now I want these to be follow-up points, not
19 additional questions. If there's points that need clarification,
20 that's the type of questions we're looking for now, not questions
21 that haven't already been asked. Go ahead, please.

22 MS. KINKADE: And I'll ask a question. If you feel it's
23 out of line, I'll completely understand. It's a little fuzzy,
24 maybe. I just wanted to get clarification if the auto-launch is a
25 common practice outside of the public service, is that okay?

1 Okay. And that would be for Dr. Hankins or Dr. Davidoff.

2 DR. HANKINS: We have a very active auto-launch program.
3 In fact, we did one of the original papers on it. And it's useful
4 in our area because we have a very rural area with a lot of basic
5 life support services that need a lot of support. And we have
6 not, since we intend to go out a little further, I think, than
7 Fairfax County does as far as auto-launches go, we don't have any
8 problems with having safe landing zones. The deputies --
9 initially, sheriffs and deputies in various counties were kind of
10 resistant to it; now when you -- they're going out to a scene of a
11 crash, you'll see -- or you'll hear them say has the helicopter
12 been auto-launched. I mean, it's a good program and they know
13 it's going to get the cavalry there faster than they would have
14 otherwise.

15 CHAIRMAN SUMWALT: Okay, thank you. Any other follow-up
16 points, clarification points?

17 (No audible response.)

18 CHAIRMAN SUMWALT: Thank you. I appreciate that. I'd
19 like to go back to the tech panel for follow-up. Dr. Groff.

20 DR. GROFF: Mr. Chairman, with your permission, I'd like
21 to pass it to Mr. Guzzetti for a follow-up question.

22 CHAIRMAN SUMWALT: Mr. Guzzetti.

23 FURTHER TECHNICAL PANEL QUESTIONS

24 MR. GUZZETTI: Thank you, Mr. Chairman. Just a couple
25 of quick probes on some testimony from Chief Burkhammer. You

1 indicated that Fairfax County doesn't do inter-facility transport
2 because there are other commercially available assets to handle
3 that, is that correct?

4 CHIEF BURKHAMMER: Yes, sir.

5 MR. GUZZETTI: Can you name off those assets or do you
6 know how many other commercial operators are available to do that
7 in your area?

8 CHIEF BURKHAMMER: Yes, sir. PHI Virginia has five
9 aircraft; MedStar, based in Maryland, has four aircraft; Air
10 Methods -- has an aircraft in Stafford. So there's a multitude of
11 aircraft that we can use. Plus there's a vendor in the county
12 that offers -- PTS offers ground critical care transport.

13 MR. GUZZETTI: Okay, thank you. The other area is you
14 indicated that Fairfax County troopers or emergency workers,
15 ground pounders, all get training in setting up a scene for EMS
16 helicopter. Did I hear that correctly?

17 CHIEF BURKHAMMER: Yes. And it's more than just for air
18 medical helicopters. Due to our proximity to the nation, we seem
19 to have a lot of VIP visitors with military aircraft, presidential
20 aircraft, so it's more than air medical transport, also.

21 MR. GUZZETTI: But this is required training for
22 everybody?

23 CHIEF BURKHAMMER: Every recruit, police officer, fire
24 and rescue, get LZ training in recruit school.

25 MR. GUZZETTI: Do you know if the entire -- does the

1 state of Virginia have a similar requirement for other counties or
2 other operators?

3 CHIEF BURKHAMMER: No, I can speak for some areas close
4 to Fairfax. Being on the aircraft, we would go out to those
5 recruit schools, Prince William, Stafford, Spotsylvania and do the
6 same type of PowerPoint presentation. It talks about LZ safety,
7 the capabilities of the aircraft, capabilities of the crew and
8 then you would always tack on the capabilities of your sponsoring
9 hospital, you know, the -- health system or something like that
10 and you would offer estimated response times and things like that.

11 Usually, you go out in the morning and do a two to three
12 hour PowerPoint presentation and then time it so the crews would
13 go out, they would actually talk to the inbound aircraft, the
14 aircraft would land and then we would do a hands-on demonstration
15 of proper loading, unloading, emergency features, safety features
16 of the aircraft, procedures to do if something should happen, you
17 know, aircraft fire, something like that.

18 MR. GUZZETTI: Would you discuss obstacles, telephone
19 poles, trees, and how not to --

20 CHIEF BURKHAMMER: Yeah. We have -- being familiar with
21 Air Methods -- they have a very defined what you ask for, if
22 you're riding in the -- and I'm speaking from the helicopter
23 standpoint now, you know, are there any poles, the whole list of
24 things, surface, inclines. Because what we found is we cannot
25 just worry about what's within that 100 foot by 100 foot or 120

1 foot by 120 foot, but it's everything within 200 or 300 yards of
2 that landing zone, so I think that's covered.

3 MR. GUZZETTI: And Dr. Hankins, are you aware of the
4 state of Minnesota, do they have similar requirements either in
5 your county or your state for that kind of training?

6 DR. HANKINS: This is not state requirement, this is --
7 the individual helicopter services realize and especially with our
8 interaction on the Minnesota Air Medical Safety Council, this is
9 really something we have to do for as many first responders, law
10 enforcement and ambulance services as we can. So it's really the
11 responsibility of the helicopter services.

12 MR. GUZZETTI: Okay, thank you. That's all I have, Mr.
13 Chairman.

14 CHAIRMAN SUMWALT: Thank you. Mr. Haueter.

15 BOARD OF INQUIRY QUESTIONS

16 MR. HAUETER: Just a couple of questions.
17 Chief Burkhammer, you mentioned you have an EMS supervisor and I'm
18 kind of curious about his responsibilities and functions.

19 CHIEF BURKHAMMER: The county is broken up into seven
20 geographical areas known as battalions. Each battalion has a
21 battalion chief and an EMS supervisor and each battalion there
22 could be six to seven stations, so the EMS supervisor is there as
23 a battalion management team. They administer administrative
24 duties and particularly on the scene of a major incident, they're
25 in a command role. If it's a single patient, they're usually in

1 an observation or a supervisory role. Currently, we have AOS, we
2 have officers on every engine, truck and rescue and then we have
3 officers and then what we call paramedic leads. We have someone
4 in charge on every vehicle. Did that answer your question?

5 MR. HAUETER: Yes, I guess. Can he make decisions in
6 terms of calling a helicopter or calling one off or --

7 CHIEF BURKHAMMER: You do hear the -- you do hear me say
8 put the helicopter in service, the patient's going by ground. It
9 may be -- you know, you may have a provider that maybe volunteers
10 somewhere and uses the aircraft routinely or they may be in an
11 area or a location in Fairfax County where they use the aircraft
12 routinely and they're detailed to work assignments that we don't
13 use the helicopter here because we're five minutes away, something
14 like that. I think what you do see, if the provider makes a
15 decision to use the aircraft, we're really not going to change
16 that decision unless there's a really good reason and we'll just
17 offer follow-up education afterwards. So there has to be a good
18 reason for us to counteract a decision that he's already made and
19 we've already put everything into motion.

20 MR. HAUETER: Thank you. And Dr. Hankins, you mentioned
21 you have one helicopter that's not IFR night vision goggle
22 equipped?

23 DR. HANKINS: The helicopter we own, which is the oldest
24 helicopter, is not IFR equipped. Our BK 117 in Rochester is, the
25 EC 145 in Mankato is and the new EC 145, which is coming up this

1 week, will be in our third base in Eau Claire. So then we'll have
2 a backup ship.

3 MR. HAUETER: I was wondering, how do you incorporate
4 that one into your fleet because it doesn't have the equipment of
5 the others. Is that --

6 DR. HANKINS: It's a backup for maintenance.

7 MR. HAUETER: Okay. Thank you.

8 CHAIRMAN SUMWALT: Dr. Ellingstad.

9 DR. ELLINGSTAD: Just one quick kind of follow-up.
10 We've heard a lot both today and yesterday about isolating the
11 pilot from the medical information to make sure that he
12 concentrates on safety of flight. I'd like to sort of follow up
13 on a question that Mr. Hooper started to ask and that had to do
14 with that function when there was some change after that initial
15 decision had been made in the case of diversion, that sort of a
16 thing. Is there some systematic kind of a procedure where there
17 is some coordination between the piloting task and the medical
18 task to make that kind of decision? Dr. Hankins.

19 DR. HANKINS: Oh, I'm sorry. Forgive me. Are you
20 talking about a medical diversion, for instance, if they're on the
21 way to the hospital and they get diverted to a scene?

22 DR. ELLINGSTAD: I think the kind of thing that
23 Mr. Hooper had sort of suggested is that if you have a change in
24 some kind of flying conditions and you have to divert, now
25 obviously, there would be some implications potentially for the

1 medical implications of that.

2 DR. HANKINS: So they start out for a critically ill
3 patient -- hospital and the helicopter can't make it, is that --

4 DR. ELLINGSTAD: Right.

5 DR. HANKINS: We would make other arrangements either to
6 get the crew there by ground. Perhaps it's a weather problem from
7 one direction but not another. Maybe another helicopter could get
8 in from the east or one could get in from the west, so the
9 dispatch looks at that in conjunction with the pilot.

10 DR. ELLINGSTAD: Well, I'm thinking the case of when
11 he's in the air.

12 DR. HANKINS: Well, if he runs into inadvertent IFR or
13 something like that, then he would go IFR and we would probably
14 divert to an airport. I'm not an aeronautical person, so --

15 DR. ELLINGSTAD: What I'm trying to get at, is that
16 purely -- is that going to be purely an aeronautic decision?

17 DR. HANKINS: That would be the pilot's decision. But
18 the crew, with crew resource management, if one of the crew
19 members is uncomfortable, you know, I don't like this, you know,
20 this doesn't feel safe to me, then they get out of the situation.

21 DR. ELLINGSTAD: Dr. Davidoff.

22 DR. DAVIDOFF: I would agree. Certainly, the pilot is
23 in charge but the crew is part of that decision making and our
24 crew resource management starts on the ground with the com specs
25 of flight coordinator, the medical director, et cetera. So if

1 anyone at any point says that's enough, this isn't safe, we need
2 to divert, that diversion's made. But no one would supercede the
3 pilot's decision, which I think is what you're asking, is that
4 correct?

5 DR. ELLINGSTAD: That's right.

6 DR. DAVIDOFF: At least in our program and in a number
7 of the programs that I'm familiar with, if the pilot makes a
8 decision for any reason whatsoever to divert land, that decision
9 holds. The medical folks, the flight coordinators, the medical
10 director or the medical control physician would be involved
11 immediately by being communicated from the COMM center that this
12 has happened because now we have to make a change in plan.
13 Patient's going to go on another helicopter, patient's going to go
14 by ground. Our crew is going to stay with that patient and
15 continue to provide the care.

16 CHAIRMAN SUMWALT: Dr. Mayer.

17 DR. MAYER: Thank you, good morning. Chief Burkhammer,
18 you've been asked a number of questions about landing zone
19 preparation and landing zone selection and I was wondering, just
20 by way of follow up if you have an estimate or maybe actual
21 statistics in a typical year how many scene response landings your
22 program makes and what proportion are to pre-designated landing
23 zones versus non pre-designated?

24 CHIEF BURKHAMMER: Sir, I can't offer that information.

25 DR. MAYER: Maybe then, perhaps, something qualitative

1 about how often pre-designated landing zones are utilized versus
2 not?

3 CHIEF BURKHAMMER: I can't tell you in Fairfax County.
4 I can tell you some of the counties where we've set up landing
5 zones. I mean, they're solely used. I mean, you can go on to
6 those units and see the booklets that I made up 10 years ago are
7 still on those units and when they dial or when they call the COMM
8 center we're at LZ-16 and that makes it very easy for the
9 communications specialists and very easy for them.

10 DR. MAYER: Trees are a little bit taller, but --

11 CHIEF BURKHAMMER: Exactly, exactly. I think are you
12 asking do we go back out and check those LZs?

13 DR. MAYER: No.

14 CHIEF BURKHAMMER: We didn't measure the trees, but I
15 can't tell you in Fairfax County. I cannot tell you that.

16 DR. MAYER: Fair enough. Thank you very much.
17 Dr. Hankins, just also by way of follow up in the line of
18 questioning toward isolating the pilot from the medical decision
19 making, I think you described the scenario where an initial page
20 concerning a mission would trigger a process whereby the pilot
21 would begin to do a weather check and perhaps the medical crew
22 would begin to review any special equipment necessary. Is there a
23 formal moment in the process whereby a pilot communicates his
24 launch decision based on the weather? In other words, is there a
25 moment where it becomes appropriate, a formal moment where it

1 becomes appropriate to discuss the medical aspect of the mission?

2 DR. HANKINS: Well, once a pilot knows it's a go/no go
3 based on weather, then they can have a discussion about do we need
4 special equipment, et cetera, and are there weight issues.

5 DR. MAYER: How does the medical crew know that the
6 weather decision has been made?

7 DR. HANKINS: The pilot -- well, they're contiguous. I
8 mean, the pilot can just tell the medical crew that and they call
9 dispatch which then pages it out and sends it out by radio in a
10 redundant fashion.

11 DR. MAYER: Thank you. And I think you also mentioned
12 that one particular contingency that's available in your program
13 is that in the case of bad weather an option exists to send a
14 flight crew by ground if that would be helpful in the situation.
15 Is that utilized often or is that a fairly rare contingency?

16 DR. HANKINS: It is utilized often because frequent
17 icing conditions. If the temperature is below 40 below zero, we
18 don't fly, it's too cold in the aircraft for that. So that would
19 be a ground run. One of the things I want to do as medical
20 director is try and avoid transports by red lights and sirens
21 because a ground vehicle under red lights and sirens is one of the
22 most dangerous vehicles in the country, if not the most dangerous
23 vehicle. So if they're going to transport this patient by ground,
24 it needs to be with an adequate crew so they don't feel like they
25 need to transport with red lights and sirens.

1 DR. MAYER: Thank you very much.

2 CHAIRMAN SUMWALT: Ms. Ward, any questions?

3 HEARING OFFICER WARD: Actually, I'd like to have
4 Mr. Deats bring up Exhibit 6(g), please, and Page 9. Thank you.
5 Dr. Hankins, I notice here that it says that for this time period
6 that it has like over 2,000 records but we don't know what the
7 time period's for.

8 DR. HANKINS: When Jeff did this, he did this as an
9 example and just as an example, so he took the dates out, so Jeff,
10 what was the time period? It was a random sample to -- just as an
11 example to understand the process, so it really is not -- it was
12 not a true query that we would normally do.

13 HEARING OFFICER WARD: I guess it wasn't like a 30-day
14 or 60-day, 90-day or a year, you just --

15 DR. HANKINS: I think he just wanted to show a screen
16 with the data on it, so -- but we could do it from any -- it's a
17 very acquirable database and we could certainly do it for any time
18 period that we want to, so --

19 HEARING OFFICER WARD: I was just looking these numbers.
20 Do you consider over-triage to be an issue for Mayo?

21 DR. HANKINS: I would rather have over-triage than
22 under-triage because if you -- I like how Dr. Wedel said it
23 yesterday with over-triage is an education issue, under-triage is
24 a political issue. The reason is because under-triage means that
25 some people are going to die who shouldn't die.

1 HEARING OFFICER WARD: Thank you. That's all I have.

2 CHAIRMAN SUMWALT: Thank you. In preparation for this
3 hearing, I had the privilege of doing a number of media interviews
4 and the issue of the over-triage was often a question that was
5 asked, so I think that you shed light on the fact that just
6 because a patient is released from the hospital within 24 hours,
7 that's not the best metric. And would you like to elaborate,
8 Dr. Hankins, any further on that?

9 DR. HANKINS: Well, a good example would be, for
10 instance, we have a lot of hockey players in Minnesota and a
11 hockey player gets checked in the boards, get knocked out or
12 something like that, unconscious for 10 or 15 minutes, he's in a
13 small town, gets brought in to our hospital by a helicopter, has
14 basically a negative workup but just because he has concussion,
15 he's reserved overnight and he's discharged the next morning which
16 is perfectly appropriate care. So there are -- discharge
17 within 24 hours is a criteria that needs to be looked at with a
18 grain of salt.

19 CHAIRMAN SUMWALT: Thank you. And Dr. Davidoff, you
20 made the point in some of the questions that I would field, also,
21 would be well, sometimes a patient might wait in a ground
22 ambulance for an hour before the helicopter even arrives and I
23 believe you made the point that they can receive critical care
24 once they're on board the helicopter that they cannot receive on
25 the ground, is that correct?

1 DR. DAVIDOFF: Yes, that was one of the things that I
2 said was, as we've said all along, we're bringing some of the
3 tertiary care to the patient rather than bringing the patient to
4 the tertiary care and while there are some ground ambulances that
5 can do that, there aren't that many. That's a very, very limited
6 resource and with air medical services we can cover a much larger
7 area with those same resources, numbers of resources.

8 CHAIRMAN SUMWALT: Thank you. And I realize that those
9 points had been made and we're trying not to reiterate points but
10 that is a question that those two questions are questions that I
11 was repeatedly asked by many people going into this hearing and I
12 wanted to make sure that I understood them properly, but thank you
13 very much. We're really doing very well on the schedule. The
14 witnesses, I want to thank you for a very enlightening panel. I
15 would like to take a break. It's 10:14. Let's come back here
16 at 10:30. This hearing is in recess.

17 (Off the record.)

18 (On the record.)

19 CHAIRMAN SUMWALT: We are back in session. Someone
20 during the break asked me if we could do anything with the
21 temperature and I think they are going to perhaps see if they can
22 adjust the lights a little bit to get some of the heat off, but
23 there again, there's the issue of it's cold for the people sitting
24 in the auditorium; for those of us under the lights, it's warm but
25 they are going to see if they can keep the lights up enough to

1 keep it nice and bright for the camera, but maybe cool it off a
2 little for you. Our next panel will be on Flight Dispatch
3 Procedures and issues to be discussed here will be air medical
4 dispatch and flight following, the roles of the communicators,
5 communications center function and technology, dispatch center
6 functions, risk assessment, flight risk assessment, dispatch
7 safety function and training. Ms. Ward, if you would please place
8 under oath and qualify the witnesses.

9 HEARING OFFICER WARD: Thank you, Mr. Chairman. If I
10 could have the witnesses please rise. Please raise your right
11 hand.

12 (Witnesses sworn.)

13 HEARING OFFICER WARD: Thank you. Mr. Hickman, if you'd
14 give me your name, your title and organization that you're with.

15 MR. HICKMAN: My name is Garet Hickman. I am on the
16 Board of Directors for the National Association of Air Medical
17 Communications Specialists.

18 HEARING OFFICER WARD: Okay, thank you. And Mr. McCall.

19 MR. McCALL: My name is Dennis McCall, Aviation
20 Compliance Manager for Air Methods Corporation.

21 HEARING OFFICER WARD: Thank you. And Mr. Dauphinais.

22 MR. DAUPHINAIS: My name is Ray Dauphinais. I'm the
23 Vice President and Director of Operations for CareFlite.

24 HEARING OFFICER WARD: Thank you. Mr. Chairman, these
25 witnesses have been qualified.

1 CHAIRMAN SUMWALT: Thank you, Ms. Ward. The Technical
2 Panel will be led by Mr. Aaron Sauer and Mr. Sauer, I will ask you
3 to introduce the Technical Panel, please.

4 MR. SAUER: Thank you, Mr. Chairman. I'd like to
5 introduce the other members of the Flight Dispatch Technical
6 Panel. They include, to my right, Dr. Loren Groff; Mr. Ron Price;
7 and Dr. Evan Byrne.

8 TECHNICAL PANEL QUESTIONS

9 MR. SAUER: First line of questioning is for
10 Mr. Hickman. Do you mind if I just refer to your organization as
11 NAACS?

12 MR. HICKMAN: Absolutely.

13 MR. SAUER: Okay. Well, let's begin by discussing NAACS
14 and its role within the HEMS community. Specifically, would you
15 address the organization's mission and how it relates to the HEMS
16 community?

17 MR. HICKMAN: Certainly. The National Association of
18 Air Medical Communications Specialists or NAACS was created
19 in 1989 by communications specialists in this industry to try to
20 develop and take to communications specialists across the industry
21 an education program that melds both EMS and aviation, and we do
22 that through a two-day course and our mission, essentially, is to
23 take education to communications specialists across the industry
24 that addresses both the aviation side of this industry as well as
25 the medical side of this industry.

1 MR. SAUER: What are the membership requirements for an
2 operator to join NAACS?

3 MR. HICKMAN: The membership requirements are for
4 communications specialists. Our membership is communications
5 specialists across the industry, not operators. And we charge
6 them a fee for membership and typically, the majority of our
7 membership comes through education. When we teach courses across
8 the industry, part of the course fee is membership for a year and
9 then the member chooses to either stay a member and continue their
10 membership through the course of their certification, the course
11 we put out gives them a certification that's certified through the
12 continuing education board of EMS and part of our requirements in
13 order to recertify is they're a member in good standing after four
14 years, as well as some continuing education requirements for their
15 CSC or their certification.

16 MR. SAUER: About how many members do you have?

17 MR. HICKMAN: We have currently between about 600
18 and 700 members and that membership changes on a yearly basis.
19 Typically, we see our membership come through our courses. We
20 have a contingent of about 100, 150 that re-up their membership on
21 an annual basis and then we have others that let their membership
22 drop, but we're educating somewhere in the neighborhood of
23 about 400 to 500 communications specialists annually.

24 MR. SAUER: About how many communications specialists
25 are out there? Do you have any idea?

1 MR. HICKMAN: No. And I don't have an actual number
2 across the country because some choose to use our course, some
3 choose not to use our course. You know, there's programs out
4 there that train their communications specialists internally,
5 therefore we don't capture those numbers. If I were to give an
6 estimate across the industry, I'd estimate about 1500, but I'm not
7 certain if I'm giving you a high or a low number in that regard.

8 MR. SAUER: What types of programs does NAACS offer to
9 its members?

10 MR. HICKMAN: We offer predominantly education. We
11 teach the communications specialists across the industry, those
12 that choose to take our course, that -- it's a two-day course, I
13 kind of talked about before, and the curriculum is in the exhibits
14 -- that's one of the main services we offer to them. In our
15 courses and through the industry, whether it be at conferences and
16 those kind of things, we try to give our membership some not
17 necessarily counseling, but advice as to what other communications
18 centers are doing and how they act in regards to procedures and
19 things like that, what equipment they're using.

20 There's some collaboration across the organization in
21 regards to types of equipment, types of software, best practices
22 for procedures, things like that. We have a contingent in our
23 board that spent some time here in Washington and with the
24 industry in regards to legislative issues and things like that and
25 tries to bring back anything that might be of value to the

1 communications specialists across the industry.

2 MR. SAUER: How does NAACS define the role of a
3 communications specialist?

4 MR. HICKMAN: It defines that -- that's a great
5 question. In regards to their role -- it's the coordinator of the
6 flight request. The role also includes flight following and
7 ensuring of safety and progression of the flight and keeping
8 everyone in regards to the flight, itself, up to date on where
9 that flight is going in regards to, you know, how far out is that
10 aircraft, what aircraft is coming, making sure that there's
11 somebody there to land that aircraft when that aircraft arrives,
12 where is that aircraft landing, is there coordination with the
13 ground support services for whoever's coming to that landing zone.

14 If it's a scene landing zone, who's going to land that
15 aircraft as far as giving them ground instructions, ground safety
16 instructions; what frequency is that on. It's the coordination of
17 the flight from the beginning to the end. And then the
18 coordination of the service and the resources that are available
19 and also for the requester, it's the coordination of, you know, if
20 that service is not available what other services in the region
21 are available and how can they assist.

22 MR. SAUER: Does NAACS support or recommend any specific
23 types of equipment available for a communications specialist such
24 as flight following weather capabilities? Do they have a position
25 on that?

1 MR. HICKMAN: We support using equipment, having a good
2 situational awareness, being able to track your flights
3 accurately, understanding what information is collected in the
4 communications center for flight planning purposes, for patient
5 purposes and those kind of things. The actual software out there,
6 we don't endorse any specific products or services out there. But
7 we support the use of services that keep the communications center
8 organized and keep the data collected in a fashion that is within
9 standard of the industry.

10 MR. SAUER: Does NAACS provide any assistance or
11 oversight in terms of audits? Do they go out and do any audits on
12 communications centers out there throughout the country?

13 MR. HICKMAN: No, they don't do any formal audits across
14 the country of communications centers.

15 MR. SAUER: Do they have a type of mechanism available
16 for the members to provide feedback that may exist out there,
17 lessons learned, if you will?

18 MR. HICKMAN: Absolutely. We collaborate with our
19 membership all the time about practices across the country in
20 different communications centers when there's questions that come
21 up and arise. We try to get the membership, you know, connected
22 with somebody else in our membership that might be able to offer
23 the expertise they're looking for in regards to whatever specific
24 problem they may be having.

25 MR. SAUER: How is that information, then, disseminated?

1 MR. HICKMAN: As far as --

2 MR. SAUER: I mean, are the lessons learned, if you
3 will, available via web?

4 MR. HICKMAN: No, mostly through courses and just
5 collaboration for direct contact from one board member to a
6 program if somebody comes and asks a question. We e-mail to our
7 board questions. We have specific people on the board that we
8 might field a question to and have them answer directly to that
9 program. We have a website that we try to disseminate some
10 information on and we carry a newsletter that we do on a quarterly
11 basis and we try to take information back out to the programs as
12 far as best practices, lessons learned, things like that.

13 MR. SAUER: Okay. I have one final question,
14 Mr. Hickman. Has your organization been working with the FAA to
15 providing the framework or the development of any type of training
16 program specific to communications specialists?

17 MR. HICKMAN: We've conferred some with the FAA in
18 regards to things that we're doing and have received encouragement
19 in regards to, you know, curriculums and things like that,
20 especially the curriculum that we currently have out there and
21 then just encouragement from the FAA and Mr. Bueller (ph.) on, you
22 know, going forward with continuing to increase our education, but
23 we haven't had any specific dialog with the FAA of exactly what
24 that curriculum should entail or should not entail in regards to
25 specific line items on curriculum.

1 MR. SAUER: Okay. Well, thank you, Mr. Hickman. Move
2 on to Mr. McCall. I'd like to begin by just if you can give us a
3 brief overview of the structure of Air Methods' operational
4 control center, specifically the structure, personnel, et cetera.

5 MR. McCALL: Air Methods utilizes both an operational
6 control center and communications centers. The personnel that we
7 utilize in the operational control center is -- we have what a
8 call a lead operational control specialist. That individual is a
9 helicopter EMS pilot who has flown the missions and understands
10 the specifics and the nature of the type of work they're doing.
11 The second position that we have in the operational control center
12 is what we call an operational control center specialist.

13 That would be someone that may have come from a
14 communications center like Mr. Hickman was discussing and we would
15 employ these people to act as a backup to the lead operational
16 control specialist in the OCC function. We also have
17 communications specialists that are in the communications centers
18 and they are people that have an aptitude towards dispatching and
19 for flight following and any type of public safety is what we
20 would use them for.

21 MR. SAUER: What type of equipment is available at your
22 OCC?

23 MR. McCALL: Air Methods has what we call a flight
24 management system. It's a unique piece of software that we had
25 developed. Before the 2006 report came out, we were already this

1 piece of software and it does something that I believe nobody else
2 does. The software takes a look at the aircraft and its flight
3 plan and monitors it throughout its entire course of its
4 operation. So from the minute the battery gets turned on, if
5 there's a GPS tracing device in the aircraft, there is, if you
6 will, a 20 nautical mile bubble built around the aircraft. If
7 that bubble contacts any hazardous weather, which we define,
8 thunderstorms, fog, rain, heavy snow, and alert is generated and
9 we're able to give that information nearly real time to the
10 pilots.

11 The flight plan also is looked at for whatever legs are
12 entered into the flight dispatch software. When they enter those
13 legs in there, the flight plan is also monitored to give the same
14 type of alerts, so we have pretty good knowledge of what the
15 aircraft is experiencing now and what it will be experiencing in
16 the future. And the focal point there is to give real time,
17 updated information to the crews in those aircraft so they can
18 make good decisions.

19 MR. SAUER: This may seem basic in nature, but why does
20 Air Methods have an OCC?

21 MR. McCALL: Two reasons; safety, to enhance safety, and
22 for operational control. Again, prior to the 2006
23 recommendations, the company realized, by looking at their own
24 history and data, that there were ways to improve the safety as
25 well as, because of the size of the fleet, to maintain operational

1 control. So that was the primary reasons they went down the path
2 of an operational control center and then after the 2006 NTSB
3 report came out, and I believe they identified 11 of the 55
4 accidents could've had a different result had there been some type
5 of formalized processes for an operational control center, it even
6 made more sense to keep going down that road.

7 MR. SAUER: Okay. I'd like to touch on the training
8 aspect within your OCC. Can you briefly discuss the training
9 program that the folks within, the personnel within the OCC go
10 through?

11 MR. McCALL: Yes. Everybody that's in the operational
12 control center, they complete the entire pilots basic
13 indoctrination training/new hire training, which is a full week of
14 all types of training to include pretty in-depth weather, flight
15 planning. They understand -- they pick up information on the IFR
16 environment and specifically, information on how Air Methods
17 operates per their GOM and their operations specifications. And
18 then there's about another three weeks of in-house training that
19 it takes to bring them up to speed on the various systems that we
20 use and our processes.

21 MR. SAUER: Obviously, Air Methods has control over the
22 folks that they bring in to their OCC from a personnel standpoint.
23 Does Air Methods have that control at the other bases throughout
24 the rest of the country? Does Air Methods hire those individuals
25 at the various bases or how -- can you explain that process?

1 MR. McCALL: Yes. We have an national dispatch center,
2 communications center. I want to clarify the word dispatch. We
3 don't dispatch anybody. That's a specific 121 term. In our
4 national communications center, which is part of Air Methods and
5 that's where the bulk of our flight followers are, there's
6 processes for hiring those individuals, training them and keeping
7 them trained. We also have several hospital based customers who
8 maintain their own communications centers. They establish their
9 own guidelines for whom they hire, although Air Methods does
10 specifically train each and every one of those individuals
11 initially and recurrent-wise.

12 MR. SAUER: Okay. Transitioning into the day-to-day
13 operations at the OCC, could you explain to me the process in
14 which -- how the OCC is involved from the beginning of a flight
15 and throughout the course until the flight is completed?

16 MR. McCALL: Yes. What happens is, the typical
17 scenario, it was described very well on the panel before, is a
18 flight request comes in to a communications center. The
19 communications center gathers the appropriate information,
20 identifies the aircraft that they will offer that flight to and
21 makes contact with the pilot. When a pilot accepts the flight or
22 declines the flight, it's entered into a computer system.

23 If the flight's been accepted, it goes into a flight
24 planning program which sends that information electronically over
25 to the operational control center where they become aware of the

1 flight. At that point, the flight plan appears on the GIS system
2 that we have and again, that monitoring of the flight begins.
3 Once the aircraft lifts off, the aircraft is also being monitored
4 and again, the OCC stays involved. Now, they will monitor the
5 flights.

6 The flight management system will take a look at the
7 aircraft. If it finds any type of alert-able criteria, I'll use
8 heavy rain as an example, that aircraft's behavior on the screen
9 changes, it starts flashing red, as well as a textual alert is
10 generated saying that that aircraft has an alert based on heavy
11 rain. What would happen then is, if that's -- depending on what
12 type of equipment's in the aircraft, we may call them on a
13 satellite phone and talk directly to the pilot. If they don't
14 have that type of communications, we will contact their COMM
15 center and ask them to please relay the information to the pilot.
16 And so we get that as real time as possible information to our
17 pilots and crew.

18 MR. SAUER: Is the OCC involved in the go/no go decision
19 at all with the pilot?

20 MR. McCALL: Often they are. When the pilot -- it's not
21 uncommon that a pilot will have a flight request and will call the
22 OCC to see what their updated system that we have -- that we see
23 the same things they do and they will confer with us. That does
24 happen quite often.

25 MR. SAUER: Do they perform any type of risk assessment

1 on their end separate from what the flight crew is doing?

2 MR. McCALL: No, we do not.

3 MR. SAUER: Could you explain the role of the OCC in the
4 event of a weather turndown and how that process works out?

5 MR. McCALL: On a weather turndown, we would not
6 specifically be notified. Let's say that an aircraft turned down
7 a flight in the field, we would not be immediately notified that
8 they had done that. But the communications centers, the guidance
9 that's to the communications centers is that if somebody turns
10 down a flight for weather, that it's recorded.

11 We also have a program called -- it's a pilot 401
12 program where the pilot would log that turndown, so we can track
13 flights that have been turned down for various reasons. The
14 important thing is or what we do is if that pilot turns that
15 flight down, the communications specialist notifies the person
16 that requested us that we've turned this down for weather and if
17 you do contact another helicopter company, please advise them that
18 we've turned this call down for weather.

19 MR. SAUER: Obviously, you have a lot of bases in some
20 areas that are relatively close to -- in proximity to each other.
21 Do they, then, do those communications specialists talk amongst --
22 is there a channel that that goes through internally?

23 MR. McCALL: In some locations there is. I'll take the
24 Omaha based system down there. There is quite a bit of the -- one
25 of the models we use where I would say 80 percent of those

1 aircraft are close to half of the fleet is the communications
2 center for them and yes, they would communicate that information
3 back and forth amongst themselves.

4 MR. SAUER: Okay. What do you feel -- final question
5 for you, Mr. McCall -- what do you feel needs to be specifically
6 addressed in the industry that's related to communications
7 specialists?

8 MR. McCALL: The one thing I would say that would go a
9 long way is having someone define the training, the minimum
10 training, that's required for a communications specialist and
11 develop that standard.

12 MR. SAUER: Thank you. Mr. Dauphinais, I'd like to also
13 begin by, if you could, explain the structure within your
14 organization from the communications center aspect.

15 MR. DAUPHINAIS: I'd like to start with the structure of
16 the company. We are a medical transport company vertically
17 integrated and by that I mean we do from wheelchair vans, ALS/BLS,
18 critical care transport, helicopters and fixed wing. A little bit
19 different model than some of the other programs we've heard from.
20 In the communications center or our operations center, we have
21 seven stations and call-takers. We also do 911 for the counties
22 in and around our area. So a call comes in through the call-taker
23 and then is routed to the appropriate position, one of those is
24 being our flight dispatchers.

25 MR. SAUER: And what is the makeup of the personnel

1 within the communications center?

2 MR. DAUPHINAIS: I'm sorry. Well, the communications
3 specialists -- we have call-takers, communications specialists and
4 within the communications specialists section, we have those that
5 do ground, 911, the flight following qualified communications
6 specialists and then the flight dispatchers. And they're all EMD
7 trained, emergency medical dispatch trained, also.

8 MR. SAUER: And through our conversation leading up to
9 this hearing, I understand that CareFlite has 121 qualified
10 dispatchers. Can you explain why you feel that is necessary
11 because I understand there's fairly extensive training that's
12 involved in that?

13 MR. DAUPHINAIS: There is. I started down the path for
14 the 121 qualified dispatchers not because of the recommendations
15 of a few years ago, but because of our single pilot IFR program.
16 The one piece of flight dispatch training was -- under 121, it's
17 actually stated that they have co-responsibility for the conduct
18 of the flight. And so it was our attempt to reach out and bring
19 some of that culture of the 121 world into our operations.

20 MR. SAUER: What is the time and cost associated with
21 that type of --

22 MR. DAUPHINAIS: Being in the Dallas-Fort Worth
23 metroplex, we're lucky in that we have several 121 dispatch
24 schools to choose from. Some operations and locations where there
25 would be a lot of travel involved, we don't have that expense.

1 But it's a five-week course. I'd have to get you the exact
2 number, but it's in the neighborhood of \$5,055. The additional
3 expense to that is to cover the open shifts that are made in the
4 operations center while those people are gone.

5 MR. SAUER: Is there any other additional training
6 programs that CareFlite has available or provides?

7 MR. DAUPHINAIS: Require is the --

8 MR. SAUER: Require.

9 MR. DAUPHINAIS: Not dissimilar to Mr. McCall's
10 statement -- I mean, we have a whole process that we go through,
11 but specifically for the flight dispatchers, they're required to
12 do a shift with each of our aircraft making models, so they have
13 that. They do CBT. We use AvStar computer based training. They
14 do portions of that, not all of it's germane to them. They also
15 sit in on portions of our aircraft ground schools.

16 And the reason we do that is because during the flight
17 release conversation the pilot has with the dispatchers at the
18 beginning of each shift and for the risk assessment, we think it's
19 important that they have the vocabulary, understand what an MEL
20 is. We're trying to use them towards the functions closer to a
21 dispatch, although we don't dispatch. We process flight requests,
22 but it's part of that culture that we're trying to develop.

23 MR. SAUER: Could you define what the role of your
24 dispatcher is day to day?

25 MR. DAUPHINAIS: The dispatcher, I've already spoken of

1 the flight releases and the risk assessments. I mean, that's at
2 the beginning of each shift. And they look at it on a per flight
3 basis. For IFR aircraft, they can relay flight plans, they can
4 follow flight plans. Twenty-five percent of their dispatcher
5 training is weather related. They can read and interpret weather,
6 they work very closely with the pilots on that as the flight
7 requests come in. If we're in a yellow status for flight
8 requests, they can talk. I mean, they understand what is --
9 what's going on with the aviation portion of our system. They
10 also have operational control. They're listed in our operations
11 manual. They are authorized to initiate, terminate or deviate a
12 flight. So in our organization, it's for to say go, when to say
13 no.

14 MR. SAUER: You mentioned risk assessment at the
15 beginning of the shift, if you will. Is that done periodically
16 throughout the day or the evening, if you will?

17 MR. DAUPHINAIS: Risk assessment is an ongoing process,
18 both preflight and in-flight. That's aeronautical decision --
19 there's lot of pieces to that.

20 MR. SAUER: I guess let me clarify that. I mean, you
21 mentioned the status, yellow, green.

22 MR. DAUPHINAIS: Well, they're required -- they get
23 flight releases for a specific period of time. We use the length
24 of the shift, their scheduled shift is 12 hours. At that time,
25 one of the items that the dispatcher and the pilot discuss is

1 what's the weather doing, not only in the local area but in our
2 cross-country area, so we divide it down. They can be in a
3 green/green status, green/yellow status or yellow/yellow status.
4 And basically, that means that if a flight comes in and the pilot
5 at that base is in a green/green status, then the flight request
6 can be sent directly to the pilot. There is no, generally, no
7 conversation with the requester, but the pilot has to check the
8 weather. We don't expect any delay for the weather. In a yellow
9 status, then we know and we tell our requesting agencies that we
10 will look at the weather and then we'll get right back to them
11 whether or not we can accept that flight.

12 MR. SAUER: How does your dispatcher then handle a
13 weather turndown event? Do they notify other operators throughout
14 the metroplex or --

15 MR. DAUPHINAIS: We do that. We also have two
16 processes. We have a North Texas Helicopter EMS Safety Council
17 that we started about three years ago. One of the first projects
18 that that information group took on was to notify each other of
19 weather turndowns. That system's still in place. It's not used
20 as much now since weatherturndown.com came up, but those notices
21 are filed. We do that routinely.

22 MR. SAUER: Okay. One final question, Mr. Dauphinais.
23 What do you feel are some of the challenges you face, your
24 dispatchers face throughout the specific area of the DFW
25 metroplex? There's obviously a lot of rotor craft operations

1 going on.

2 MR. DAUPHINAIS: And there are a lot of operators, air
3 medical operators, in that area. Very large Class B airspace.
4 The airspace is extremely complex, lot's of -- five Level 1 trauma
5 centers, lot of traffic in and out of there. And so the
6 communications both on-scene and in and out of those helipads is a
7 continuing challenge. Through the regional safety council that I
8 mentioned, we also have a letter of agreement that we will use
9 CareFlite's operations center frequencies, not to give permission,
10 but to broadcast intents to land and take off at different
11 facilities or multi-aircraft scenes.

12 MR. SAUER: Do you feel there's anything out there,
13 improvements to the industry, specifically?

14 MR. DAUPHINAIS: Now, there's an open question. Thank
15 you. But germane to this panel.

16 MR. SAUER: Correct.

17 MR. DAUPHINAIS: One of the challenges we do face,
18 especially with our IFR program, is a lack of weather reporting.
19 I mean, that's probably one of the biggest challenges that we face
20 is getting accurate weather to be able to determine whether we can
21 do a flight.

22 MR. SAUER: Just a lack of weather sites out there in
23 the Texas area for the most part?

24 MR. DAUPHINAIS: It gets pretty dark out there. It's
25 not only the lack of AWASs, it's the AWASs that are available or

1 not tied into the National Weather System, so I mean, it's kind of
2 a two-fold problem for the weather.

3 MR. SAUER: Thank you, Mr. Chairman. That's all the
4 further questions I have.

5 CHAIRMAN SUMWALT: Thank you. We'll now go to the
6 parties and before we do, I see that we have witnesses from Air
7 Methods and CareFlite, so I assume would your parties like to go
8 last or does it matter to you? Okay, you'll go last and
9 CareFlite? Thanks. PHPA.

10 PARTY QUESTIONS

11 MR. DUQUETTE: Thank you, Mr. Chairman. Mr. Hickman,
12 with regards to -- I understand your course only certifies and
13 they are, in fact, not licensed, is that correct?

14 MR. HICKMAN: That's correct.

15 MR. DUQUETTE: Okay. And it's a two-day course. And
16 you were mentioning the fact that you were covering certain
17 aviation subjects and I saw, from your exhibit, that you are, in
18 fact, covering weather reporting. But I would like to ask an
19 additional question in that regard, what about the IFR? Is that
20 just VFR weather, you're talking about the IFR structure system
21 and how the weather relates to that or --

22 MR. HICKMAN: No, we're not. We talk predominantly
23 about weather theory, about how to obtain weather for pilots, how
24 to assist them on giving them information, read-me -- those types
25 of things. We talks a little bit about IFR in respect to, you

1 know, IFR approaches in the fixed wing environment, which is what
2 we see predominantly across the country more so than a lot in
3 regards to, like Mr. Dauphinais' program, programs with IFR
4 approaches at helipads and those are handled more regionally with
5 those programs to give them that education specific to their
6 programs. However, what we'll talk about, just the fact of what
7 IFR equipment's out there in order for an airplane to make an
8 approach into an airport. As we know, not all airports are
9 created equal in regards to IFR based equipment that's there, so
10 we speak a little bit about that, but it's more the weather
11 theory, it's more about being able to read METARs, give that
12 information to pilots, where to obtain weather for pilots when
13 they need it, how best to kind of support the pilot in regards to
14 weather information should he need us to -- he needs a
15 communications specialist to read a METAR for him from a specific
16 site and if he's in the air and he's flying and he needs some
17 information to make a weather decision.

18 DR. ELLINGSTAD: Okay, one more question. Your
19 membership, is it primarily with individuals or do you, in fact,
20 work with organizations and so they send all their communications
21 specialists to you for training?

22 MR. HICKMAN: It's both. We have program memberships
23 where organizations may decide to purchase a membership for all of
24 their communications specialists. So for example, an air medical
25 program might have 15 air medical communications specialists and

1 decide that they want membership for all of them and they'll pay
2 for that membership for all of those communications specialists.
3 But then the communications specialists, themselves, that are
4 on-staff there need, in that membership -- and should there be
5 attrition in that program, we'll honor that membership for them to
6 take one person out of that membership and place somebody else
7 into it if they replace that person and over the course of the
8 time, that membership dues are available for a year or whatever
9 the case may be.

10 MR. DUQUETTE: Okay, thank you. Mr. McCall, in your
11 organization at Air Methods, apparently you have another level.
12 You have the actual OCC which does supervisory, but then you also
13 have regional communications center that's also tied in with
14 regards to dispatching and working with the pilots?

15 MR. McCALL: Yes, it is.

16 MR. DUQUETTE: Okay. And for the most part, do the
17 pilots spend most of their time, in fact, communicating with the
18 OCC or are they, in fact -- they're using the regional
19 communications center for their dispatch information and weather
20 updates?

21 MR. McCALL: That's a good point. No, their
22 communications center that they're assigned to will do the primary
23 flight following. The benefit is we see to the OCC is we're
24 removed from that area and so we're strictly focused on safety and
25 compliance. And what we will do is pass that information down to

1 the communications centers, keeping them in the loop and having
2 them pass that information on to the pilots, but we're -- the
3 OCC's function is oversight.

4 MR. DUQUETTE: Okay. I was very intrigued about
5 your 20-mile bubble. Sounds like a very good -- of staying ahead
6 of what's going on. My question is obviously -- and I'm not
7 trying to hit a particular small point, but when it comes to
8 weather, rain, obviously you can probably use that weather overlay
9 and that gives you information, but with regards to fog, does that
10 mean that it's looking at the weather forecast either up ahead or
11 it's looking at the current METAR change and as a result that's
12 what trigger that you're having, in fact, a fog condition that
13 you're approaching?

14 MR. McCALL: For the specific fog condition, there are
15 two triggers. And again, when those alerts come out, the OCC
16 knows whether it's a forecasted fog or whether it's being reported
17 by a METAR. So that's how those come to us.

18 MR. DUQUETTE: Okay. With regards to -- you mentioned
19 that your COMM center personnel take part in either with or at
20 least they cover initial training, just like the pilots do,
21 initial pilot training --

22 MR. McCALL: Yes.

23 MR. DUQUETTE: -- as far as the subject matter and that
24 kind of stuff? Pilots are required to do recurrent training and
25 other additional upgrade training. Do the COMM center specialists

1 also do recurrent training or is there a course for that?

2 MR. McCALL: We do recurrent training and we also have
3 -- there are two types of recurrent training they do. For the
4 OCC, we do in-house. We have our own curriculum that we use. And
5 for the communications specialists, every year they repeat the
6 training that they got initially.

7 MR. DUQUETTE: Okay. And thank you. And
8 Mr. Dauphinais, you made mention that your COMM specialists are
9 also licensed, so I would be assuming that they would also have a
10 form of recurrent training --

11 MR. DAUPHINAIS: Yes, sir.

12 MR. DUQUETTE: -- just like the pilots do?

13 MR. DAUPHINAIS: Yes, sir.

14 MR. DUQUETTE: In regards to CRM go/no go decisions,
15 responsibilities, the pilot obviously has the responsibility of
16 gathering all sources of information and he's obviously discussing
17 the flight with his crew members. Is the COMM center also
18 considered part of the CRM and the decision making process? Does
19 the COMM center have a role in the go/no go decision?

20 MR. DAUPHINAIS: Absolutely. But that changes a little
21 bit based on the weather status. There's not a four-way
22 conversation for every flight. I mean, if there's any -- maybe an
23 MEL (ph.) issue, IFR capable aircraft that's got an item, MEL,
24 can't do IFR, I mean, those conversations are had based on the
25 particulars of that flight request. But to answer your question,

1 any one of those four members could say I'm not comfortable with
2 this, we're not going.

3 MR. DUQUETTE: Okay. With regards to NOTAMs, obviously
4 we're going to different hospital locations, typically hospitals
5 are not part of the NOTAMs system, so when a pilot or someone
6 else, even the hospital, puts out a notice, how is that
7 disseminated down to the pilots?

8 MR. DAUPHINAIS: A couple of ways. One is the Safety
9 Council of North Texas helicopter EMS safety council, we got some
10 seed money from all of the operators in the beginning. We have a
11 website. On that website, CareFlite is the holder of a database
12 of obstructions and those type of things, opening and closing of
13 pads, cranes, whatever it may be. And those are reported by all
14 the operators to include local police helicopters that we have.

15 It's been a long-established process, everybody's
16 familiar with it. Those are put into our right CAD system which
17 we use for flight following. When an aircraft is -- I'm sorry.
18 When an aircraft destination has an obstruction there's an alert
19 that comes up for the communications specialist or the flight
20 dispatcher to advise the pilot of that obstruction.

21 MR. DUQUETTE: Thank you. And one more question for
22 Mr. McCall with regards again to the NOTAMs. A pilot issues a
23 NOTAM or puts in a problem and reports a NOTAM, does that just
24 stay locally at your local COMM center or does that go all the way
25 up to the OCC and then is disseminated from the top on down?

1 MR. McCALL: When we become aware of a NOTAM at a
2 hospital, we do nationally distribution of that even though it may
3 be on the East Coast and you're on the West Coast. We put it on
4 the home page of our pilot 411 system and make that information
5 available to everyone.

6 MR. DUQUETTE: Thank you. And that's all my questions.

7 CHAIRMAN SUMWALT: Thank you, Mr. Duquette. AAMS.

8 MS. KINKADE: Thank you, Chairman. Garet, are there --
9 you mentioned you have a NAACS certification class. Is this a one
10 time class or are there continuing education requirements in order
11 to maintain that certification?

12 MR. HICKMAN: There's continuing education requirements,
13 yes, to maintain the certification through articles, through the
14 newsletter, through advance courses. The NAACS organization also
15 puts out -- does three or four advance courses a year, which is a
16 hodgepodge of information and we're looking to kind of revamp that
17 system. Right now it's just been what are hot topics, those kind
18 of things, and going through different hot topics in the industry,
19 but we're looking to take that course into an operational control
20 course and that's kind of what the focus of NAACS as it goes now,
21 but to answer your question, yes.

22 We require that they go through continuing education in
23 order to recertify either that through articles, through going
24 through courses at AMTC or other places within their region in
25 order to obtain enough continuing education to be able to

1 recertify. We require at least four articles a year that they
2 have to go through in order to recertify in the course and there's
3 not necessarily an hour requirement as far as how many hours that
4 they go through, it's more about how many articles, how much
5 information have they obtained in order to go through --

6 MS. KINKADE: Thank you. Are you aware of any national
7 standard or requirement for education or training for the EMS
8 flight dispatchers are they for the FAA or Part 121 dispatchers?

9 MR. HICKMAN: Yes. The Commission on Accreditation of
10 Medical Transport Systems has standards for communications and --
11 or CAAMS, as we call it and I'm sure everybody here is familiar
12 with them. There is a set of continuing education requirements
13 that the COMM specs need to go through continuing education.

14 There's a list of education topics that they need to be
15 trained on initially and that's, in fact, one of the areas where
16 our course kind of fits with that organization is we try to hit
17 all those topics that are in the CAAMS requirements when people go
18 through our initial two-day training course. Unfortunately, the
19 CAAMS accreditation standards is not mandatory across the country
20 100 percent.

21 There are states and there are some counties in some
22 states that require CAAMS as far as their legislative process.
23 However, if there's not a need -- if there's not a legislative
24 requirement for CAAMS, it's a voluntary process that programs go
25 through and I think -- I don't have the answers to that and I'm

1 certain that Eileen can answer -- Frazier can answer that better
2 tomorrow as far as how many programs across the country are CAAMS
3 accredited, but there is a set of standards in there that maintain
4 for communications specialists and the NAACS board sits, has a
5 position, a representative position, on that board to be able to
6 continue to drive those standards.

7 MS. KINKADE: And one more question for you, Garet. And
8 you may not know this for sure, but does NAACS support a
9 government regulation requiring all air med communications
10 specialists to have an FAA supported certification? Does NAACS
11 have a position? You may not.

12 MR. HICKMAN: No, we don't have a position on that.

13 MS. KINKADE: Okay, thank you. Let's see. Mr. McCall,
14 how many aircraft are you monitoring in your OCC?

15 MR. McCALL: The potential is up to 254. Normally, we
16 don't see over a hundred. The average number of aircraft that we
17 might monitor at one time probably hovers around 35 to 45
18 aircraft.

19 MS. KINKADE: Okay. Excuse me. And Ray, are here
20 issues unique to air medical flights that are not covered in the
21 Part 121 dispatch training?

22 MR. DAUPHINAIS: No, absolutely.

23 MS. KINKADE: Can you elaborate?

24 MR. DAUPHINAIS: Well, all our communications
25 specialists/flight dispatchers are EMD certified, which is the

1 Emergency Medical Dispatch training. I mean, there's a whole list
2 of information that a medical transport company needs to find the
3 right mode of transport. Yes, there's a lot. So in addition to
4 the aviation specific, which was the question from Mr. Sauer,
5 there is a lot more training on the medical aspects of it and
6 selecting the right mode.

7 MS. KINKADE: And for you and for Mr. McCall, speaking
8 both from your programs, specifically, do either of you have
9 minimum liftoff times when it comes to whether it's not a launch
10 or a regular call? Is there a minimum time that you expect your
11 aircraft to be off the ground?

12 MR. McCALL: No. For Air Methods, no.

13 MS. KINKADE: Okay.

14 MR. DAUPHINAIS: My answer would be yes and no. I mean,
15 what we work for is that a launch sequence is a task-oriented
16 event, not a timed event. That being said, on the clinical side,
17 they live and die by numbers and so they kind of monitor it time
18 on-scene, you know, those types of things. So there is some
19 tracking of time, but it does not affect our ability to launch
20 safely.

21 MS. KINKADE: And one more question because I know I'll
22 run out of time and this will be for Ray. Can you explain the
23 risk assessment process during the course of a flight request?

24 MR. DAUPHINAIS: It's very similar to what Mr. McCall
25 talked about electronically. We don't want to take away the

1 command authority of the pilot. I mean, he's doing an ongoing
2 risk assessment. The flight dispatcher's just a second set of
3 eyes. He's monitoring the weather, also. He's looking ahead for
4 NOTAMs at the landing. He's talking to the people who are on the
5 ground if it's a scene call and then he's relaying that
6 information to the pilot.

7 MS. KINKADE: Thank you, Chairman.

8 CHAIRMAN SUMWALT: Thank you, Ms. Kinkade. Next we'll
9 go to NEMSPA and then after that, Mr. Harris, FAA, will go after
10 them, so NEMSPA.

11 MR. SIZEMORE: Thank you, Mr. Chairman. Thank you,
12 panel, for some good information there. Mr. Hickman, you
13 mentioned one of the things that you all are in the process of
14 developing is an OCC type course. Can you tell me, do you know if
15 there are any OCC personnel that attend your all's training
16 programs?

17 MR. HICKMAN: Anecdotally, yes. You know, I can't tell
18 you actually how many people from operational control centers have
19 attended our course, but over the past year or two, since
20 operational control has been strengthened, we've seen a lot of
21 folks that have either transitioned up to an operational control
22 position from an operator, like, for example, Mr. McCall's talking
23 about hiring folks, experienced communications specialists, and
24 taking them through their course, so we've had some of those folks
25 probably gone through our course in the past and we've had

1 individuals from many different lines take our course from -- I
2 know that we've had a couple folks from the NTSB take our course,
3 I know we've had folks from different flight standards division
4 offices from the FAA go through our course in different regions
5 just to get some experience on what we teach and how we're
6 teaching, those types of things.

7 MR. SIZEMORE: Okay, thank you. Mr. McCall, do all the
8 crews across the nation perform the risk assessment as a
9 standardized risk assessment or is it an individualistic process?

10 MR. McCALL: It's more standardized. When the pilot
11 receives the flight request, there is a form that they use to help
12 identify those hazards and complete the risk assessment.

13 MR. SIZEMORE: Okay. Ray, in your program, the same
14 thing, do you have a standardized process or is it
15 individualistic, by base, by --

16 MR. DAUPHINAIS: No, it's a standardized and the pilot,
17 at the beginning of each flight will give a number. I mean --
18 yeah.

19 MR. SIZEMORE: Okay. Back to Mr. McCall. You talked
20 about hospital based or regional communications centers, what kind
21 of oversight process is there to ensure that they're upholding the
22 standard that you've set for them?

23 MR. McCALL: The software, that's one of the ways that
24 we provide the oversight, for example. We want to know that when
25 an aircraft has gone on a mission that we're aware of the details

1 of that mission, departure location, landing location. On that
2 flight management system that I described to you, if an aircraft
3 departs without a flight plan or without that type of planning
4 done, their aircraft appears differently on the screen. It's
5 white. We call it a ghost flight. And that would cause the OCC
6 to pick up the phone and call that communications center and make
7 contact with them and find out what's going on. And just by the
8 nature of having the OCC -- there's quite a bit of communications
9 where those communications centers will call us to make sure they
10 understand exactly what the guidance is and how we do things. So
11 that was a side benefit of the OCC was it increased communications
12 with our communications center and there's quite a bit of
13 follow-up and oversight.

14 MR. SIZEMORE: Okay. And talking about the risk
15 assessment process, you mentioned that at the beginning of the
16 shift, the OCC is involved in the risk assessment with the pilot.
17 As far as on a per flight basis, is there any interaction on risk
18 assessment between the pilots and the OCC?

19 MR. McCALL: Not necessarily. Each flight, if I didn't
20 say that up front or was confusing about it, every flight requires
21 that risk assessment to take place and upon lifting, they provide
22 that risk assessment value to the communications specialist and
23 it's recorded so that -- just so that we know that it was done.
24 The OCC is always available to the pilots if they want to call and
25 get any type of briefing or counsel, if you will, and they take

1 advantage of that.

2 MR. SIZEMORE: Okay. Is there any point the OCC can
3 step in and say this is beyond the risk we're allowing you to
4 accept, so we're going to shut the flight down?

5 MR. McCALL: We do not have that process in place.

6 MR. SIZEMORE: Okay, thank you. Mr. Dauphinais, the
7 same type questions insofar as your operational control, are they
8 involved on a flight-by-flight basis or just on an original --

9 MR. DAUPHINAIS: For the most part, we are, but we're a
10 lot smaller than Air Methods so yeah. I mean, we do have that
11 ability and the flight dispatcher, as I mentioned, does have
12 operational control, formal operational control, and he can say
13 no, stop the flight, turn around, go home. As backup to that --
14 now, the dispatcher is not a pilot. He's not an EMS pilot, he's
15 not a helicopter pilot. The backup to that is our ops on call who
16 is an aviation manager and if there is a dispute, which we have
17 not had yet, if there is a dispute, the manager would step in.

18 MR. SIZEMORE: Okay. And just to clarify something you
19 said a little bit earlier, you said if it's green/green, they know
20 that it's a non-delay flight, they're going to go ahead and go.
21 Is that a true reflection or does that just mean that there's no
22 indication however the processes of preflight and so forth are
23 going to go on the same?

24 MR. DAUPHINAIS: Thanks for asking for that
25 clarification. That's used on two sides. One is when the request

1 comes in from an agency, whether it's a scene call or inter-
2 facility, if it's yellow, then they will automatically tell the
3 caller we have to check the weather so the caller, our customer,
4 can understand that there is potential delay. Sometimes there is.
5 Usually there is, sometimes there's not. But if it's green, it
6 doesn't trigger that particular conversation with the outside
7 request or the customer. Internally, the pilot still is going to
8 check the weather before he walks out the door. He still does all
9 those things. It's just what is the expectation. It doesn't
10 change the process.

11 MR. SIZEMORE: Okay. And when you were talking about
12 lift-off times and stuff and the process that you described there,
13 that doesn't enter into any of that so he's not expected, if it's
14 a green/green day to be off the ground in five minutes as opposed
15 to a yellow day when he'll --

16 MR. DAUPHINAIS: The pilots are aware what the clinical
17 numbers are and I do look at launch times, VFR, IFR, but I do it
18 on a systemic level. What is our average across all of our bases,
19 all the pilots. I mean, I don't drill down to an individual pilot
20 or base, but for us to be able to appropriately give ETAs and all
21 that stuff, we have to know what our averages are to be able to
22 give the customer accurate ETAs.

23 MR. SIZEMORE: Okay. Thank you. That's all the
24 questions I have.

25 CHAIRMAN SUMWALT: Thank you, Mr. Sizemore. FAA.

1 MR. HARRIS: Thank you, Mr. Chairman. Mr. Hickman, in
2 your organization, in NAACS, can you speak to the ratio of members
3 who are employed by hospitals or medical entities versus those
4 that are employed by certificated operators?

5 MR. HICKMAN: NAACS just did a survey recently that gave
6 us a percentage that -- now, the survey was small. The sample
7 size was probably about 300 communications specialists and out of
8 that, about 53 to 54 percent were hospital based and then there
9 was another about 25 percent, 20 to 25 percent that were from
10 certificated operators.

11 MR. HARRIS: Had you done a previous survey or do you
12 have an anecdotal observation of any trend or transition in that
13 trend, in that relationship?

14 MR. HICKMAN: I don't. I'm sorry, I don't.

15 MR. HARRIS: Okay. Thank you very much. Mr. McCall,
16 you're dealing with, I believe, the largest helicopter EMS
17 operator in the country and with your centralized operational
18 control center and Mr. Dauphinais, even though your organization
19 is relatively small compared, I would argue that it's actually
20 fairly complex with your IFR infrastructure. Both of you have
21 taken the choice to go through an operational control center to
22 manage some of your risks in that activity and at least, in
23 Mr. Dauphinais' case, exercise some portion of the operational
24 control requirement through that center. Do either of you have a
25 comment or an observation on what might be the minimum size

1 operation that an operational control center would be appropriate
2 to?

3 MR. McCALL: Go ahead, Ray.

4 MR. DAUPHINAIS: Go ahead.

5 MR. HARRIS: Remember, you're under oath. The correct
6 answer is that you have no opinion.

7 MR. McCALL: We've talked about this amongst ourselves
8 and what the tipping point is, I don't know. Obviously, what
9 we're doing at Air Methods may not be appropriate for an operator
10 that has three aircraft, the level that we've gone to. I don't
11 know when Air Methods reached that point to where it became
12 necessary, but we're there now.

13 MR. DAUPHINAIS: Every operator needs to look at their
14 own operation and see what's appropriate for them. I really do
15 believe that. We don't want to completely remove the pilot's
16 authority to conduct the flight. But as I've reviewed accidents
17 in the industry over the years, sometimes it was just somebody
18 saying what are you thinking, you know, to the pilot. So I don't
19 know that there's any minimum or maximum number. I think every
20 pilot should have that resource, not to tell them what to do but
21 just to be the resource to ask him what's he thinking.

22 MR. HARRIS: Thank you. Do either of your operations,
23 either Mr. McCall's or Mr. Dauphinais' utilize the ADDS HEMS
24 weather tool?

25 MR. McCALL: Yes, at Air Methods we use that.

1 MR. DAUPHINAIS: CareFlite does, also.

2 MR. HARRIS: Could I ask, perhaps, Mr. McCall, could you
3 give us an idea of how you use it in either a go or a no go
4 decision?

5 MR. McCALL: Actually, we don't use it for a go
6 decision. The instruction is that when you look at that ADDS,
7 that's just additional information, not always an aviation
8 product, so the reliability could be in question. So you could
9 use it to make a no go decision, but certainly not as the criteria
10 to accept a flight.

11 MR. HARRIS: Mr. Dauphinais, would you concur with that
12 or have a differing opinion or --

13 MR. DAUPHINAIS: What Mr. McCall said.

14 MR. HARRIS: And are either -- have either of you looked
15 at -- and I don't want to bring this in as an exhibit, but
16 Advisory Circular 120-96, which is the operational control center
17 use in helicopter EMS and if so, have you found it useful in
18 supporting your design of your centers?

19 MR. McCALL: I found it very useful. The 120-96 gives a
20 lot of -- I think one of the best parts of that was using the
21 words 121-like operation as opposed to a 121 dispatcher, so I
22 thought that was good. I also liked the different models that
23 were laid out, their understanding that that's a continuum, it's
24 not a one-size-fits-all, that there's a lot of room for different
25 models. For example, I believe we're doing a really good job at

1 Air Methods of meeting those needs, although we don't really fit
2 into one of those four models that's laid out there and for our
3 own reasons and location and size of the operation. We've done
4 the best we can, I believe, with -- that we could for our size.

5 MR. DAUPHINAIS: And I would concur. It's an excellent
6 reference document. We use it as a reality check on what we're
7 doing and use it that way.

8 MR. HARRIS: Thank you very much. No more questions,
9 Mr. Chairman.

10 CHAIRMAN SUMWALT: Thank you, Mr. Harris. And HAI.

11 MR. ZUCCARO: Thank you, Mr. Chairman. Just some quick
12 questions, most of them are answered. Mr. McCall, we were just
13 talking about the HEMS tool and the fact that it's utilized for no
14 go decisions. Would it be beneficial if that was an upgraded tool
15 and could, in fact, be used for go decisions?

16 MR. McCALL: Absolutely. I think no one's going to
17 disagree with the statement that one of the biggest challenges to
18 the HEMS operations is the availability of good weather sources.
19 You know, you have maybe at the departure point and at the final
20 destination you have weather, but all in-between it may be scarce
21 and of course, that's where we got into using that tool.

22 MR. ZUCCARO: Thank you. Mr. Dauphinais, just a follow
23 up to the comment about the various elements of the operation that
24 you monitor, one of them was launch time. And I understood you
25 analyze it on a systemic basis to determine the average. In that

1 review of that type information, have any actions come out of that
2 where you change policies or procedures predicated on it?

3 MR. DAUPHINAIS: No, sir.

4 MR. ZUCCARO: Great. The other thing is you're using --
5 I'm correct you're using 121 certified dispatch personnel?

6 MR. DAUPHINAIS: Yes.

7 MR. ZUCCARO: And obviously, operating a 135 operation,
8 I'm assuming that there's tangible things that you looked at and I
9 was wondering, what benefits or additional capabilities do you
10 believe that's giving you?

11 MR. DAUPHINAIS: The knowledge base of the flight
12 follower, which is what we have done in the past, to have a deeper
13 understanding of the pilots' not only capabilities, but
14 limitations. We do encourage them to fly, require one, and we
15 encourage them to fly out routinely just so that they know what's
16 going on. It's the co-responsibility between the flight
17 dispatcher and the pilot that they have in 121 that were missing
18 in 135. Nobody on the ground is responsible for the flight. Now,
19 I mean, the certificate holder is; I mean, there's all of that,
20 but the person who's watching and monitoring every flight. And
21 that's the piece of it that we were trying to bring in to our
22 operation.

23 MR. ZUCCARO: Did the fact that you fly IFR play into
24 that decision, to go that way?

25 MR. DAUPHINAIS: Yes, sir. I mean, that's why I started

1 down that road and then when the FAA came out with their
2 recommendations with the NTSB, I mean, it just reinforced that we
3 needed to beef that up a bit.

4 MR. ZUCCARO: Okay. Thanks a lot. That's all the
5 questions I have, Mr. Chairman.

6 CHAIRMAN SUMWALT: Thank you, Mr. Zuccaro. Air Methods.

7 MR. YALE: Thank you, Mr. Chairman. Mr. Hickman, if I
8 can, what type of training do you receive from the operator and
9 how do you interface with that? Could you explain that just a
10 little bit?

11 MR. HICKMAN: As far as from a NAACS perspective?

12 MR. YALE: No, specifically as a communications
13 specialist with a flight program that you're with, you receive
14 training from your operator how to interface with them --

15 MR. HICKMAN: Right.

16 MR. YALE: -- and their certificate. Could you explain
17 that?

18 MR. HICKMAN: Yeah. We receive training in reference to
19 how they operate in regards to post-accident/incident plan.
20 Expectations and training in regards to flight following
21 procedures, some general education in regards to everything from
22 phonetic alphabet to how to -- I mean, some of it's rudimentary
23 and pretty basic in regards to the -- you know, for the
24 communications specialist, but everything from, you know, radio
25 etiquette and you can expand on it, if you want, Dennis, but some

1 of it's rudimentary, some of it's in regards -- it talks about how
2 to interface with the pilot in regards to weather and the pilots
3 -- weather systems and things like that. The red, yellow, green
4 system, the green being weather is, you know, is clear and I'm
5 good to go, I've checked weather; obviously, that can change. The
6 yellow is weather's changing on a regular basis right now in the
7 areas that I want to fly, you need to check with me first, you
8 need to let the requester know that we're going to spend a little
9 bit of time taking a look at weather and then the weather hold
10 decision where we're not going to go in that direction, the
11 weather's going to be down for, you know, several hours. We'll
12 continue to evaluate but don't accept any flights in those
13 regions.

14 So we talked a fair amount about that and that's
15 proliferated through the NAACS side of things, as well. So that
16 system, how to obtain weather, the HEMS tool, the ADDS tool that
17 Mr. Hooper Harris, you know, talked about is another thing that we
18 talked a little bit about, is having that situational awareness
19 for the communications specialists to be able to use some tools,
20 to be able to have a good idea in the region what weather is
21 doing, talking about obtaining requests from -- when obtaining the
22 requests from the requester in areas where there isn't any
23 official weather reporting, to try to at least get some
24 information from them and some data collection from them on what's
25 the weather doing there, knowing that sometimes that information

1 can be skewed based on a patient that they want out their doors,
2 but at least a little bit of information in regards to what's the
3 weather doing there to try to help to assist that pilot in making
4 a no go decision in situations where the weather might be
5 marginal.

6 MR. YALE: Thank you. And when finding that you've --
7 again, I'm speaking to you from your role as a communicator, when
8 you deal with a weather related turndown, in other words, a pilot
9 has gone ahead and told you they're not going to take a flight as
10 a result of that. You talked about the Commission on
11 Accreditation of Medical Transport Services. In order to be
12 accredited, there is a requirement that you have a way of
13 notifying other like programs in your area of that and so that
14 they can use it as part of their risk assessment, is that correct?

15 MR. HICKMAN: Yeah. And I can speak to that in regards
16 to both -- just from my operation and as a general rule across the
17 industry, there are several avenues to collaborate on weather with
18 programs that -- and other programs in your region. From the
19 Colorado perspective, which is where my expertise comes from,
20 where I spend most of my time, we do that through both phone
21 collaboration but also, we page all of the other air medical
22 program communications centers when we turn something down for
23 weather and we also receive pages from them when they turn
24 something down for weather. Now, that information is just that.

25 It's information that a program has turned something

1 down for weather and what we try -- that paging is scripted. It
2 gives us information about where that weather is and what that
3 weather is so that we can further make a decision about that
4 weather. Say, for example, if we're dealing with weather that's
5 en route weather or weather at a base of an operation because they
6 can't depart, but weather is not necessarily an issue at a scene,
7 then in many cases we can look around the region and find somebody
8 else that can come in from another direction and accept that
9 flight. Obviously, if it's weather at the point of the patient
10 pickup, all the programs are going to turn that down for weather.
11 There's a fair amount of collaboration when you look across the
12 region or across the nation in regards to that. There's a
13 regional -- you know, points of collaboration, whether that be at
14 a state level, at a multi-state level, a multi-county level in
15 regards to how are we going to operate amongst each other in
16 regards to weather and communicate that weather to each other.

17 MR. YALE: Good. So it's an effective defense against
18 the practice of having people shop for a helicopter?

19 MR. HICKMAN: It is, because we understand the process,
20 that many cases the patient or the caregiver in charge of that
21 patient has one thing on their mind and that is that patient needs
22 a higher level of care and they need to move that patient quickly.
23 So it's understandable that a requester may hang up the phone with
24 air medical program who has told them no, we can't come for
25 weather and immediately pick up the phone and call somebody else

1 because they have a duty to that patient to get that patient to a
2 higher level of care. So we make in incumbent on ourselves to
3 communicate weather amongst each other so that we keep each other
4 advised to when we've decided to turn something down for weather
5 so we can give that information to our pilots so they have that
6 extra piece of information when they make a decision about that
7 flight.

8 MR. YALE: Thank you. Mr. Dauphinais, are there other
9 methods than what you and Mr. McCall have talked about that can be
10 used to meet operational control and still meet the FAA guidance?

11 MR. DAUPHINAIS: I believe there is.

12 MR. YALE: Could you give me a little bit of an idea of
13 what this might be or --

14 MR. DAUPHINAIS: Well, as I already stated, I think that
15 every operator, every operation, needs to look at their operation,
16 their topography, their area and determine what their capabilities
17 are, work with the FAA, the POI, the FSDO, and come up with works
18 for them. I'm honestly prepared to --

19 MR. YALE: Okay, thank you. With the current 121
20 training that you use, there are parts of that that deal with more
21 airline type of stuff, weight and balance, that type of thing.
22 How much of it is not pertinent to what you do in your business?

23 MR. DAUPHINAIS: I can't give you a percentage,
24 Mr. Yale, but I will say that those things that are not pertinent
25 we don't use. Again, I was looking for a baseline knowledge,

1 trying to bring in some of the culture from the 121 world,
2 specifically, co-responsibility.

3 MR. YALE: Thank you. Mr. McCall, if you could, just
4 talk a little bit about this idea of how are your aircraft
5 dispatched and are they requested by someone or do they respond on
6 their own in the way that they take a call?

7 MR. McCALL: The aircraft never just respond on their
8 own. We have a formalized process. That process is somebody from
9 the accident scene, a first responder, a county communications
10 center will contact the communications center and make that
11 request. Appropriate questions are asked by the communications
12 centers and that information is presented to the pilot minus any
13 type of patient information. The pilot simply makes a
14 determination, can you do a scene flight, can you do a hospital
15 flight from Point A to Point B. If the answer is yes, the
16 aircraft lifts off on the mission.

17 MR. YALE: Excellent. Is the communications specialist
18 and OCC personnel training that you do FAA approved?

19 MR. McCALL: Accepted.

20 MR. YALE: FAA accepted?

21 MR. McCALL: Yes.

22 MR. YALE: Could you explain the difference between the
23 two?

24 MR. McCALL: Well, what we did is develop training and
25 as far as the GOM goes, we have guidance in there for

1 communications specialists and as well as for the OCC. The
2 communications specialist training is submitted to the FAA as part
3 of our training program and they accept that.

4 MR. YALE: Excellent. And Mr. McCall, maybe if you
5 would take a shot at the same answer that I asked Mr. Dauphinais
6 about alternatives to what the two of you have put together to be
7 able to meet the FAA's spirit of operational control. What type
8 of centers might there be?

9 MR. McCALL: Again, you could have -- what it boils down
10 to, in my opinion, is that whether you're using dispatchers,
11 whether you're using operational control specialists, the idea is
12 that whoever that person is that's on the other side of that radio
13 has aviation specific training and I think there is the common
14 ground. So for a smaller operation that only has two, three -- I
15 don't want to pin it down to a number of aircraft, that aviation
16 specific training may be all they need to have a sustainable
17 system of operational control and some of those enhanced safety
18 functions.

19 MR. YALE: Okay. Thank you very much. And that
20 concludes my questions.

21 CHAIRMAN SUMWALT: Thank you, Mr. Yale. CareFlite.

22 MR. BELL: Yes. Ray, earlier you had mentioned that you
23 got into the Part 121 -- thank you, Mr. Chairman, by the way. You
24 had mentioned that you got into the Part 121 training due to your
25 single pilot IFR. Can you describe the difference between the

1 flight dispatch procedures under VFR and IFR, if any?

2 MR. DAUPHINAIS: The flight -- the process for the
3 incoming flight request and the way it is presented to the pilot
4 as a flight request isn't any different between IFR and VFR. It's
5 how can we conduct the flight safely and then we determine the
6 appropriate mode of transport and if that's IFR, that's what we
7 use. It's a tool.

8 MR. BELL: Okay. Now, on the Part 121, you mentioned
9 that you train for 121 but you don't dispatch like a 121. What's
10 the difference between air ambulance dispatch and a Part 121
11 dispatch and why don't you do 121?

12 MR. DAUPHINAIS: Because we don't have a 121 certificate
13 would be the short answer. We have a 135 certificate. Under 135,
14 we do not dispatch. We process flight requests and the pilot is
15 -- well, self-dispatch isn't the correct term, but he either
16 accepts the flight or not based on a number of issues.

17 MR. BELL: Now, Mr. McCall, do you have anything to add
18 to that?

19 MR. McCALL: No, I do not.

20 MR. BELL: Okay. On the availability of dispatchers and
21 the communications specialists, I want to ask Mr. Hickman, do you
22 find that in the industry we're having difficulty finding trained
23 and qualified people for that?

24 MR. HICKMAN: At this point, the industry kind of trains
25 their own. So we have -- what we see in the industry more so is

1 communications specialists coming in to air medical communications
2 centers from one form of EMS or aviation or some area. It kind of
3 all depends on their experience and it depends on the program.
4 Some programs will hire folks that, you know, and require maybe a
5 private pilot's license. That's probably the smallest contingent.
6 Most look for communications specialists that have been in public
7 safety in one realm or another. They look at 911 dispatchers,
8 dispatches that are coming from other air medical services. Some
9 look for, you know, at the entry level, communications specialists
10 coming in that understand the EMS system within the region as an
11 EMT or a paramedic. And then the programs will take those
12 communications specialists through a training program.

13 Now, depending on the programs, depending on how long
14 that training program is, for me, it's a program that's six weeks,
15 but that's program specific based on their training and that
16 training might include the NAACS training, initially, or later,
17 within the first year in many cases and some might not. If you
18 look at Air Methods program in Omaha, Nebraska, they take them
19 through a whole contingent of training there and don't necessarily
20 use NAACS, but the course content is somewhat similar in regards,
21 so the industry does -- pretty much trains their own, but they
22 look for people that are qualified in the region, they either
23 understand aviation or understand the EMS system or understand
24 both and are good multi-taskers.

25 MR. BELL: Do you recommend a specific ratio of

1 controllers versus the number of aircraft?

2 MR. HICKMAN: That depends on how task saturated the
3 communications center is. There's not a good, right now, good
4 measure across the industry that is -- you know, that's one that
5 can be targeted for every program as far as a ratio of
6 communications specialists to aircraft. I would say that the
7 average is one communications specialist to three or less aircraft
8 across the industry and the -- we recommend that it stays lower
9 rather than higher. And we recommend that the communications
10 specialists, if they have extra duties in the communications
11 center, that those duties are something that can be put aside when
12 their job of flight following and managing the actual physical
13 requests becomes a higher level of need as far as task saturation
14 goes.

15 So we try to look at and try to recommend that
16 communications specialists don't ever get task saturated and that
17 if there is a level of duties in the communications center that
18 are aside from coordinating the requests, flight following the
19 aircraft, ensuring that somebody's going to be safely there on the
20 ground to be able to give them, you know, pre-arrival scene size
21 up, LZ size up and those types of things, that those tasks can be
22 aside until the request is over and then pick up whatever
23 secondary or tertiary tasks they have in the communications center
24 after their volume drops.

25 MR. BELL: Okay. Mr. McCall, what happens in your

1 communications center when an aircraft's overdue?

2 MR. McCALL: Part of that flight management system I've
3 been describing, if an aircraft misses an 15 minute position
4 report, there is, again, behavior changes on the map. A blue ring
5 is drawn around that aircraft, bringing immediate attention to it
6 that it's missed a position report. From right then and there, we
7 will reach out to the communications center and see if there's an
8 update that someone didn't get, whether their tracking unit
9 stopped working, something along those lines. But if the aircraft
10 is actually considered overdue, then we follow all the processes
11 that you would, you know, calling airports, calling where they
12 were last going, where they were getting picked up at and see if
13 we can locate the aircraft and then escalating that up to the
14 point where certificate is notified and then the appropriate
15 authorities are notified.

16 MR. BELL: Thank you. We have no further questions.

17 CHAIRMAN SUMWALT: Thank you. Are there any follow-up
18 questions from the parties?

19 (No audible response.)

20 CHAIRMAN SUMWALT: Seeing none, I'd like to turn it back
21 to the Technical Panel for follow up.

22 MR. SAUER: Thank you, Mr. Chairman. I would like to
23 turn over the mike to Mr. Guzzetti here for some follow up.

24 FURTHER TECHNICAL PANEL QUESTIONS

25 MR. GUZZETTI: Thank you, Mr. Chairman and Mr. Sauer.

1 Yeah, there are just some clean-up questions that I've been
2 designated to ask, just some quick ones. Mr. Harris referred to
3 Advisory Circular 120.96. It is an exhibit, as you know. It's
4 Exhibit 7(a) and even though there's an exhibit that I don't think
5 is on this panel's list, I just wanted to point out to the public
6 and to the panel, it's Exhibit 12(o) which is the four safety
7 recommendations that the safety board issued at the response, the
8 most recent response, back from the safety board to the FAA in
9 which the safety board indicates that we felt that the FAA's
10 response to that recommendation regarding flight dispatch was
11 response of the advisory circular.

12 But is it still considered open because -- acceptable
13 response because it is not required yet and that brings me to my
14 question for the three of you, just a yes or no answer, would you
15 support an FAA requirement for a standardized training program for
16 the industry to use for communicators? Mr. Hickman?

17 MR. HICKMAN: Yes.

18 MR. GUZZETTI: Mr. McCall.

19 MR. McCALL: Yes.

20 MR. GUZZETTI: Mr. Dauphinais.

21 MR. DAUPHINAIS: If it met my needs, yes.

22 MR. GUZZETTI: Okay, very good. Thank you. Another
23 question for Mr. McCall. If there is a weather turndown that's
24 processed through your OCC, would you automatically issue, make an
25 input for a PIREP or would you contact Flight Service or get that

1 information out in that vein or how would that work?

2 MR. McCALL: The PIREP. Actually, what we would do is
3 encourage the pilot to submit a PIREP --

4 MR. GUZZETTI: Okay.

5 MR. McCALL: -- for that because the information's no
6 good to anybody else unless it's reportable to some agency.

7 MR. GUZZETTI: Understood. Mr. Dauphinais, you would
8 agree?

9 MR. DAUPHINAIS: Yes, sir.

10 MR. GUZZETTI: In regards to -- I know, Mr. Dauphinais,
11 this is for you. I know, in the Dallas-Fort Worth metroplex
12 there's a lot of helicopter activity. There's Eurocopter, there's
13 Bell, there's electronic news gathering helicopters, there's of
14 course, EMS helicopters. Does your dispatch or communications
15 center play a role in alerting other pilots of other traffic,
16 helicopter traffic in the area, for example, approaching the same
17 helipad on a hospital? What role does your communications center
18 play in that regard, if any?

19 MR. DAUPHINAIS: We do. Through the North Texas
20 Helicopter HEMS Safety Council, which -- there's a safety
21 organization, AMSAC, who put out a white paper recommending that
22 we based our safety council on that recommended practice from
23 AMSAC. All the operators got together. One of the first -- I
24 thought I'd spoke to this before, but one of the first things that
25 we tackled was that communication. Prior to any agreement, we

1 would have two, three different colored aircraft show up on-scene,
2 sometimes -- and then, in addition to that, was the news gathering
3 folks, so it would get crowded pretty quick and everybody very
4 fast recognizes safety concerns there. So through the safety
5 council we came up with a letter of agreement. There was a
6 discussion about using helicopter air-to-air frequencies. The
7 problem with that, from our perspective, was it doesn't have a
8 memory. In other words, if you're broadcasting in the blind
9 air-to-air that you're three minutes out or three miles out from a
10 helipad, you have to switch back to your company frequency or to
11 ATC.

12 A minute later, somebody else calls inbound to that same
13 pad, you know, the air-to-air doesn't have the memory that
14 somebody just called. So although the CareFlite operations center
15 does not give permission to land, we don't pass -- for other than
16 our own aircraft, we don't pass patient reports and that kind of
17 stuff. We are the memory for that, used as a UNICOM in that case.
18 We do that both scenes and for the hospitals and our agreement is
19 within 50 nautical miles of the center of the metroplex.

20 MR. GUZZETTI: Okay. Thank you very much. I guess I'll
21 pass this along to Mr. McCall. Who sets the overall dispatch
22 policy for an organization, within Air Methods, for example?

23 MR. McCALL: That process is set up by the certificate
24 management team, primarily, the Director of Operations and the
25 Chief Pilot.

1 MR. GUZZETTI: Okay, thank you. And does your
2 operational control center offer services -- do you offer that
3 service to other smaller operators that may want to use your
4 operational control center?

5 MR. McCALL: No, it's specifically for Air Methods
6 operations.

7 MR. GUZZETTI: Okay. And Mr. Dauphinais, if you were
8 approached by another EMS operator that wanted to contract out
9 their communication services to your OCC, is that something that
10 could be done or would you even consider that?

11 MR. DAUPHINAIS: I think that there would be a
12 conversation with senior management within the company, but from
13 my perspective, I would entertain that option, yes.

14 MR. GUZZETTI: Okay.

15 MR. McCALL: Mr. Guzzetti, could I clarify something?

16 MR. GUZZETTI: Yeah, certainly.

17 MR. McCALL: In Omaha, they would. You were asking a
18 question I thought was specific to the OCC.

19 MR. GUZZETTI: Right.

20 MR. McCALL: If it's to a communications center, the
21 operation in Omaha, Nebraska may consider that.

22 MR. GUZZETTI: Okay. Mr. Hickman, you had a comment?

23 MR. HICKMAN: Yeah, that occurs, I wouldn't say a lot,
24 but that occurs across the country a fair amount. The
25 communications center that I'm in charge of has, in the past,

1 provided communication services to other air medical services.

2 MR. GUZZETTI: Okay. That's all the questions that I
3 have, Mr. Chairman.

4 BOARD OF INQUIRY QUESTIONS

5 CHAIRMAN SUMWALT: Thank you. Mr. Haueter.

6 MR. HAUETER: Mr. Hickman, you indicated that you've
7 turned down requests for a flight due to weather and then the
8 requester shopped elsewhere?

9 MR. HICKMAN: Yeah, that's correct.

10 MR. HAUETER: I guess my question comes in, did you
11 receive any pushback from upper management for turning down the
12 flight or otherwise any problems?

13 MR. HICKMAN: No. If we turn something down for weather
14 and another program picks it up and with the information that
15 they've had that we've turned it down for weather, they made the
16 decision on their own recourse for taking that flight, whether
17 that be coming from another direction, which is typically the
18 case.

19 We may turn something down for weather because the
20 weather at our base or at an in-flight route between us and the
21 patient pickup location, whereas it may not necessarily be weather
22 at the actual patient pickup location, so we may actually look to
23 other air medical programs to assist us with that flight, if
24 they're coming from a different direction and could safely get
25 into that scene, but the final decision in regards to turndown of

1 weather by a pilot is never questioned, from my experience in my
2 organization, by upper management.

3 MR. HAUETER: Thank you.

4 CHAIRMAN SUMWALT: Dr. Ellingstad.

5 DR. ELLINGSTAD: Just a quick question. This morning
6 Chief Burkhammer had indicated that he thought that more use could
7 be made of information that the first responders at the scene had
8 relative to the conditions, et cetera. Is communications with the
9 first responders or the people on the ground a part of this, the
10 whole flight following dispatch process beyond just ordering up
11 the flight in the first place? I'd like each of you to respond,
12 if you would.

13 MR. HICKMAN: Yes, it is part of the whole process.
14 There are many places around the country, including in Colorado
15 where there is collaboration just even on -- Colorado uses a
16 website called EMS Systems in order to disseminate out to EMS
17 responders a couple of different things; one, they use this site
18 in order to communicate hospitals' abilities, what they can accept
19 and what they can't accept currently, so sometimes a hospital
20 might not have any ICU beds and they'll put that -- they'll post
21 that on this site.

22 But also, in the state of Colorado, it's used to track
23 air medical and what air medical is currently seeing as far as
24 weather or availability. We have an ability to put in the site
25 whether we're -- that whole system, that red, yellow, green

1 system, if we're red for weather on weather-hold, if we're yellow
2 and meaning that we need to make a decision about weather or we're
3 green, we can accept all flights, we put that in there for every
4 one of our aircraft and the base that they're sitting at. So
5 there is something that EMS responders can look at immediately
6 before they respond on a scene and they can pay attention to. It
7 also pages EMS responders so they can look at it on a pager base
8 if they're not near an Internet connection to tell them what's
9 going on in regards to availability of both hospitals and air
10 medical. Besides that, we collaborate with the other -- the
11 public safety access points, the 911 centers, in regards to
12 whether if they call us for a flight, whether it be for just a
13 pre-alert or a standby or they want to put the aircraft on standby
14 and -- because of the nature of a call that might need air
15 medical.

16 A question that comes up routinely is well, what's the
17 weather doing out there, especially in areas where there's not
18 weather -- where there is not weather reporting. That's something
19 the pilot usually typically wants to know, so the communications
20 specialists are pretty in tune with asking those questions of our
21 colleagues at the 911 centers and then they, in turn, ask those
22 questions of the responders if they don't know.

23 DR. ELLINGSTAD: Thank you. Mr. McCall.

24 MR. McCALL: Garet did a wonderful job of answering
25 that. Two perspective I have, one from an OCC and as being a

1 pilot that flew EMS missions, the COMM centers were really good at
2 getting that type of information, seeking it, when it wasn't even
3 offered to them and as well as it wouldn't be unusual for myself
4 to even ask further questions to be given to the responders on the
5 scene to let me know what they saw on the way out there or those
6 type of things or even call a hospital and ask someone to walk out
7 on the pad and look up in the sky and see what the weather looks
8 like. So it's critical information and I think it's sought out
9 and it's obviously very useful.

10 DR. ELLINGSTAD: Thank you. Mr. Dauphinais.

11 MR. DAUPHINAIS: Not a whole lot more to add to that
12 other than a lot of times you're not talking to the unit on the
13 scene, you're talking to their dispatch center and so, as Mr.
14 McCall stated, you just have to ask the question to be passed down
15 to the unit in the field, which was what generated part of my
16 question to Captain Burkhammer this morning about couldn't you
17 just routinely give that information back up the chain, so --

18 DR. ELLINGSTAD: Thank you.

19 CHAIRMAN SUMWALT: Dr. Mayer.

20 DR. MAYER: Just to follow up on that very briefly. If
21 you ask to be -- to communicate with the unit that's directly in
22 the field who can observe whether on-scene conditions -- do you
23 have difficulty doing that? Do you have the communications
24 capability to do that?

25 MR. DAUPHINAIS: I think it's technologically possible,

1 perhaps, but especially in the rural, very limited resources,
2 you've got volunteer first responders -- you know, they're in the
3 ditch and their knees in the mud trying to work the patient. They
4 really don't have time to --

5 DR. MAYER: Sure.

6 MR. DAUPHINAIS: -- give us a full report until other
7 assets arrive on scene, so although it may be technologically
8 possible, I'm not sure how practical it is, especially in the
9 rural areas.

10 DR. MAYER: Thank you very much. I've learned a great
11 deal from this panel. I have no other questions.

12 CHAIRMAN SUMWALT: Ms. Ward?

13 HEARING OFFICER WARD: I have a couple questions.
14 Mr. Deats, could you bring up Exhibit 7(c), Page 3, please? Thank
15 you. And this question's for Mr. Hickman. It talks about the
16 differences between Part 91 and Part 135 regulations. Are you
17 able to just give us a brief description about what's discussed
18 there?

19 MR. HICKMAN: Yeah. We go through and discuss several
20 in regards to 91 and 135. The first and foremost is the authority
21 of the pilot in regards to the flight, itself. And then we talk
22 some about weather minimums in regards to 135 versus 91 in our
23 courses and we just talk a little about each when the regulations
24 -- the regulations, themselves, are up there as far as, you know,
25 sterile cockpits and ATC clearances, things like that.

1 HEARING OFFICER WARD: Now, would the communications
2 specialists know ahead of time if it was going to Part 91 flight
3 or a Part 135 flight?

4 MR. HICKMAN: Maybe. It just depends on -- in our
5 industry, most of them are operated under 135. However, it just
6 depends. It's program specific, so it just depends on that
7 communications specialist at that program, whether he's going --
8 he has knowledge of the pilot operating under 91 versus 135.

9 We define the differences between the two in our course
10 for the communications specialist, but still there's a decision
11 that a pilot needs to make in regards to operating on one or the
12 other in regards to, you know, if he's ferrying an aircraft, he
13 might want to do it under 91 and the communications specialist may
14 not be aware of that, meaning moving an aircraft from one location
15 to another without a patient, without a medical staff on board,
16 those types of things.

17 HEARING OFFICER WARD: Does the -- and this is for
18 anyone on the panel. Since the communications specialist is not
19 "regulated," I assume that they don't have established duty times,
20 also. Do they support 24 hours? What would be a typical shift
21 for a communications specialist?

22 MR. HICKMAN: There are shifts for -- it depends on the
23 program. Again, it's program specific. The Commission on
24 Accreditation of Medical Transport Systems has set up a guideline
25 and a standard in regards to the amount of shifts that

1 communications specialists can accept, so you have -- if you have
2 a CAAMS accredited program for one reason or another, whether it's
3 regulatory based or they've made a voluntary decision to operate
4 under the CAAMS standards, then yes, there is definitely a
5 standard that is imposed on communications specialists in regards
6 to not, you know, having any other employment eight hours before
7 shift, having adequate rest times, having a time out policy, those
8 types of things, when things get too busy for them, those types of
9 situations.

10 Now, certainly, other programs across the country
11 operate under the same guidelines, even regardless to whether
12 they're CAAMS accredited or not, but I can't speak to the entire
13 industry on how they regulate their shifts. Personally, we have a
14 standard in our communications center based on the fact that it's
15 CAAMS accredited and based on the fact that we don't want to
16 fatigue our communications specialists and we want to have a
17 fresh, sharp communications specialist on duty at all times.

18 HEARING OFFICER WARD: Thank you. And Mr. McCall and
19 Mr. Dauphinais, could you respond to how your operations do that?

20 MR. DAUPHINAIS: It's 12 hours at CareFlite.

21 MR. McCALL: Twelve hours at Air Methods. In the
22 operational control center, we have numerous different schedules
23 out in the communications centers, but along the lines of what
24 Garet described.

25 HEARING OFFICER WARD: Okay, thank you.

1 CHAIRMAN SUMWALT: Thank you. Mr. Dauphinais, I believe
2 you said that you collect launch data on the time between the call
3 comes in and the time that the helicopter departs, is that
4 correct?

5 MR. DAUPHINAIS: Yes, sir. It's part of the CAD
6 program, the software we use. I mean, it's not developed
7 specifically for that, but the data is there.

8 CHAIRMAN SUMWALT: What is the average launch time for
9 CareFlite?

10 MR. DAUPHINAIS: Well, VFR, it's under five minutes on
11 average. I mean, now there are differences to that. The IFR --
12 and that's been pretty constant over the last five years. The
13 IFR, which we've been doing for about three, three and a half
14 years, that number has actually started coming down and today I'd
15 have to say it's about 13 minutes. I can get you the exact
16 numbers, but that's pretty close.

17 CHAIRMAN SUMWALT: That's okay. And why the difference
18 between --

19 MR. DAUPHINAIS: Between the IFR and --

20 CHAIRMAN SUMWALT: Yes. Is it the time required to pick
21 up an IFR clearance from ATC or what's the difference?

22 MR. DAUPHINAIS: That's exactly what it is.

23 CHAIRMAN SUMWALT: Yeah.

24 MR. DAUPHINAIS: There's been lots of challenges --

25 CHAIRMAN SUMWALT: Okay.

1 MR. DAUPHINAIS: -- to developing IFR in the metroplex.

2 CHAIRMAN SUMWALT: You indicated that you use the data
3 for looking at the system and for being able to know, on average,
4 what your launch time is and I can certainly understand that. Can
5 you give me an example of how you have used this data
6 historically?

7 MR. DAUPHINAIS: The customers are becoming more
8 educated, they have more people talking to them. They want
9 accurate estimated times of arrivals at their scene or their
10 facility and it's become a discriminator for them.

11 CHAIRMAN SUMWALT: And what do you mean it's becoming a
12 discriminator? Would they perhaps decide to use another carrier
13 whose time might be ostensibly shorter than yours?

14 MR. DAUPHINAIS: Yes, sir.

15 CHAIRMAN SUMWALT: That would -- okay. And then you
16 made the statement, as I recall, you said that we collect the data
17 but it doesn't affect the safety. Did I hear you correctly on
18 that?

19 MR. DAUPHINAIS: Actually, I believe, other than the
20 data miner we have, I think he and I are the only ones that ever
21 see it and then the operations center is under my authority within
22 the company and as we look at the accuracy of our ETAs, I use that
23 data to set those benchmarks for the ops center to give to
24 customers.

25 CHAIRMAN SUMWALT: Yes. And I flew for an airline

1 for 24 years and no one ever overtly told me that we have to keep
2 on schedule, but I know that internally I always had that pressure
3 to depart on schedule and if you know that your customers are
4 discriminating now because they're more educated, could this
5 perhaps affect safety, that we're collecting these data, your
6 clients are becoming more discriminating? I don't understand how
7 this potentially could not affect safety.

8 MR. DAUPHINAIS: I think you articulated it correctly.

9 CHAIRMAN SUMWALT: Thank you very much. Thank you. I
10 have no further questions. There's a delicate balance that I, as
11 the Chairman of the Board of Inquiry, have for collecting
12 information, factual information, and that's the whole purpose of
13 this. This is to get -- is to gather factual information and my
14 struggle is to gather the factual information and keep the
15 hearings moving. And I hope that we have met both of those
16 guidelines. I don't believe we've hammered anybody down too hard.
17 But actually, the truth of the matter is, I think everybody is
18 doing a great job.

19 As I indicated, I was an airline pilot and time schedule
20 pressure is important for me. I have a pro forma schedule here
21 and we are exactly on schedule, so I comment all parties, the
22 Technical Panel, the Board of Inquiry, for keeping that in mind.
23 But I also don't want to overemphasize the time pressure. We are
24 here to collect information. So thank you for working with me,
25 just from a process point of view. We are a day and a half into

1 this hearing. I'd like to hear from the parties any comments or
2 questions about any concerns about the way that the hearing is
3 being conducted up to this point because I think that you're doing
4 a very good job. Any feedback for us?

5 MR. ZUCCARO: One comment I would make would be,
6 Mr. Chairman, is that I just want to acknowledge the fact that
7 we're very appreciative of the excellent job that you and the NTSB
8 have done to bring these parties together and the manner of the
9 agenda and the subject matter discussed. Everything seems to be
10 on-point.

11 CHAIRMAN SUMWALT: Well, thank you. And again, the main
12 objective is to gather the information. The main objective is not
13 to see how close we can keep this on schedule, but I also
14 understand physiological needs and things like that, so with that,
15 we will adjourn for lunch. We will be back in this room and
16 reconvene at 1:15. We are in recess.

17 (Whereupon, a lunch recess was taken.)

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A F T E R N O O N S E S S I O N

(Time Noted: 1:15 p.m.)

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3 CHAIRMAN SUMWALT: Well, good afternoon. We are back in
4 session and thank you, everyone, for minding the clock. This next
5 panel will feature Safety Equipment and Flight Recorders and
6 issues will include helicopter FDR and CDR, flight data recorder
7 and cockpit voice recorder; cockpit video recorders; flight
8 operations quality assurance programs; future technology; status
9 of helicopter safety equipment and its use; the effectiveness of
10 safety equipment and the cost of safety equipment. Ms. Ward, if
11 you would please place under oath and qualify the witnesses.

12 HEARING OFFICER WARD: Thank you, Mr. Chairman. Can the
13 witnesses please stand? Please raise your right hand.
14 (Witnesses sworn.)

15 HEARING OFFICER WARD: Thank you. Please take your
16 seats. Okay, I'll start with Mr. Kallenbach. Can you please
17 state your name, your title and the organization you're with?

18 MR. KALLENBACH: TK Kallenbach. I'm the Vice President
19 of Marketing and Product Management with Honeywell Aerospace based
20 in Phoenix, Arizona.

21 HEARING OFFICER WARD: Thank you. Mr. Baxter.

22 MR. BAXTER: My name is Scott Baxter. I'm the Assistant
23 Chief Flight Instructor for the Bell Training Academy in
24 Fort Worth, Texas.

25 HEARING OFFICER WARD: And Mr. Downey.

1 MR. DOWNEY: I'm Dave Downey. I'm the Vice President of
2 Flight Safety, responsible for all flight operations at Bell
3 Helicopter in Fort Worth.

4 HEARING OFFICER WARD: Mr. Batcheller.

5 MR. BATCHELLER: My name is David Batcheller. I'm the
6 Director of Quality Process and Program Management at Appareo
7 Systems LLC.

8 HEARING OFFICER WARD: And Mr. Shaver.

9 MR. SHAVER: My name's Tim Shaver. I'm the Assistant
10 Branch Manager of the Aircraft Certification Engineering Division
11 Avionics Systems Branch within the FAA.

12 HEARING OFFICER WARD: Thank you. Mr. Chairman, these
13 witnesses have now been qualified.

14 CHAIRMAN SUMWALT: Thank you, Ms. Ward. The panel will
15 be led by Tom Jacky and Jim Cash, so gentlemen, if you would
16 please proceed and introduce the Technical Panel. Thank you.

17 MR. JACKY: Thank you, Mr. Chairman. I will be
18 interviewing the first two witnesses, Mr. Kallenbach and
19 Mr. Baxter, and then Mr. Cash will be interviewing Mr. Downey,
20 Mr. Batcheller and Mr. Shaver. The members of my panel are, as
21 you mentioned, my co-chairman, Mr. Cash, to my right and to his
22 right is Mr. Aaron Sauer and to his right is Mr. Tom Latson.

23 TECHNICAL PANEL QUESTIONS

24 MR. JACKY: Good afternoon, Mr. Kallenbach. Before we
25 begin, just by way of explanation, there have been a couple of

1 acronyms that we'll be using, have been using, will be using this
2 afternoon. One of them is HTAWS, which stands for Helicopter
3 Terrain Awareness and Warning System and EGPWS, which is Enhanced
4 Ground Proximity Warning Systems. Mr. Kallenbach, I'm familiar
5 with the Honeywell Enhanced Ground Proximity Warning System that
6 Honeywell manufactures for fixed wing aircraft, but many of us
7 could use a little primer on EGPWS for rotary wing aircraft.
8 Could you please do that? And before you answer that question,
9 let me just mention that Mr. Kallenbach will be referring to
10 Exhibit 8(k), please.

11 MR. KALLENBACH: Thank you, Mr. Jacky. It's my pleasure
12 to be here on behalf of Honeywell and 40,000 employees that
13 provides safety systems for all types of aviation whether it's
14 fixed wing aviation, as you --

15 HEARING OFFICER WARD: Mr. Kallenbach, your microphone.

16 MR. JACKY: Your microphone, please.

17 MR. KALLENBACH: I thought we had it on. Is it on now?

18 CHAIRMAN SUMWALT: Really, you want to encourage the
19 witnesses and anyone speaking to really, really hug that
20 microphone because there are -- like myself, people are fairly
21 hard of hearing around here. Thank you.

22 MR. KALLENBACH: All right, Chairman Sumwalt. Is that
23 better? Good to go? Okay, on behalf of the 40,000 Honeywell
24 employees that work on these safety systems, my pleasure to be
25 here today. Thank you for the opportunity to talk a little bit

1 about helo EGPWS. What I though I would start with is the
2 differences, as you had asked about the differences between
3 helicopter EGPWS and fixed wing EGPWS. I think the best way to do
4 that is to -- if you could refer, please, to Page 3 of the
5 exhibit. One more, please.

6 (Slide.)

7 MR. KALLENBACH: The key here is that fundamentally the
8 technology that is used in Enhanced Ground Proximity Warning is
9 fundamentally the same between fixed wing and rotary aircraft.
10 The database is the same. The differences are primarily around
11 how we view the data, recognizing that a fixed wing aircraft
12 travels at typically forward straight velocity with some turning
13 and a much higher rate of speed, and that helicopters are
14 basically flying lower and slower and are fundamentally more
15 maneuverable. So the first adjustment in the technology is really
16 around the algorithms and the key there is to use the same
17 database which provides you with good terrain warning, but to
18 tailor the software specifically. It also allows pilots to land
19 helicopters anywhere. It's not restricted to a particular airport
20 or runway like a fixed wing aircraft. And there are two key items
21 which are in Bullets 4 and 5, which we think are important pieces
22 of making helicopter EGPWS better for the pilots.

23 And there, the low altitude mode, which the pilot can
24 select and the inhibit mode where the pilot can select that in
25 extremely close proximity to terrain and obstacles, where all of

1 the alerting is inhibited. These have been specifically included
2 in helo-EGPWS to reduce the number of nuisance faults that a
3 helicopter pilot might experience when flying with EGPWS and in a
4 helicopter framework. As I mentioned first off, it does use the
5 same basic database. We have a single integrated database for
6 EGPWS which has 600 million flight hours, of flight time on it.

7 What we do is when we supply that database to helicopter
8 pilots, we've actually got a higher resolution version and we
9 extract that data into one of eleven different zones and so one
10 zone, for instance, would be North America, which includes the
11 northern half of Mexico, the United States, continental United
12 States, Canada and Alaska in one zone. So it gives the resolution
13 of the data much higher fidelity, which is much more important
14 when you're flying, as I said, low, slow and with a lot more
15 maneuverability.

16 MR. JACKY: Thank you. You mentioned the low altitude
17 mode and the inhibit mode and mentioned that those were flight
18 crew selectable. How does the flight crew, in fact, select those
19 modes?

20 MR. KALLENBACH: The flight crew selects those modes by
21 way of an inhibit switch that's placed on the flight deck as part
22 of the installation on the aircraft, itself, and you can either
23 select a hard switch or if you have an aircraft that has a
24 selectable display panel, you can actually use that, as well.

25 MR. JACKY: Okay. How and what types of warnings does

1 the HEGPWS provide to flight crews?

2 MR. KALLENBACH: Okay. And also to assist with this, if
3 you could please turn to Page 5 of the exhibit.

4 CHAIRMAN SUMWALT: Which exhibit number is this again,
5 please?

6 MR. KALLENBACH: This is Exhibit H or excuse me, 8(k), 8
7 kilo.

8 CHAIRMAN SUMWALT: Thank you.

9 HEARING OFFICER WARD: It's one more, I think. There's
10 a cover page on, so just add a page to it.

11 MR. KALLENBACH: Add a page, okay. Thank you. So on
12 Page 6, then, it should be the helo-EGPWS features. So one more
13 page, 6. This is interesting. There you go. Page 5. So in
14 terms of EGPWS features, there are several callouts; geometric
15 altitude, the peak display, vertical situation display and then
16 since we have two different versions of the helo-EGPWS product,
17 one is called the Mark 21. The Mark 21 is a more basic package
18 and it has less feature set. It tends to be the one that folks
19 who would like to upgrade their helicopter but want to have a
20 basic feature set use, the type of price on that product is
21 roughly \$25,000 installed. The Mark 22 has a number of additional
22 callouts and features. It's a much more extensive package.

23 It tends to be the one that's incorporated directly with
24 the aircraft manufacturers, themselves, and it includes radial
25 altitude input which gives you excessive descent rate, excessive

1 closure rate, descent after takeoff, but also tail strike
2 callouts, autorotation callouts, dual terrain display capability
3 and envelope modulations. So there are a number of features that
4 are different between the two and a number of these features are
5 not available on the fixed wing aircraft version because they're
6 unique to helicopter aircrafts.

7 MR. JACKY: Okay, thank you. I understand that there is
8 a video that you've provided which provides an example of a
9 typical flight path and the warnings that would be provided.
10 Before we start the video, could you please explain to the
11 audience what we are about to see?

12 MR. KALLENBACH: Absolutely. And I appreciate you
13 asking about that. There a number of misconceptions about how
14 helicopter EGPWS works and to demonstrate the different features
15 and the possibilities of the system, we actually took an accident
16 that involved a helicopter. It was a straight and level flight,
17 it was conducted at night. There were elements of patchy fog.
18 What we've done -- and I can go ahead and set it up during the
19 video so go ahead and please roll the video. What you'll see, if
20 the AV gods are working for us today.

21 (Video recording played.)

22 MR. KALLENBACH: On the far right you'll see a synthetic
23 vision, which is a rendering of the terrain that the pilot would
24 have seen outside if it wasn't nighttime and it wasn't foggy. So
25 this is actually a synthetic vision view of the terrain. On the

1 right, you'll see what the pilot would have seen in a graphical
2 display unit with either our Mark 21 or Mark 22 helo-EGPWS system.
3 What you'll notice -- this video is about 90 seconds long. About
4 the first 60 seconds or you can see in straight and level flight,
5 you'll notice that the terrain is currently coded in green with
6 some elements of red. If the audio's working, you should hear
7 some of the first warning callouts and they start at about --

8 UNIDENTIFIED SPEAKER: Caution, terrain. Caution,
9 terrain.

10 MR. KALLENBACH: That's the first -- warning. You'll
11 hear four of those that occur about 35 seconds prior to the crash.
12 You will then hear --

13 UNIDENTIFIED SPEAKER: Caution, terrain. Caution,
14 terrain.

15 MR. KALLENBACH: You will then hear 11 warnings.

16 UNIDENTIFIED SPEAKER: Warning, terrain. Warning,
17 terrain.

18 MR. KALLENBACH: And you'll notice that the terrain is
19 turning red, so he would see this. Are we back on? There we go.
20 So the display is intended to demonstrate the value of EGPWS even
21 in a straight and level flight operation. So you can see that the
22 helicopter pilot, in this particular case, was unaware of the
23 approaching mountain peak. It was very clear, both graphically
24 and verbally, from the signals that he was getting, he had
25 approximately 30 to 35 seconds to react and respond to the input

1 from the audio signal.

2 In our fixed wing experience, most EGPWS warnings are
3 reacted to, by most pilots, within two seconds, by almost all
4 pilots within four seconds. So it's a clear demonstration, I
5 think, of the types of warnings that you would get, when you would
6 get them, that the pilot has enough time to respond and he's not
7 getting a series of nuisance warnings, which has been one of the
8 myths, I think, surrounding helicopter TAWS and helicopter EGPWS
9 in the past. And you can see how we've formulated the device to
10 alert the crew members not only verbally, but also graphically,
11 turning the terrain from green to yellow to red as it approached
12 and became a true obstacle.

13 MR. JACKY: You mentioned nuisance warnings and I'm
14 wondering, the operators, helicopter operators, who do have EGPWS,
15 what sort of feedback are they providing and how does Honeywell
16 utilize that feedback in terms of nuisance warnings?

17 MR. KALLENBACH: Well, one of the reasons that we
18 decided to include some testimonials today, if you'll go back to
19 Exhibit 8 kilo on Page 7, most of the feedback that we have
20 received is quite positive. We've had some experience where we
21 need to work with the pilots specifically to show them how to use
22 the inhibit switches, when to use the inhibit switches and make
23 sure that they're placed in the right location. The main cause of
24 any type of nuisance is usually if you're in close proximity to an
25 obstacle but if you're aware of the obstacle, the system allows

1 you to inhibit out the warning.

2 There are certain guidelines that we have as part of the
3 pilots manual that we use with the system so that the pilot must
4 be able to see the obstacle within a certain distance and if
5 that's the case, they can go ahead and inhibit the information
6 out. When they do inhibit it, the display continues to show the
7 obstacle or the terrain, so it's more around the nuisance
8 information that you would get from the verbal signals, verbal
9 queues.

10 MR. JACKY: And you mentioned earlier, as well, the
11 higher fidelity database, what sort of feedback are you getting
12 from operators in terms of the higher fidelity database and as far
13 as accuracy is concerned?

14 MR. KALLENBACH: Users in North America and in Europe,
15 the feedback has been quite good. The key to any database,
16 obviously, is the information is as good as the information that's
17 placed in it. One of the things that we, I think, continually
18 struggle with is the rapid inclusion -- identification and
19 inclusion of new obstacles in the database, so if there was an
20 additional thing that we'd ask this committee for, it's a
21 recommendation around the location of obstacles that are put up
22 quickly and maybe even temporarily, so that it's really around the
23 obstacle information. The resolution, the database of the terrain
24 is excellent, but the inclusion of obstacles and the quick
25 inclusion of those obstacles and especially the identification of

1 them is extremely important, especially in helicopters.

2 MR. JACKY: And just so I have my terminology correctly,
3 when you refer to obstacles as I am, you're referring to manmade
4 objects as opposed to --

5 MR. KALLENBACH: That's correct. The obstacles would be
6 things like a radio tower or a crane on top of a building, that
7 maybe there is a temporary structure. We automatically include
8 any obstacle identified greater than 100 feet above ground level,
9 but the key is to get those obstacles identified to us so we can
10 get them in the database.

11 MR. JACKY: Okay. And if you mentioned this before, I
12 apologize. How often does is the database updated and provided to
13 operators?

14 MR. KALLENBACH: The database is updated, in effect, on
15 a continual basis. We use this -- like I said, we use this
16 database to feed our fixed wing EGPWS systems. We also use it now
17 to feed our synthetic vision product which is certified in an
18 operation, as well as our helicopter TAWS. We distribute updates
19 to the field either three or four times a year and we can also do
20 it on an ad hoc basis, if required. So it's generally a quarterly
21 update. Helicopter pilots and helicopter operators will typically
22 receive a high resolution update at least four times a year.

23 MR. JACKY: This morning there was some discussion and
24 yesterday, as well, about operators depicting landing zones in a
25 geographical area. My question is, is there any consideration

1 within the database for landing zones as opposed to airports?
2 Essentially, is anything other airports considered to be terrain?

3 MR. KALLENBACH: With respect to the helicopter TAWS,
4 the system doesn't restrict you to a landing zone like an airport.
5 The airport information is still in the overall EGPWS database,
6 but heliports and things like that are not specifically called out
7 in the database today. In fact, that will be one of the longer
8 term improvements, especially as we go to more advanced
9 technologies like helicopter synthetic vision.

10 MR. JACKY: Okay, thank you. I'd like to turn your
11 attention to products or safety equipment that Honeywell
12 manufactures other than EGPWS. Could you briefly describe the
13 other systems that Honeywell manufactures for safety equipment?

14 MR. KALLENBACH: Certainly. If you could, I think the
15 place I'd like to start is Page 10 in the exhibit, which is around
16 synthetic vision. We are in the process of continuing the
17 development -- would you put that up, please? We are continuing
18 the development of synthetic vision. We've received Part 25
19 certification for synthetic vision on fixed wing aircraft. That
20 happened earlier this year. The reason I bring this out is
21 because controlled flight in the terrain is such a critical
22 problem for helicopters, we think that a combination of helo-EGPWS
23 but in the longer term, specific synthetic vision for helicopters
24 is a very important new technology that's in development.

25 In fact, we have a prototype demonstrator on our AW139

1 corporate helicopter. This is a system that's specifically
2 tailored for helicopter pilots, so in our synthetic vision for
3 fixed wing aircraft, the display that you have in the lower part
4 of the screen is a continuation of a typical integrated primary
5 flight display. It is not in this particular case because this is
6 particular to helicopters.

7 This is actually a vertical lookdown, so you're actually
8 looking straight down below the helicopter at the zone that you're
9 flying over and you're looking forward of the aircraft and the
10 aircraft in this case is in a very slow forward motion. But the
11 key here is to have certain key pieces of information like the
12 wind vector, like certain kinds of terrain shading, ground
13 texturing and have the system tailored more for, again, lower
14 altitude operation, lower speed operation and more highly
15 maneuverable operation; in this case, vertical takeoff and landing
16 information. So this would be one of the key technologies that
17 we're working on. Further in, one more page down, please. Cable
18 warning and obstacle avoidance. Even though our helicopter EGPWS,
19 when you put in a radio tower or obstacle, we construct a cone
20 around that obstacle to include enough blackout spot for the
21 cable, itself, that would be holding up that radio tower.

22 So we put a cone in place in the database that would
23 give you the warning. We still think that cable warning is a key
24 part of any helicopter safety system and so we've been working on
25 a millimeter wave product that will allow you to detect and then

1 warn the pilot of an approaching cable and a potential cable
2 event. So that's kind of another item that we're working on, as
3 well. If you'll go to the next page, please.

4 (Slide.)

5 MR. KALLENBACH: Obviously, weather radar is a key piece
6 of this and while we think that today's safety problems are not
7 directly related to weather information, we think that there's
8 continuing improvement that can be made in the gathering of
9 weather data. We've recently brought out a new three-dimensional
10 weather radar which actually has a three-dimensional buffer of the
11 weather in front of you which allows the pilot to be able to
12 understand out to about 320 miles the density of the storm and it
13 also has a number of additional features which gives you a much
14 better sense of the weather coming at you and you can actually
15 re-plan your flight much more tactically smart than prior events.
16 And then last, but certainly least, one more page down, please,
17 which is flight data recorders. I know that's also a topic of
18 this hearing. Obviously, we have flight data recorders for both
19 voice and data that are available for helicopter installations.
20 So there are a number of additional safety products.

21 What we didn't include here today but we probably also
22 should mention, Honeywell makes a number of condition-based
23 maintenance and health and usage monitoring systems for helicopter
24 products which can also add to mechanical safety by allowing a
25 much quicker update of the mechanic health of the power terrain

1 and the gearbox and rotor system. And that's something we've
2 continued to invest in, as well as non-certified products like our
3 aviator handheld and electronic flight bags.

4 MR. JACKY: Thank you. Given the products and the
5 amount of products that Honeywell manufactures that go towards
6 safety equipment and keeping in mind or given the environment that
7 EMS helicopters operate in and that they operate so close to the
8 earth, in your opinion, is there one product that may be a better
9 bang for the buck, if you will, than others?

10 MR. KALLENBACH: Absolutely. I think, based on the
11 safety statistics that we have today, at least our understanding
12 of them, controlled flight into terrain is the primary issue
13 around helicopter fatalities, whether it's within EMS or in
14 general within commercial service. Clearly, some form of terrain
15 awareness -- and obviously, we prefer that helicopter EGPWS is a
16 clear high bang for the buck. The technology is proven from a
17 fixed wing perspective. I mean, since the fleet is now fully
18 mandated for turbine powered aircraft, at least in Honeywell's
19 case, we've not had a fatal accident with any EGPWS in operation
20 since they've been installed, so we think that the technology is
21 compelling, it's validated and we think it addresses a
22 particularly acute problem in the helicopter world today.

23 The second one that we think is a longer term is
24 definitely around synthetic vision which really gets to the issues
25 of pilot awareness in their situational environment, making sure

1 that they've got the full benefit. In terms of products we don't
2 make, some people prefer night vision goggles and while we think
3 night vision goggles have a place and enhanced vision systems have
4 a place. We see that those are really good systems when combined
5 with other IFR devices like EGPWS and synthetic vision.

6 And in fact, in the case of Gulfstream aircraft, we have
7 an EVS system which is integrated with the HUD that Honeywell
8 provides and synthetic vision. The combination of these three
9 elements is a wonderfully safe environment because synthetic
10 vision will provide you with a very clear view without the weather
11 of the terrain, any obstacle information. EVS then further helps
12 you in case there's any obstruction on the runway that you can't
13 see through the synthetic vision so we think that those in
14 combination are very, very effective technologies and especially
15 for helicopter operations.

16 MR. JACKY: Thank you. My final question to you is
17 in 2006 the NTSB recommended to the FAA that they require
18 emergency medical service operators to install HTAWS on their
19 aircraft. I'm wondering, since the issuance of that safety
20 recommendation, could you characterize the conversations that
21 Honeywell has had both with the FAA and with helicopter operators?

22 MR. KALLENBACH: Well, certainly in the last key
23 recommendation, the fourth of the four recommendations, we've been
24 actively engaged not only with the FAA but with the Flight Safety
25 Foundation, which I'm a board member, a number of the key

1 operators of helicopters, to see if we can incorporate EGPWS
2 technology into those cockpits. That's been a key one.
3 Primarily, in the last six weeks, we've gone through to validate
4 that both our Mark 21 and Mark 22 EGPWS systems for helicopters
5 comply with the recently issued TSO. They do, in fact. We'd
6 obviously like to see people incorporating this technology at a
7 much quicker rate.

8 Right now, today, we think that the helicopter EMS
9 incorporation in the U.S. is roughly 30 percent, which means
10 there's 70 percent of the aircraft that are not currently
11 equipped. We'd like to see that increase quickly. We've also
12 continued to identify some new technology around flight data
13 recorders, incorporating some of the more recently issued mandates
14 around flight data and we've also continued to work on the
15 synthetic vision product which we think ultimately is going to be
16 a very effective pilot situational awareness system, so we've been
17 active on several fronts. We very much would like to see people
18 voluntarily incorporate EGPWS into their helicopters and we'd like
19 to see that done just as soon as possible.

20 MR. JACKY: Thank you very much.

21 MR. KALLENBACH: Thank you.

22 MR. JACKY: I'd like to direct my next questions to
23 Mr. Baxter and Mr. Baxter will be referring to Exhibit 8(1),
24 please. Mr. Baxter, as the Assistant Chief of Flight Instruction
25 at the Bell Training Academy, could you provide us a little

1 background in terms of what you train?

2 MR. BAXTER: Well, essentially, we train in every
3 aircraft that Bell currently has out in the field, so we're going
4 to train anything from instrument training to regular emergency
5 training, ab initio training, NVG training and of course, we do
6 that all around the world, so as far as our NVG training is
7 concerned, we -- if you could go to Page 2 of the exhibit. We
8 started the first Night Vision Goggle 141 course at the training
9 academy and that was in February of 2002. Since then, we have
10 moved to not only an initial NVG course, but also a refresher 141
11 course, an instructor pilot 141 course and a regular ground
12 school 141 course that quite possibly might be for administrative
13 personnel, crew members, anything like that, that might apply. As
14 you can see, on the page or on the display up there, our
15 philosophy is that training is a lot more than just flying skills.
16 I've met a lot of people who can do a great job flying but when it
17 comes to other areas such as decision making and things like that,
18 maybe they're lacking, so it does include safe decision making.
19 I'd like to say right off the bat that NVGs are not a cure-all.
20 Just because you slap NVGs on your head it does not mean that all
21 problems have gone away.

22 I believe that the use of night vision goggles should be
23 integrated with all the other technologies that we've heard about
24 here in the last two days. Weather minimums do not change. We
25 don't change weather minimums because we have goggles on. And the

1 training should be a crawl, walk and run type of approach. The
2 reason why we went to the 141 program was back in early 2000-2001,
3 if you had an instructor who -- or a pilot who was an NVG pilot
4 trained on the East Coast and that person went to the West Coast,
5 there's no way that an FAA POI of a 135 operation would know okay,
6 who is this individual, what kind of training did this person get.

7 And that's why we decided, at Bell, to go with the 141
8 program so it's approved on a national level. At least that FAA
9 inspector knew that this individual came out of a program or got
10 training in a program that was recognized, okay. The training
11 that we do at Bell with the NVGs covers basic tasks to advanced
12 tasks. That can be traffic pattern flight to pinnacle landings to
13 every emergency procedure we teach during the day. So anything we
14 do during the day, whether it's an auto rotation, a tail rotor
15 malfunction, hydraulics, we teach all of that at night with the
16 goggles on. The idea is we're trying to instill confidence into
17 the pilots that come train with us. It's amazing when you take
18 somebody out for the first time on goggles and you say to them by
19 Friday you'll be doing an auto rotation to this runway and I
20 expect you to get close to this spot on the runway and by Thursday
21 they're doing it. It's a huge confidence boost for a pilot to
22 know that at night they can get the aircraft down safely. We
23 always look at night vision goggles as being used for obstacle
24 avoidance. We also use the goggles for an emergency landing
25 situation if you have to put it down.

1 MR. JACKY: Okay. I guess before we get too far into
2 that, I believe that you've brought along an example of a night
3 vision goggles system. Could you please --

4 MR. BAXTER: Yes, sir.

5 MR. JACKY: -- just briefly describe what it is that
6 we're talking about, the different parts of the system, how it
7 works and how a pilot might wear it and utilize it?

8 MR. BAXTER: Absolutely. Basically, the key component
9 to the goggles system is the goggles, themselves, right up here on
10 the front, on the mount. Mounts vary based on what helmet design
11 you have, what you're using, but they all tend to -- they all will
12 accept generally the same night vision goggle-type device. The
13 goggle mounts in front of the pilot's eyes, there's adjustments to
14 move them up and down, backwards or closer to the eye, further
15 away from the eye. You can, what they call in the Army,
16 interpupillary distance, I call eye span adjustment, you can move
17 the goggle laterally away from each other to compensate for any
18 differences you might have in the shape of your head. You also
19 have a batter pack on the back that is connected with a cable
20 through up to the mount and that's how you provide power to the
21 goggles. It would be an on-off switch.

22 You have two sets of batteries, two double A batteries.
23 If one battery starts -- if one set starts to go bad, you just
24 simply switch over to the other side and you've got the goggles
25 still operating. As far as the goggles, themselves, I like to

1 break it down into very simple terms and basically, you're taking
2 near IR energy or visible light, you're turning it into an
3 electron by the use of a photo cathode in the front of the
4 goggles. When that electron travels through the goggles, it goes
5 through what's called a micro-channel plate.

6 Depending upon the type of goggle, the generation of the
7 goggle as far as how old or how new it is, you'll have anywhere
8 from six to ten million small tubules in that micro-channel plate.
9 The micro-channel plate is about the size of a nickel, so that
10 should give a good comparison to what it looks like. As those
11 electrons travel into those tubules, the tubules are tilted and as
12 they strike the wall, they continue to multiply so on the front
13 end of the micro-channel plate you have a certain amount of
14 electrons. When it's finished going through the micro-channel
15 plate, now you have a much larger number. Because of electrical
16 charge, positive and negative, they accelerate towards what's
17 called a phosphor screen. When it hits the phosphor screen, it
18 causes it to glow and then it turns it back into visible light
19 again for the human eye to see. So the way I describe it in all
20 of our classes is we're taking visible light or near IR energy,
21 we're turning it into a form of electricity. That way we can
22 multiply it, magnify it and then we turn it back into visible
23 light for the eye to see.

24 MR. JACKY: Okay. Thank you. How many different types
25 of NVG manufacturers does Bell train to? Is there a number, one

1 or two?

2 MR. BAXTER: We currently have two types of night vision
3 goggles at our facility. We have goggles that are made by ITT and
4 the civilian term for those would be the Pinnacle. We also use
5 Litton, Northrop Grumman, they've changed names, but they have
6 what's called the Infiniti and so we have those two types.
7 There's also another company called Nivis Systems and I believe
8 they were the first to just come out and get a TSO for their
9 goggles.

10 MR. JACKY: Okay. And is there any differentiation with
11 manufacturers between like newly delivered helicopters or
12 retrofitted helicopters or when you're training it doesn't really
13 matter the type of helicopter that you're on?

14 MR. BAXTER: Well, because of the fact I work for Bell,
15 I'm restricted to only training with Bell aircraft but no, I don't
16 believe that there's any overall requirement that it would be
17 different from one to the other, maybe aircraft specific
18 differences based on the size of the aircraft, but I don't think
19 there's anything that would stand out.

20 MR. JACKY: Okay. Could you, in your opinion, provide
21 us with some of the benefits to using NVGs?

22 MR. BAXTER: Well, certainly the fact that you can see.
23 If you look at our -- as human beings, we greatly rely on our
24 sight and any pilot that's been out on a dark night in an area
25 where there's very little -- I say visibility, I just mean there's

1 no light. It certainly brings up the anxiety level and your
2 situational awareness is certainly not there if you don't have the
3 goggles on.

4 When you put the goggles on suddenly you can see and it
5 may be a 40 degree field of view that you can only see in, but
6 through scanning and moving your head, you can cover multiple
7 different directions but I would rather see 40 degrees of
8 something than 180 degrees of nothing and so, you know, to me
9 that's the greatest benefit is allowing that -- to be able to see
10 what's out in front of you.

11 MR. JACKY: You mentioned the 40 degrees field of view.
12 Are there other limitations to NVG use?

13 MR. BAXTER: Well, certainly you have things like the
14 weight on the helmet, you have some depth perception issues. With
15 the way the goggles are being developed now, the visual acuity is
16 such that you're reducing the depth perception issues quite a bit.
17 You know, to me, any of the limitations are greatly diminished
18 when you look at what it's providing you at night.

19 MR. JACKY: Okay. You made some mention to the training
20 starting on Monday and by Thursday landing a helicopter. Could
21 you kind of walk us through a typical NVG training class that you
22 might -- how long it is and the topics covered?

23 MR. BAXTER: Sure, sure. If we could go to Page 6 on
24 the exhibit, you'll notice that we have eight hours of ground
25 school. The way we normally take an individual through the school

1 in a five-day period is they'll come in around noon to 12:30 on
2 Monday, they'll sit through four hours of ground school and then
3 fly that night, their first flight. The second night, or the
4 second day, they'll have two to three hours of ground school and
5 fly again the second night. The third day is a ground school day
6 for half a day, but it's mostly to answer questions, fill in any
7 blanks that might've been left.

8 We also give -- because we're 141, we give a written
9 exam that the customer has to fill out and then we fly again. So
10 we fly every night and we have three days of ground school. And
11 initially, the first night is just a basic scenario, going out and
12 flying; normal approaches, steep approaches, max performance
13 takeoffs, normal takeoffs, we'll do pinnacle and anything along
14 those lines. One of the things we believe very strongly at Bell
15 is the fact that hovering the aircraft under the goggles is --
16 I've always said if I can get a person to hover the aircraft,
17 whether it's five feet or a hundred feet or a thousand feet, if I
18 can get them to hover the aircraft under the goggles, then they
19 can handle anything else we're going to throw at them the rest of
20 the week because that seems to be the hardest task. So we spend a
21 lot of time the first night on that.

22 The second and third night we go out, we do confined
23 areas, slopes, because right about then is when they're starting
24 to get a feel for the goggles and correcting drift and things like
25 that. We found that most pilots get comfortable with the goggles

1 around three and a half to four hours, give or take a half hour.
2 And it's very obvious when somebody starts to see -- when you can
3 tell they're starting to see it.

4 So the second and third night are basically confined
5 areas, things like that, terrain flight takeoffs, terrain flight
6 approaches and then the last two -- the last event we do on both
7 of those nights, generally, is an inadvertent IMC scenario where
8 we turn the goggles off and require the person to fly the aircraft
9 back and do an instrument approach back into Alliance Airport
10 where we're based out of. And that's obviously based on the
11 weather. If we don't have the ceiling and vis, then that becomes
12 something we don't do. And then Thursday and Friday we do all the
13 emergency procedure training and it's very intensive. It's a lot
14 of auto-rotations, a lot of emergencies in two nights. Sometimes
15 we may start on one of the other nights, just introducing it if we
16 think the individual's doing well.

17 MR. JACKY: To that end, a couple different questions.
18 Do you actually have to train or teach towards viewing obstacles
19 or is that --

20 MR. BAXTER: Constantly.

21 MR. JACKY: Okay.

22 MR. BAXTER: Constantly. That's a part of everything we
23 do. One of the things that we teach at the training academy is
24 you're not only looking through the goggles but you're looking
25 around the goggles, under the goggles and over the goggles. So in

1 other words, you're -- if you're in an urban area, you may look
2 and see what might be an obstacle with the goggles and you're
3 going to confirm it unaided, so you're going to look -- tilt your
4 head down. You can just barely see over the top of the goggles
5 and you'll be looking that way or possibly sideways, however you
6 have to do it, you're going to look around and try to compare the
7 two views.

8 MR. JACKY: And I guess, are there pilots or students
9 that just are unable to use the NVGs or unable to be trained to
10 use them?

11 MR. BAXTER: I have not met one yet.

12 MR. JACKY: Okay. And I guess part of that, given the
13 fact that, you know, I, for example, need reading glasses and
14 contacts. How does that affect in there? Are there --

15 MR. BAXTER: Well, I'm the same way. I wear glasses to
16 read and what I do is when I get my goggles on, all I do is just
17 slide my glasses down slightly so that I have clear view with my
18 eye through the night vision goggle, but I can still use the
19 bottom part of the lens for reading the instruments and things
20 like that.

21 MR. JACKY: Okay. And is there any part of your
22 training that goes towards interacting with other safety equipment
23 such as HTAWS or --

24 MR. BAXTER: We don't, primarily because we don't have
25 it in our aircraft but if we did, it would certainly be taught,

1 absolutely.

2 MR. JACKY: Okay. Do you provide training to students
3 who are not pilots but yet are flight crew members?

4 MR. BAXTER: We can do that and we have done that in the
5 past, yes.

6 MR. JACKY: Okay. And I'll ask for your opinion on
7 this. Let me back up. Do you provide recurrent training --

8 MR. BAXTER: Yes.

9 MR. JACKY: -- or is just sort of initial training?

10 MR. BAXTER: Yes, sir. Like I said, we provide initial,
11 refresher, instructor, pilot and just ground school. That is all
12 under Part 141. We also have many customers that have already
13 been through our course and then annually they come back for,
14 let's say, a three-hour 407 refresher and what we'll do is we'll
15 break that down into three flights and we'll give them two
16 one-hour-a-day flights and a one-hour NVG flight. So every year,
17 they're constantly coming back and doing those aggressive -- as I
18 call them, aggressive maneuvers, the auto-rotations and tail rotor
19 malfunctions and things like that.

20 MR. JACKY: And when students return, so you do any sort
21 of proficiency checking of them from time to time or --

22 MR. BAXTER: Well, basically what we're doing is just
23 providing the training. Now, as far as -- let's say Part 135
24 operator, that would be under their control to provide, if you
25 will, a check flight which I think, actually, an annual check

1 flight would be very important to maintain, make sure that the
2 standard is remaining where it needs to be.

3 MR. JACKY: Thank you. I guess, ultimately we're
4 discussing NVGs in use with helicopter EMS operations. Do you
5 have any opinion or characterization of what would be the benefits
6 to EMS operators if they were to use night vision goggles?

7 MR. BAXTER: I think certainly obstacle avoidance, being
8 able to see and avoid, utilizing the goggles at night. A lot of
9 people have a misunderstanding about goggles, thinking that the
10 night vision goggles see through clouds and things like that and
11 the comment I always hear is well, it's very easy to go
12 inadvertent IMC because you can see through clouds and snow and
13 fog, and my answer to them always is well, if you can see through
14 it then you're not inadvertent IMC. So what I try to let people
15 know is it's just like the human eye. You can't see through
16 everything and you still have to make smart decisions based on
17 what you're seeing through the goggles and you compare what you
18 see through the goggles with what you see unaided constantly
19 throughout the whole flight. And so the fact that you can
20 actually visually see is a huge benefit and then if you look at it
21 from a crew standpoint, if the whole crew is wearing the night
22 vision goggles, I think it just reduces anxiety levels within the
23 crew.

24 It's just a better situational-ly aware crew. There's
25 been a lot of talk about whether or not you could go single pilot

1 and no crew on the NVGs. I believe it could be done safely with
2 just one person on NVGs and I also think it could be done much
3 safer with everybody on the NVGs, so I think that's the -- you
4 know, that's the benefit of having them in the cockpit and in the
5 back, as well.

6 MR. JACKY: Thank you, Mr. Baxter. And with that, I
7 have no further questions, so I'll pass the microphone to
8 Mr. Cash.

9 MR. CASH: Thank you. I have three witnesses.
10 Mr. Dave Downey is going to provide the manufacturer perspective
11 for recorders, Dave Batcheller is going to provide the perspective
12 from a manufacturer of recorders and Tim Shaver from the FAA
13 provide that regulatory oversight. Without trying to overload on
14 Bell here, Mr. Downey, could you please explain what your current
15 programs are as far as recorders are concerned in Bell?

16 MR. DOWNEY: Thanks, Jim, for the opportunity. What
17 Bell's looking at right now is well, three different aspects of
18 it. One of them is the one that we're working diligently on right
19 now is what's called the cockpit image recorder. Basically, the
20 genesis of this was originally under accident investigation to
21 have a tool by which we could reconstruct. You go back to the
22 IHST data, one in five accidents has no data, so our decision in
23 that regard was try to find something in a low-cost, non-intrusive
24 environment that would be retrofit-able.

25 And we are currently in the process of getting STCs for

1 a couple of our aircraft in that regard. The benefit of the CIR
2 or cockpit image recorder is the fact that not only can you look
3 at the cockpit, itself, but going back to a program you and I did
4 several years ago on future flight data recorders was how do you
5 preserve the dignity of the pilots and those types of issues.

6 Well, the way we've managed to construct it from a field
7 of view standpoint is you can see the pedals, you can see
8 collective, cyclic. You can see what the hands are doing but you
9 don't see the body of the pilot at all and you have a complete
10 field of view of the instrument panel so that we can see exactly
11 what's going on. The other thing that we've done is we've tacked
12 a GPS engine onto this so basically you take Google Earth and what
13 we get. And what we get is four JPEGs, that we have a computer
14 program that laces those together so basically what you get is
15 kind of a real -- it's a little bit choppy, but you can see
16 everything that goes on the cockpit. We've looked at this under
17 both day, night unaided and night -- under night vision goggle
18 conditions. And based on our technology, we can see everything
19 that needs to be seen in that kind of an environment, the benefit
20 of this being that you do have a rudimentary flight data recorder
21 because you can see what's on the instrument gauges at any given
22 time.

23 The other advantage is that it's retrofit-able because
24 the way we've got this constructed is it's probably about four
25 pounds with everything. That includes wiring, all the harnessing

1 and everything that needs to go into it. That also provides the
2 operator with the ability to have flight data monitoring in terms
3 of an operations oversight or a FOQA type program. You'll be able
4 to -- there's nothing like the CEO in the back seat type
5 environment, so we believe that would work, as well.

6 We will be amenable, from Bell's standpoint, to the
7 retrofitting of almost anything into the cockpit that gets us out
8 of that one in five environment where we don't know what happens.
9 So although yes, we have a proprietary interest in our own
10 program, we are not so blind, from a safety standpoint, as to not
11 be willing to be amenable to anybody else retrofitting something
12 in there and the Appareo system has had great success with air
13 logistics and I commend those guys in that regard. The other
14 thing we are looking at is -- and we are asking for from industry
15 right now is, in the HUMS area, we are looking for something that
16 basically targets -- if you look at the data, 17 percent of it's
17 mechanical and we already know that we've got engine reliability
18 numbers to a point where if you're doing your normal health
19 monitoring checks and things like that with the engines, that's
20 not really the focus. It needs to be on the dynamics system and
21 drive components. So we would like to find some manufacturer
22 that's going to give us something in the four pound area that
23 gives us that sort of capability.

24 Anecdotally, Abu Dhabi Aviation shared with us that they
25 have full HUMS systems on their aircraft as a requirement for

1 their contracts, but they are finding on our 212s that they are
2 determining out-of-track conditions long before the pilots even
3 write it up and they've already shown a trend line that shows that
4 they're actually having components last a lot longer because
5 they're not getting beat up. So when you're talking about, you
6 know, bearings and control fittings and hanger bearings and all
7 that sort of stuff, if you can reduce the environment that they're
8 operating in, you necessarily derive better operational
9 capability.

10 MR. CASH: Thank you. Would you consider this recorder
11 being an accident investigation tool or is it really a FOQA
12 maintenance recorder?

13 MR. DOWNEY: Yes and yes. It can be done with either
14 one and the advantage is that if you've got a PC, that's all you
15 really need to download it. It comes on a low flash drive. We
16 recognize it is not -- especially our CRS system will not be
17 necessarily going to survive every accident. But if we've
18 analyzed our accidents, usually you can pull the flash drive out
19 of almost any of those accidents and be able to download it, so we
20 feel that that gives us a decided advantage in that 20 percent of
21 accidents we don't have any data.

22 MR. CASH: How long -- what kind of time period -- and
23 do you envision the pilot pulling it every time he leaves or --

24 MR. DOWNEY: To be honest with you, I'm not sure of the
25 timeframes on it. It's not every hour. I think we're getting up

1 in the -- well, it depends upon really what -- how much data does
2 the operator want to gain out of it, but we're talking about flash
3 drives so -- I mean, you could hand the pilot a new flash drive,
4 he walks out, sticks it in. It's just like the one that comes in
5 your camera or your video recorder right now.

6 MR. CASH: And do you envision a crew switching that out
7 every time they would go to fly and then get downloaded and
8 analyzed every flight?

9 MR. DOWNEY: That's a possibility, if that's what the
10 operator would like.

11 MR. CASH: Is there any plans on making it a hardened
12 unit?

13 MR. DOWNEY: I don't know the answer to that right now
14 because that simply becomes a cost factor and we've been looking
15 at a low-cost retrofit-able capability, so we'll solve Problem 1,
16 then we'll work on Problem 2.

17 MR. CASH: What is the current implementation schedule?

18 MR. DOWNEY: Well, we're hoping to get an STC somewhere
19 between the second and third quarter of this year.

20 MR. CASH: And then --

21 MR. DOWNEY: There's been a softening of the market so
22 obviously, we're in a different commercial posture than we were
23 six months ago.

24 MR. CASH: And then you plan on standard equipment
25 rollout or --

1 MR. DOWNEY: Yeah, to be determined that we will have it
2 available for those that want to have it incorporated into the new
3 aircraft.

4 MR. CASH: And is there any, as far as retrofit, what
5 kind of incentives have you dreamed up to encourage operators to
6 retrofit?

7 MR. DOWNEY: I'll let the marketing guys figure that one
8 out. I'm the safety guy.

9 MR. CASH: So you don't have any timeline for retrofits
10 or anything?

11 MR. DOWNEY: Well, we would hope that the SCC would be
12 retrofit-able and then it's really -- you know, one of the big --
13 let's put this up on the table. When you're talking about, you
14 know, aircraft, we have the most prolific single engine aircraft
15 out there in the turbine market, so we have aircraft that anywhere
16 from 14 to 20 years old on the old side, so it simply becomes a
17 matter of what is the economic value of that aircraft versus what
18 are they going to gain from a retrofit capability. So obviously,
19 we want to incentive-ize them, but at this point in time that's a
20 very difficult proposition to try to calculate. But we will look
21 at that and hopefully, the insurance industry will help with that,
22 you know, Back to Safety Bucks that was discussed yesterday.

23 You know, if the insurance companies help in that regard
24 in terms of what they would like to see or back to what Matt
25 Zuccaro was alluding to earlier, you know, OGP set a standard that

1 required installation of certain equipment. You know, hospitals
2 or programs could come to the same level of desire, then certainly
3 that helps in terms of a pull as opposed to a push.

4 MR. CASH: Do you have an idea for the costs, you know,
5 what an install cost might be?

6 MR. DOWNEY: I don't. And it's not that I don't -- I
7 just don't know the answer. Again, that's -- I let other people
8 worry about it from a program side.

9 MR. CASH: I guess you could ask the question why not
10 use traditional large aircraft recorders, they're already approved
11 and the FAA certainly, you know, is well-versed in getting those
12 onboard.

13 MR. DOWNEY: It really comes down to two items. One is
14 the weight of the box, itself. When you're talking about a 6,000
15 pound aircraft, Part 27 goes to 7,000 pounds. When you're talking
16 about a 40-pound piece of equipment, the first question that --
17 plus installation cost and all the wiring and sensors and stuff to
18 go with it, you know, you're talking about a significant weight
19 fraction of the aircraft useful load. And as several of our
20 operators have shared with us, unfortunately the U.S. population
21 has gained weight.

22 I know that comes as a surprise, but weight becomes an
23 issue on any of these things. All the equipment -- I was very
24 surprised to learn at the technology that has to go into just
25 things like stretchers and things like that with higher weight

1 patients. So when you start talking about adding upwards of 40
2 pounds to an aircraft, that's a very short discussion with an
3 operator.

4 MR. CASH: How important is the video aspect to your
5 philosophy of recording? I mean, traditional recorders, it's
6 going to be flight data and a voice recorder. How much more does
7 that image add to --

8 MR. DOWNEY: Well, it was really more -- that was the
9 simplest solution because you're able to look at the cockpit and
10 get all of the data parameters you're looking for, you know,
11 altitude, air speed, any of those types of things and so
12 basically, it was sort of like what's the smallest net you can get
13 everything with and then the fact that we could use a JPEG image,
14 stitch them together into a video and add -- basically, you can
15 put a ribbon on this thing so you can watch where an aircraft
16 goes. It was just like -- you'd have to be an idiot not to look
17 at this and say this solves all the problems that you're looking
18 for. Rudimentarily, I will agree and no, you don't have the kind
19 of data parameter pickups that you get with a full -- HUMS, but
20 the bottom line is you kind of kill two birds with one stone and
21 then you can use it for two different things. You can look at it
22 from an accident investigation standpoint if you need to, but then
23 you can look at it from an operations monitoring standpoint at the
24 same time.

25 MR. CASH: All right, thank you. I'd like to switch now

1 to Mr. Batcheller to give the, kind of, the industry perspective
2 on where the technology is in the industry. Could you briefly
3 explain what your company does and what your marketing plans are?

4 MR. BATCHELLER: Sure. Thank you, Mr. Cash, and
5 Chairman Sumwalt, for having us today. We appreciate being here.
6 It's our pleasure. For those of you who are unfamiliar with
7 Appareo Systems, Appareo Systems is a small contract design and
8 manufacture company in the aerospace and defense industries that
9 spends a lot of our time solving problems regarding data
10 acquisition on small and especially legacy aircraft. If you'd be
11 so kind as to bring up the first page of our exhibit?

12 (Slide.)

13 MR. BATCHELLER: That would be wonderful. As Appareo
14 Systems' primary function is design and manufacture, consequently
15 a large portion of our resources are dedicated to technical tasks,
16 embedded systems, design engineers, mechanical design engineers,
17 web software and desktop software design engineers and we've had
18 the opportunity to produce a number of products that are used for
19 flight operations quality assurance in the rotorcraft marketplace;
20 operational loads monitoring, they're used as training aids,
21 they're used to provide low-cost solutions for acquisition of
22 aircraft performance data for aeronautical engineers and to the
23 extent that we can't avoid it, occasionally, unfortunately, also
24 used for accident investigation.

25 Appareo Systems has been working a lot in flight

1 operations quality assurance and for those of you in the room who
2 have a little bit of familiarity with FOQA, as it's referred to,
3 flight operations quality assurance is really about fundamentally
4 utilization of onboard data acquisition systems to proactively
5 understand operational risk areas and then move to mitigate those
6 risk areas before they become an accident rather than being
7 reactionary encountering an incident, trying to figure out what
8 happened and then saying we should avoid this moving forward,
9 reducing the number of incidents that happen on a much larger and
10 much more active scale.

11 Appareo Systems has seen tremendous success in the
12 elicitation of behavioral changes as a result of utilization of
13 our equipment. Although it's going to be difficult to see from
14 the back, the graph that you see at right is from January to June
15 of 2008. It represents a little bit more than 25,000 flight hours
16 for one of our operators. And they turned on their FOQA program,
17 so to speak, in January and you see the blue line is actually a
18 low cruise event where operators of their aircraft were cruising
19 routinely below their minimum cruise altitude in their SOP. And
20 this was a problem with which they were completely unaware.

21 And I think this is the type of thing where flight
22 operations quality assurance becomes really useful, really impact-
23 ful and really valuable in identification of risk areas that you
24 may not be aware of and then perhaps more importantly, allowing
25 you to substantiate the impact, if any, of your corrective action.

1 Understanding you have an issue is Step 1, but understanding if
2 you've actually solved it is oftentimes, in the absence of some
3 metric, the more difficult challenge.

4 What you see there is a 95 percent plus reduction in the
5 incidence of that particular occurrence in less than six months
6 which is across a statistically significant sample of flight data,
7 a pretty profound reduction in occurrence of that particular risk
8 area. If you'd be so kind, perhaps, to move to the second page of
9 our exhibit.

10 (Slide.)

11 MR. BATCHELLER: What you see up here on the table is
12 the first flight data recorder, the flight data recorder that was
13 used for the chart that you saw up there which is significantly
14 different from traditional understanding, traditional design
15 paradigms of data acquisition equipment. Appareo worked with a
16 helicopter operator called Bristow, who does a substantial amount
17 of offshore work, to develop this product and it's supporting
18 software applications on the idea with this product was to
19 overcome the common objections in implementation of data
20 acquisition equipment on Part 27 rotorcraft by addressing the size
21 issue, addressing the weight issue and trying to distill a product
22 down that maybe was, you know, 70 percent of the functionality
23 at 5 percent of the cost that would give you an opportunity to do
24 flight operations quality assurance, give you easy access to
25 airframes to install and operate this type of equipment and have

1 doing so make economic sense.

2 Among the differences between this product -- and I
3 think you're going to begin to see more and more of these products
4 emerging on the marketplace as opposed to traditional flight data
5 recorder design paradigms, this product is based on inertial
6 foundation.

7 It contains its own gyroscopes, its own accelerometers,
8 its own magnetic compass, its own GPS and so if you provide this
9 product with power and ground or a product similar to it, you have
10 an aircraft agnostic solution. You can put this in any aircraft,
11 absolutely any type of aircraft, and it'll give you this baseline
12 of parametrics about how the aircraft got from A to B, its
13 altitudes, its accelerations, its rotational rates, its vertical
14 rates of descent and ascent. And it give you a lot of information
15 about how that asset's being operated without having a whole lot
16 of cost, without having a whole lot of weight, without occupying
17 volumetrically a whole lot of space in space-constrained aircraft
18 and with really not having interface with much of the aircraft at
19 all.

20 Traditionally, people think of gyroscopes as being
21 fairly good-sized mechanical apparatuses that are used as part of
22 an AHERS (ph.) or as part of inertial navigation system and
23 Appareo's been focusing on integrated circuit technology
24 advancements, specifically MEMS, micro-electro mechanical
25 structures, that make functionality like that more accessible and

1 smaller, so although it's going to be impossible to see for the
2 room, it's illustrated the concept that chip is the gyroscope and
3 there's three of them in here, six accelerometers, three
4 compasses, 16-channel -- GPS.

5 There's a lot of circuits in that tiny little package.
6 And with those little integrated circuits, you can get extremely
7 accurate -- results about aircraft, altitude is a function of
8 time. And that's becoming ever less costly, ever smaller and is
9 going to continue to make these technologies, we believe, very
10 palatable for the end user. It's important to note that at this
11 time, this technology and other products like it of our and other
12 manufacturers, are Part 27 focused, they're voluntary in their
13 adoption and to that end, they need to have an ROI to the
14 operator. At the end of the day, the technology needs to bring
15 some value to the end user and so there's some supporting software
16 applications that allow you to, from a flight operations quality
17 assurance perspective, parse data for events, identify safety
18 areas, report against those areas -- and if you'd advance the
19 slide just once.

20 (Slide.)

21 MR. BATCHELLER: And to recreate flight over three
22 dimensional terrain and solid imagery, it's just a quick screen
23 shot of an application that we designed and there's several
24 applications like it that allow you to get into that operational
25 issue, understand what happened perhaps more intimately and if

1 there was environmental considerations or factors that may have
2 contributed to, call it proximity to an obstacle or other
3 operational issues that may have contributed to the way that
4 somebody handled an aircraft precipitating some event. You can,
5 as an analyst, try to better understand that. I guess if you'd be
6 so as to advance the slide just once.

7 (Slide.)

8 MR. BATCHELLER: These products are culminating in more
9 advancements and Appareo's worked with Eurocopter to add some
10 functionality to this equipment to make it more accurate, to make
11 it higher fidelity and to actually install it on some of their
12 aircraft as standard equipment. I believe their target is 2010.
13 And so what you see here is everything that this product contains
14 plus a camera plus a microphone to record ambient audio and it's
15 going to be more accurate and it's going to do all the solutions
16 in real time or some of the existing product does some work in
17 post-processing after the flight. And it's going to be comparable
18 cost, it's much, much lighter. This product, in its current
19 prototype embodiment, weighs less than 300 grams. So then we're
20 talking at Appareo about some other, what we call four figure
21 fixes, things that for four digits or less deliver data
22 acquisition products to the end user as a total in-sold cost and
23 that, I think, is a really important concept from a device
24 manufacturer perspective.

25 Total system install cost is procurement to the

1 equipment. It's procurement of peripherals, things -- wiring,
2 anything else you need to interface the equipment with the
3 aircraft, fasteners, it's your installer's time. Four figures or
4 less is the focus that we have and I think is where this section
5 of the marketplace, data acquisition in Part 27 aircraft, is
6 continuing to strive. Thank you, Mr. Cash.

7 MR. CASH: Thank you. You answered most of my questions
8 here, but who generally are your clients now for the FOQA system
9 and I assume that's primarily what it's being installed for is for
10 FOQA kind of analysis, right?

11 MR. BATCHELLER: That's correct. The primary
12 utilization of this equipment is flight operations quality
13 assurance. It's seen lots of uptake in the offshore marketplace.
14 Operators that fly smaller aircraft; offshore, especially in the
15 Gulf of Mexico; some in South America or western Africa. We've
16 also seen utilization of this equipment in some EMS operations, in
17 utility and pipeline and forestry, the military's using some of
18 this equipment for both MFOQA and also for a flight training aid
19 to use flight data as an aid to instruct your pilots when
20 debriefing a student in primary flight instruction as to you
21 remember this control input, this is what was happening to the
22 aircraft from an external view and helping, you know, an
23 increasingly digital and video game savvy generation understand,
24 perhaps, on their own terms what manipulation of different control
25 surfaces does to an aircraft, give them an opportunity to take

1 that home and understand it more completely. We're hoping to see
2 additional uptake of this equipment in emergency medical services
3 and we're actually making changes to the equipment to make it a
4 better service offering for EMS operators. Again, we're a very
5 end user focused manufacturing company.

6 MR. CASH: Could you explain a little bit on how the
7 FOQA program works? Do you download every flight, do you -- you
8 know, how does the data get from the airplane back to the user as
9 useful data?

10 MR. BATCHELLER: Certainly, Mr. Cash. At present, this
11 recorder has a secure digital card which is the type of -- card
12 you commonly see in digital cameras. It's commonly part of
13 cellular telephones. It's easily commercially available, it's
14 very inexpensive. Our operators vary in the frequency with which
15 they remove the information from the aircraft. Some remove it
16 daily as part of the normal operator's routine or as part of
17 maintenance routine. That information is then placed in the
18 computer, actually, the manufacturer computer for this purpose.
19 You place the card in the computer, it processes data and uploads
20 it to a server that we maintain for our clients where they can log
21 in from anywhere in the world at any time, be it their basement,
22 their hotel room, their desk in their office and see information
23 rolling in from their fleet, see whether or not it contains events
24 and do all the visualization and analysis work that they'd like to
25 do and do so without needing to necessarily be tied to a

1 particular station.

2 The product also contains -- and all of our products
3 contain an internal secondary redundant memory source that is
4 within this little steel block in the rear of this enclosure. The
5 product is a flight operations quality assurance product, but it
6 was our feel that to meet the design intent of any recording
7 system, you need to have redundancy and in the event that some SD
8 card wasn't in the aircraft or it was ejected as part of an
9 impact, having a penetration-proof, crush-proof, flame retardant,
10 low cost, low weight memory module was something that was a focus
11 of this product and it's of this product, as well. That is a
12 source where people can retrieve information in the event that
13 someone forgets to put a card in the aircraft or loses a card and
14 doing so is pretty easy to do.

15 MR. CASH: How well is that card surviving?

16 MR. BATCHELLER: The card, in its operational
17 environment, is surviving well. There's been a couple cards that
18 have disappeared and when the data is retrieved from the internal
19 memory, it appears for a reason. And there's been some honest
20 mistakes. Maintenance tech pulls a card, it slips out of his or
21 her hand, falls through a grate in the floor and disappears and
22 really, the function of the internal memory is to make sure that
23 that type of information's recoverable.

24 MR. CASH: I really meant how -- I know you've had a
25 couple accidents that the recorder's been through. I just --

1 MR. BATCHELLER: We've done some internal testing, you
2 know, really the product isn't designed around the existing
3 Part 29 recorder TSO and we did our best with the end user in mind
4 to create a product that was submersible, that you could shock,
5 you could try your darndest to penetrate and couldn't, that could
6 withstand a reasonable amount of flame and again, weight and
7 volume are very related to flame resistance and so we did the best
8 tradeoff we could.

9 The product was involved in an accident last fall on a
10 fixed wing aircraft, specifically a Lockheed P2V in Forest Service
11 fire fighting applications and the recorder survived, which was
12 impressive to us because the product was designed around AS-350s,
13 Bell 206Bs, Bell 407s, smaller, light turbine aircraft, and that
14 was an incident that involved significantly higher speeds,
15 significantly more airframe mass that was impacting the recorder
16 and the information came out, we thought, quite well. So we're
17 really impressed with the survivability of the equipment and the
18 incidents its been involved in today and as we continue to do
19 DOEs, designs of experiments, where we're subjecting our memory
20 modules to different conditions we think indicative of different
21 kinds of rotorcraft incidents and accidents, we hope to improve
22 this technology more and more to make it even more survivable.

23 MR. CASH: What's your current timeline for deployment
24 of the new Eurocopter?

25 MR. BATCHELLER: The product's development is well

1 underway. We were flying it for functional testing last week. We
2 hope to have the supplemental type certification completed in the
3 third or fourth quarter of this year. Plans are to begin, I
4 believe, installing it on AS350 B2s and B3s in 2010.

5 MR. CASH: I know you can't speak for Eurocopter, but do
6 you know what their plan is as far as outfitting?

7 MR. BATCHELLER: As I understand it, the intent is not
8 to stop with the first certified airframe nor to necessarily stop
9 with installation of the equipment in the United States, although
10 the first certification's going to be for the FAA here and that is
11 necessarily going to impact its -- the ability to deploy it in
12 other countries. My understanding -- and again, you know, I'm not
13 -- an Eurocopter employee and I definitely can't speak for their
14 company -- is that the equipment will be available on other
15 airframes and it's certainly Appareo's intent as a market driven,
16 operator driven company for other aircraft variance, make this
17 product available for certification and to assist in those efforts
18 to disseminate it as broadly as possible within the light turbine
19 rotorcraft fleet.

20 MR. CASH: You don't know if they're going to --
21 equipment is standard equipment?

22 MR. BATCHELLER: It's my understanding their intent is
23 to make it standard equipment on the initial certification
24 airframe. As to subsequent airframes, I'm not entirely certain.

25 MR. CASH: Okay. I understand you're big into the FOQA

1 and you're working with the Fight Safety Foundation. Could you
2 just briefly kind of go over what that effort is?

3 MR. BATCHELLER: Certainly. I think one of the
4 impediments to adoption of flight operations quality assurance
5 programs, especially for operators who fly perhaps only Part 27
6 aircraft have not had any experience with data collection, don't
7 necessarily understand inherently the value in acquiring flight
8 data and processing it to understand fleet safety risk areas and
9 to mitigate those areas is having lack of empirical evidence or
10 proof, so to speak, that this is a good idea. The Flight Safety
11 Foundation is running a flight operations quality assurance
12 demonstration validation effort of sorts to take a couple HEMS
13 operators to collect data from their airframes, to process it in a
14 flight operations quality assurance environment and to articulate
15 over a certain period of time the value that you find in doing so.
16 We're certainly supportive of that effort and hope to play a role
17 in it.

18 MR. CASH: Thank you. I'd like to switch now and ask
19 Mr. Shaver from the FAA why does this process take so long?
20 What --

21 HEARING OFFICER WARD: Mr. Cash, can I just interrupt
22 for one second? I'm sorry. I just need to do a little
23 housekeeping for the hearing side. Mr. Batcheller was referring
24 to his exhibit. We actually don't have an exhibit entered at this
25 time. I would like to ask the Chairman if it's okay if we enter

1 these slides as Exhibit 8(s) and this is to help the court
2 reporter so it can be archived.

3 (Whereupon, the document
4 referred to as Exhibit 8(s) was
5 marked for identification.)

6 CHAIRMAN SUMWALT: That would be acceptable, thank you.

7 (Whereupon, the document
8 referred to as Exhibit 8(s) was
9 received into evidence.)

10 HEARING OFFICER WARD: Thank you. Okay. Thank you,
11 Mr. Cash.

12 MR. CASH: Turning now to the FAA, Mr. Shaver, why --
13 what's the process that the regulations go through from an idea to
14 actually regulation?

15 MR. SHAVER: So the rule making process, I assume.
16 Typically, you have to start with some type of equipment standard,
17 so we'll work with a group such as RTCA or another organization to
18 make a minimum operational performance standard and that does a
19 couple of things for us. That standardizes the equipment amongst
20 the manufacturers, as well as helps us, you know, adopt things
21 internationally as far as the standard goes.

22 So once the MOPS is completed, then there's the whole
23 process of evaluation of whether the rule making should be
24 accomplished or not. So rule making, in general, you know, there
25 are several things that are looked at in rule making, that's the

1 benefits of the rule, itself; the cost of implementation of the
2 rule; and then once it's in the process, we also consider the
3 comments that are provided by the customers, the air freight
4 manufacturers, the equipment manufacturers, other regulatory
5 agencies, to see how the rule is done.

6 The process of rule making, itself, is fairly lengthy.
7 It requires a lot of internal coordination within the FAA and then
8 it has a public comment period, significant rules also go through
9 OMB and OST, and there are several phases of rule making. There's
10 the Notice of Proposed Rule Making where the idea is basically put
11 out and we'll receive comments from the public. And then the
12 final phase also goes through a review process. Any adjustments
13 we need to do to the proposed rule making based on those comments
14 or other information gained and then ultimately, it goes once
15 again for significant rule through OMB and OST before finally
16 being approved and placed into the Federal Register.

17 MR. CASH: Thank you. I know you just recently, this
18 past summer, produced a quite extensive flight recorder revision,
19 I think we called it FDR updates. How long did that -- basically,
20 how long did that take from when that started until it finally got
21 a rule?

22 MR. SHAVER: I think the entire process -- it was
23 actually started before I joined the FAA in 2003, but the entire
24 process was close to 10 years.

25 MR. CASH: Is that typical?

1 MR. SHAVER: Unfortunately, that's what it seems to have
2 been in a lot of the recorder rules. It's difficult to get those
3 through, I guess.

4 MR. CASH: I know it's always been an issue doing the
5 cost benefit analysis because it's hard to justify the cost to
6 operators for flight recorders when they don't generate revenue or
7 make the airplane safer. How does the FAA deal with that?

8 MR. SHAVER: Well, we have to look at the benefits as
9 best we can and you know, the benefits of having additional data
10 in an accident scenario or an incident scenario, and then base
11 that off of the costs and if -- I guess that's basically it. You
12 have to try to compare all the benefits with the cost.

13 MR. CASH: If you look at the rule structure for --
14 concerning helicopters, especially -- the FAA was granting
15 exceptions and they finally made permanent exceptions for
16 helicopters, basically, from the flight recorder standards.
17 Anything built prior to 1991 wasn't required to have a flight
18 recorder, even though it traditionally would have had one. Can
19 you speak to any -- why that was?

20 MR. SHAVER: No. Unfortunately, the decision for the
21 current equipage requirements was done in a rule making that
22 happened before I joined the FAA, so I don't have any of the
23 details of what was actually looked at when the dividing line or
24 the decision for where equipage was. I don't have that
25 information.

1 MR. CASH: Is there any program to go back and get those
2 airplanes or aircraft?

3 MR. SHAVER: Well, I guess to explain my role, I'm in
4 aircraft certification, so typically we deal with the
5 certification requirements which are Part 23, 25, 27 and 29. Now,
6 we work with our flight ops counterparts who actually do the
7 operational rule making and that is where the true flight recorder
8 rule is, is in the operational requirement, so I've led several
9 teams on rule making processes but they've always been in
10 conjunction with a flight standards person. So from an aircraft
11 certification side, we have no plans for doing rule making, but as
12 I understand, Flight Standards is considering rule making for
13 those.

14 MR. CASH: It's good to hear. I understand you or your
15 staff has been involved with, kind of an unusual --

16 CHAIRMAN SUMWALT: Mr. Cash, excuse me just a moment.
17 So we've heard this before during board meetings and I think this
18 is the fire alarm out in the garage, but I'm going to ask somebody
19 to check on that and make sure -- I think it does not concern this
20 room because otherwise the lights would be on, but we will check
21 it and sometimes this can go on for a while. I think they test it
22 on Wednesdays or something like that.

23 MR. CASH: You're trying to tell me something here,
24 right?

25 CHAIRMAN SUMWALT: We do know it works. As long as you

1 can hear, we will continue unless we hear otherwise. Is that
2 acceptable? Can everyone hear the questions with this noise?
3 Let's continue.

4 MR. CASH: I understand your staff has been involved
5 with kind of an unusual installation in an S-76 for a European
6 requirement with a video recorder. Could you briefly talk about
7 that?

8 MR. SHAVER: Sure. Physical Optics is a corporation we
9 worked on in actually, a -- concept test back in 2005 with you,
10 but Physical Optics has developed an image recorder, crash
11 protected image recorder unit that they worked with Sikorsky to
12 install on their aircraft and the purpose is, hopefully, to
13 satisfy the UK CAA's flight recorder requirements. There was
14 around nine parameters and it had to do with selected altitudes,
15 selected air speed, so there were nine parameters that weren't
16 currently being recorded on a flight data recorder, so the thought
17 is they could put an image recorder in that is focused on the
18 instrument panel and be able to collect the parametric data from
19 those instruments to satisfy those requirements. So in December,
20 people from my organization went up and actually witnessed the
21 installation and the STC and the operational checks and spoke to
22 the UK CAA and once they've completed their evaluation, we'll see
23 if it meets -- you know, if it's satisfactory for that purpose.

24 MR. CASH: I know the FAA had expressed some interest in
25 a performance based rule that might cover these smaller aircraft,

1 smaller helicopters, turbine powered commercial stuff. Are you
2 familiar at all with that or --

3 MR. SHAVER: I've not been participating in that
4 activity.

5 MR. CASH: The URK (ph.) Working Group 77, which is
6 developing a minimum standard, manufacturing standard, for small,
7 lightweight, low cost recorder technology. How does that play in
8 to the -- I mean, is that going to rolled into a TSO or what is
9 that process?

10 MR. SHAVER: Okay, yeah. We're considering developing a
11 TSO around that unit. We're trying to do everything we can to
12 encourage and enable this type of technology on the various
13 aircraft, voluntary equipage. So we're participating in many
14 activities. We've worked with Appareo and Eurocopter, trying to
15 understand their installations. We've been attending various
16 aviation safety forums to promote the use of these type of
17 devices. So we began work with URK Working Group 77 in the
18 development of AD155 to try to develop a standard that would kind
19 of fit into that realm.

20 MR. CASH: Okay. I have no other further questions.

21 CHAIRMAN SUMWALT: Okay. Mr. Jacky, any further
22 questions from you or anyone else on the Technical Panel?

23 MR. JACKY: Yes, Mr. Chairman. Mr. Guzzetti would like
24 a couple of follow-up questions, please.

25 CHAIRMAN SUMWALT: Thank you.

1 MR. GUZZETTI: Thank you. Thank you, Mr. Chairman. As
2 you know, we have this HEMS@ntsb.gov where folks enter in comments
3 and I'm one of the monitors of that and I got several e-mails and
4 phone calls on a couple of other pieces of equipment that I know
5 that aren't exhibits or -- but I just wanted to see if any of you
6 could speak to them. One is wire strike protection systems.
7 Mr. Downey, can you comment on those in terms of are they useful,
8 it is a useful safety equipment?

9 MR. DOWNEY: Yeah. Let me go way back. When I was a
10 young captain the Army, I was at the Aviation Research and
11 Development Command and I was brand new in the office and I walked
12 in one morning and they said you're now the wire strike guy; I
13 thought great and they said but there's no money for your program,
14 so I went and put it in the file cabinet. Three weeks later we
15 had a UH1 killed in division search at the first -- and nine other
16 people. So the position that I have had all along is yes and
17 there's three issues that I think fundamentally need to be at
18 least entered into this forum. One is there's a weight cost and
19 that's always been a big concern from a manufacturer's standpoint,
20 but I will tell you Bell's made the decision wire strike kits will
21 be standard on all of our aircraft.

22 Now, when that's being cut in was simply based on when
23 we've got the systems and when they're going to go on the
24 aircraft. One of the concerns raised was some of our customers
25 said well, we don't really want them. Well, I guess there's a

1 feeling amongst us -- and I've talked to my counterparts at both
2 Eurocopter, Agusta and Sikorsky is if people don't want safety
3 equipment on their aircraft, they probably don't need them as
4 customers. And the third thing is that what we found in the Army
5 because a year after we started the installation, started
6 monitoring it, is the number of wire strike incidents went down.

7 Now, the hard part of that is did the real -- did the
8 number really go down or were the number reported, wire strikes --
9 because if you hit a wire and you cut it and nobody knows, are you
10 reporting it? No. And my colleague, Mr. DuCarl (ph.), said we
11 all did stuff, you know, earlier in our career we probably
12 wouldn't admit to. So I would say that WSPS is absolutely, you
13 know, it's free, especially aircraft operating in a low level
14 environment. You know, the biggest issue is how do you compute
15 the geometry to get the right amount of surface area on it, but
16 Bell's position is that it will be standard equipment on all of
17 our aircraft.

18 MR. GUZZETTI: And this is basically like a scissor
19 that's mounted, a blade, that's mounted on the nose of the
20 helicopter?

21 MR. DOWNEY: Yeah, it's a set of wire guides that bring
22 it into a cutter and then it only works to a certain point. The
23 geometry and the construction of those is based on the numbers,
24 the preponderance of wires that are out there. One of the things
25 that we evaluated was what about using other things to detect

1 wires. The Army had a program several years ago that they were
2 looking at where they detected the electronic field around wires.
3 The only problem is if the wire's not powered, it doesn't do you
4 any good. So this came back to what is the least cost solution
5 that gets us the most bang for the buck and the answer is a wire
6 cutter.

7 MR. GUZZETTI: Okay. And then one other piece of
8 technology that maybe you're familiar with, it's called OCAS,
9 Obstacle Collision Avoidance System. I guess it's a little mini
10 radar that a construction firm or a factor could mount on the
11 bottom of its giant antennae --

12 MR. DOWNEY: Correct.

13 MR. GUZZETTI: -- and I guess if the helicopter gets
14 close enough, it emits a signal over the VHF radios.

15 MR. DOWNEY: Correct. It's a 1 watt radar that sits at
16 the -- sits on a high piece of terrain. You get within 30
17 seconds, it starts broadcasting. The way its designed is the
18 radar sits, looks out there and as long as you are going to be 165
19 feet, basically 50 meters above the highest of the obstacles, it's
20 okay, but if you intrude into that area, you get a series of VHF
21 warnings.

22 And I will tell you, one of the big problems with that
23 has been the reluctance on the part of certain elements of the FAA
24 and the Federal Communications Commission to allow broadcast.
25 Although it's a very directionally and polar setup for the

1 broadcast, they've only allowed it on certain frequencies. Well,
2 you can't decide, if somebody's cruising down a river and whether
3 it's a fixed wing or a rotary wing aircraft, you need it to be
4 broadcast on all the frequencies and you can keep it at such a low
5 power that it's not going to intrude into air traffic.

6 But there has been a great deal of reluctance of the
7 part of the agency to consider that and it's got to be in
8 conjunction with an FCC license, but I can tell you, I've been to
9 Norway, I've seen the system, it works. In fact, after the first
10 installation in Norway, a German Tornado turned down the wrong
11 fjord and it saved it.

12 MR. GUZZETTI: Okay, thank you. Even though these
13 aren't exhibits, they will be -- they are in the docket or will be
14 in the docket, Mr. Chairman, for those that are interested in
15 that.

16 CHAIRMAN SUMWALT: Okay. So administratively, yes, I
17 accept those into the docket.

18 MR. GUZZETTI: Yeah, okay.

19 CHAIRMAN SUMWALT: Or as exhibits, that is.

20 MR. GUZZETTI: Thank you.

21 CHAIRMAN SUMWALT: Is that what you --

22 MR. GUZZETTI: No, no. They don't need to be exhibits,
23 per se.

24 CHAIRMAN SUMWALT: They're just in --

25 MR. GUZZETTI: They'll just be in the docket.

1 CHAIRMAN SUMWALT: Thank you, thank you.

2 MR. GUZZETTI: And then just a few other quick questions
3 regarding night vision systems and I just want to reiterate this,
4 in my mind. Night vision goggles are not -- and I guess this
5 should be for Mr. Kallenbach. They're not to be used to fly into
6 reduced visibility, is that correct? Or excuse me, Mr. Baxter.

7 MR. BAXTER: No, they're not devices that are to be used
8 because the weather has gotten bad, now you slap those on and you
9 start flying with them. They're used for VMC flight.

10 MR. GUZZETTI: Okay. And again, to reiterate, the cost.
11 How much, if you were to outfit a helicopter with a night vision
12 goggle system, how much would that cost?

13 MR. BAXTER: The goggles tend to range anywhere from,
14 what I've seen, \$10,000 to \$15,000 depending upon which one you
15 buy, depending upon how many of them you buy. The cockpits will
16 range anywhere from, I've seen \$15,000 up to \$160,000, \$180,000 on
17 a larger multiengine aircraft like a 430, S-76, things like that.

18 MR. GUZZETTI: And Mr. Kallenbach, in terms -- when he
19 says cockpits, does he mean compatibility lighting on the -- yes,
20 okay.

21 MR. KALLENBACH: Yeah, exactly. The cockpit has to be
22 modified. There's a lot of theory out there that because the
23 goggles have gotten so good that you don't have to modify the
24 cockpit and that's not true. You still have to modify the
25 cockpit, they just happen to work together better now with the

1 better goggles. And that has to be done under an STC process.

2 MR. DOWNEY: Jeff, could I comment on that for a second?

3 MR. GUZZETTI: Sure.

4 MR. DOWNEY: You know, one of the things that all of the
5 manufacturers suffer from is ITAR, the International Trades and
6 Arms Regulation. We cannot equip a cockpit with ANBUS (ph.)
7 compatible lighting off the line. The State Department will
8 absolutely hammer us. So what we've done is we've created an
9 impediment to what -- we would love to equip our cockpits, right
10 off the line, NVG compatible because we can make them day usable,
11 night unaided and night vision compatible with a much reduced cost
12 to the entire industry. But that is an ITAR area. I know the
13 Board just went through a very long, you know -- well, let's put
14 it this way; you've suffered from some of the same things with the
15 State Department. But the goggles, the lighting, itself, the
16 filters, the glass, all of that and the goggles are all ITAR
17 controlled items. So basically, we have to put -- in aircraft
18 that meets all the ITAR rules off the line, so it doesn't make any
19 difference whether it's Eurocopter, Agusta, Sikorsky or us, we
20 cannot put any ITAR controlled items on that aircraft. And then
21 -- but you can STC it and then put it on. But we, as a
22 manufacturer, cannot get clearance on that. So that would be one
23 of those things where a recommendation from the Board that says,
24 based on safety, this would make more sense and less cost to the
25 industry, that would be something we would certainly embrace.

1 MR. GUZZETTI: Okay. And there was a myth slide that
2 you put up, Mr. Kallenbach. It was a slide of --

3 MR. BAXTER: That was me.

4 MR. GUZZETTI: Oh, I'm sorry, Mr. Baxter. I keep
5 getting you confused.

6 MR. BAXTER: That's okay.

7 MR. GUZZETTI: And it was on the slide, but I don't
8 think you talked about it and it was about how night vision
9 goggles are not really useful in urban environments, that there's
10 just too many streetlights and things like that. And in fact,
11 our 2006 study even made a statement to that effect. Can you
12 comment on that or has the technology improved since that --

13 MR. BAXTER: Absolutely. The technology has improved to
14 the point where the goggles are usable in an urban area. One of
15 my biggest customers is law enforcement and when you talk to them
16 about where do the bad guys go, they don't go to a streetlight and
17 hang out underneath it when they run and so they're in the
18 alleyway, they're in the woods. That's where they go and that's
19 where the night vision goggles really help because you can fly
20 over an urban area, look down into an alleyway and you can see
21 down in that alleyway.

22 MR. GUZZETTI: Okay.

23 MR. BAXTER: I know of two law enforcement individuals
24 who found two suspects that ran across the field early in the
25 morning and there was dew on the grass and their footprints showed

1 up with the night vision goggles. That was how they found them
2 and they guided the guys on the ground to the individuals that
3 were hiding.

4 MR. GUZZETTI: Okay. And I've also heard that one of
5 the reasons why night vision devices are aren't being implemented
6 quickly enough is because they need to be certified by the FAA, an
7 individual operator has to get --

8 MR. BAXTER: Yes.

9 MR. GUZZETTI: -- an inspector to kind of certify the
10 program or --

11 MR. BAXTER: But again, that's an STC process and you
12 know, there is a process to follow, but it can take time. It can
13 be a lengthy process and --

14 MR. GUZZETTI: Is part of that because perhaps the FAA
15 is busy, they may not have the resources available or you have to
16 schedule an appointment with them?

17 MR. BAXTER: I wouldn't know. I wouldn't want to speak
18 on why it doesn't get done quicker.

19 MR. GUZZETTI: Okay.

20 MR. BAXTER: I don't know the manpower and the strength
21 and things like that.

22 MR. GUZZETTI: And --

23 MR. BAXTER: I would also add that one of the challenges
24 with night vision goggles is the training requirement.

25 MR. GUZZETTI: Okay.

1 MR. BAXTER: It's a fairly sophisticated training
2 requirement and it is important, in the overall use of those, that
3 they are used properly.

4 MR. GUZZETTI: And then finally, my last question's to
5 Mr. Shaver. This came up at a board meeting that we held last
6 week on the Phoenix electronic news gathering helicopter
7 collision. There was discussion about what is the difference
8 between an RTCA standard and a TSO, and I think -- I tried to get
9 -- I tried to elicit the answer indicating that an RTCA gives
10 performance standards but a TSO takes those and tells a
11 manufacturer how to build a box. But can you -- is that a correct
12 answer? Can you elaborate on the process?

13 MR. SHAVER: Yeah, basically. RTCA activity is a
14 consensus group where all the manufacturers and different groups
15 of people get together and they come up with a minimum operational
16 performance standard. The TSO, itself, is an approval that allows
17 the person to manufacture those parts for installation on the
18 airplane, so it provides design approval as well as production
19 approval for that part.

20 MR. GUZZETTI: Okay. That's all the questions I have,
21 Mr. Chairman.

22 CHAIRMAN SUMWALT: Thank you. Mr. Cash, Mr. Jacky,
23 anything else from the Technical Panel?

24 (No audible response.)

25 CHAIRMAN SUMWALT: Great. We'd like to take a break.

1 Let's come back at 3:20. We are in recess.

2 (Off the record.)

3 (On the record.)

4 CHAIRMAN SUMWALT: You guys are great coming back on
5 time, thank you. We are back in session and we will now begin
6 with the parties questioning the witnesses and Mr. Harris, I
7 assume, since you have a representative as a witness, would you
8 prefer to go last or does it matter to you?

9 MR. HARRIS: We'll be happy to go last, thank you.

10 CHAIRMAN SUMWALT: Yes, sir. Absolutely. So with that
11 in mind, we started with PHPA last time so this time it will be
12 AAMS to begin.

13 PARTY QUESTIONS

14 MS. KINKADE: Thank you, Mr. Chairman. And I also want
15 to thank all of the witnesses. This has been an extremely
16 informative session and my medical colleagues will appreciate --
17 I'm just a nurse and I've absolutely learned a whole lot of
18 information here, so thank you. Mr. Kallenbach -- and part of
19 this question is maybe also more than just for me, but it seemed
20 like you were using some terminology interchangeably, the Enhanced
21 Ground Proximity Warning System along with the HTAWS along with
22 the synthetic. Can you elaborate a little bit on what the
23 differences are between those?

24 MR. KALLENBACH: Sure, I'd be happy to. And thanks for
25 being a nurse. That's good. So if you think about -- most of the

1 time, when people refer to terrain awareness, it's just terrain,
2 okay. So we want to make sure that when we refer to EGPWS, people
3 realize that it's not terrain awareness, but it's terrain, it's
4 obstacles, other things that would be in the database, all right.
5 So that's the first difference. And then, within the EGPWS, which
6 is a Honeywell proprietary system, there's a series of functions
7 and features that we put in that, in terms of things like how you
8 calculate geometric altitude.

9 I mean, you can calculate altitude of the helicopter a
10 number of different ways. We like to believe that the way we do
11 it is better and so that's one of the differences in that
12 nomenclature. Now, all of the systems require a terrain database
13 and obstacle information. What synthetic vision does is it takes
14 the same data that we use in our EGPWS system and what it does is
15 it renders that data in a three-dimensional view on a two-
16 dimensional flight display so you can actually see the data that
17 you're flying over and that would be the case whether it's in a
18 helicopter or in a fixed wing aircraft. Then what we do is we
19 overlay the primary flight display information that a pilot would
20 see on top of that synthetic vision rendering. So you saw the
21 video that we used?

22 MS. KINKADE: Um-hum.

23 MR. KALLENBACH: And on the left side, the left side of
24 that, where you were actually flying across the terrain is the
25 type of view that you would get out of a synthetic vision system.

1 So it's constructed from data, rendered in three dimensions on a
2 two-dimensional display and then what we do is then we overlay
3 that primary flight information like altitude, air speed, heading,
4 all the kinds of things that you want to see and you get the
5 picture like I showed you for helo synthetic vision. Imagine
6 that's full motion video as you fly by it, does that help?

7 MS. KINKADE: Um-hum. Yes, sir. It sure does. Thank
8 you.

9 CHAIRMAN SUMWALT: So let me make sure I've got this
10 right. So what's the difference between TAWS and EGPWS? And as I
11 understand it, Honeywell invented EGPWS. When the government went
12 out and mandated EGPWS, since that was patented by Honeywell, the
13 generic name for EGPWS is TAWS, is that correct?

14 MR. KALLENBACH: That's the generic name, but that's --

15 CHAIRMAN SUMWALT: So they're the same?

16 MR. KALLENBACH: Well, they're not the same.

17 CHAIRMAN SUMWALT: Okay.

18 MR. KALLENBACH: That's the generic name. I don't know
19 what kind of cookies you buy, but you know, you can buy generic
20 cookies or you can buy the really good cookies.

21 CHAIRMAN SUMWALT: Right. Okay.

22 MR. KALLENBACH: Sorry, sir.

23 CHAIRMAN SUMWALT: Okay, good. So it's safe to say that
24 EGPWS and TAWS are pretty much synonymous. When we talk about
25 mandating TAWS, EGPWS would fit that bill?

1 MR. KALLENBACH: The way I would say it, sir, is that
2 when you talk about mandating TAWS, helo-TAWS, EGPWS is compliant
3 to that mandate but there may be additional features and functions
4 that may not be in the mandate.

5 CHAIRMAN SUMWALT: Okay, thank you.

6 MR. KALLENBACH: Does that help, sir?

7 CHAIRMAN SUMWALT: It does, thank you.

8 MS. KINKADE: Thank you for helping me clarify that. Do
9 you know how many other manufacturers build HTAWS or systems that
10 would be compliant with HTAWS requirements?

11 MR. KALLENBACH: I can't speak specifically if they are
12 compliant with the TSO that was recently issued, which was part of
13 the MOPS that was agreed to by the RTCA. I can say that there are
14 at least two other manufacturers of systems that advertise
15 themselves as helo-TAWS.

16 MS. KINKADE: So do you know if there would be any
17 restrictions in terms of a supply and demand should this
18 requirement be implemented in terms of the operators and the
19 programs and the services being able to get these in a reasonable
20 timeframe?

21 MR. KALLENBACH: In terms of it were a mandated item, I
22 don't believe that there would be any source of constriction
23 within the supply of an EGPWS system. There could potentially be
24 some constraints in the upgrade of the helicopters because when
25 you put your helicopter in for an upgrade, you know, there is a

1 certain amount of wiring, there's a certain amount of installation
2 that goes into that. Our systems take somewhere between 50
3 and 100 hours to install, so they can be done in the course of a
4 short week or a longer week depending on the helicopter and the
5 type of system that's installed.

6 So the Mark 21 system, the more basic system, takes 50
7 to 80 hours to install. The more complicated Mark 22 takes
8 somewhere between 100 and 120 hours to install. Our belief would
9 be if there were a constriction in the supply base it would
10 probably be in the retrofit of aircraft, but as somebody mentioned
11 earlier there's a little bit of a slack in demand right now, so if
12 it were relatively near term, I don't think that would be an
13 issue.

14 MS. KINKADE: Great, thank you. And one more question
15 for you. During your presentation you were talking about some of
16 the newer technology coming. Would it be fair to say that
17 helicopter specific Enhanced Ground Proximity Warning Systems are
18 fairly new. You referred to a lot about the fixed wing and that
19 there are some definitely unique requirements for the low-level
20 flying. Would that be a fair statement? And maybe it's not.

21 MR. KALLENBACH: I would say -- well, I would say in the
22 case of helo-EGPWS, I mean, we certified our systems in 2001, so
23 they've been certified and in operation for the better part of
24 eight years, so I would say in that case the systems are not
25 terribly new and they're also based on technology that we

1 developed back in the late '80s and early '90s, so I think those
2 are pretty sophisticated systems. I would say that in the case of
3 synthetic vision, that's definitely something new and the
4 application of that, the helicopter is new and in advance.

5 I would say that in terms of collision avoidance -- I
6 didn't talk too much today about collision avoidance which -- up
7 to aircraft that potentially could collide with each other. But I
8 think in that case, that technology is still in development. One
9 of the areas that we would very much like to see the FAA continue
10 to pursue more quickly is the implementation of ADS-B technology,
11 which is Automatic Dependent Surveillance Broadcast. And so we'd
12 like to do that for a couple of reasons. One is we think that's a
13 much more sophisticated high-fidelity system for position of
14 aircraft and at the end of the day, the helicopter, in it's low,
15 slow, more maneuverable mode really needs that level of technology
16 which is much more sophisticated and much higher fidelity than
17 what the current TCAS standard provides. So that would be an area
18 that I think the FAA could be very helpful if they would move out
19 more quickly on the implementation of ADS-B and the industry would
20 move out more quickly on the application of that technology
21 specifically to helos.

22 MS. KINKADE: Thank you. This next question, I might
23 just go right across the panel and hopefully you guys can keep it
24 brief because I still have a few more and we're on a time -- we've
25 been hearing a lot about technology and some of it, you know, all

1 incorporated into one box but others, it sounds like kind of goes
2 across the cockpit. This kind of going down to human factors line
3 of thinking. So is there any concern or how are you all thinking
4 about in terms of the workload that all of this input is for the
5 pilots and specifically with HEMS pilots.

6 You know, they're getting a lot of information from
7 dispatch, from ATC, from the ground, you know, giving them
8 information; now, they're also getting all this information
9 terrain/terrain, the night vision goggles, you know, there's just
10 a lot, it seems -- and again, I am just a nurse but I'm just
11 wondering, in terms of the workload, how do we assure we're not
12 putting more input onto the pilots where the benefit is starting
13 to decrease?

14 MR. KALLENBACH: So at least from the standpoint of how
15 we do it at Honeywell, one of the things that we try very, very
16 hard to do is to only implement technology to give pilots
17 information at the time they need it. So for instance, the
18 warnings that you heard, when you hear an EGPWS warning, you need
19 to respond to it, okay. It's not just talking to you. I would
20 say that in the case of synthetic vision, same kind of thing.

21 We're trying to make the environment more situational-ly
22 aware and more contacts based. One of the things that I would
23 cite is kind of the simplicity that we try to use when we
24 implement these systems. Both EGPWS and synthetic vision don't
25 require any training of the pilot. Just a familiarization is all

1 they got. So it's one of those systems which is so intuitive and
2 so easy to use, you don't really have to have a lot of recurrent
3 training and it's available to the pilot and the context does
4 change the way that you view the information.

5 MR. BAXTER: I would have to say as far as the NVGs go,
6 the FAA did a study and I can't recall the exact date, but one of
7 the statements on the first page talks about the fact when
8 properly trained and properly employed, night vision goggles
9 reduce pilot workload and increase situational awareness. So I
10 think, you know -- I don't believe that the NVGs inhibit progress
11 or increase workload, I think they decrease workload.

12 MR. DOWNEY: I think what I would say is that one of the
13 things that we would like to see is a better integration in the
14 cockpit of all the systems and that -- and necessarily, that's one
15 of the things that we key on. You know, we have a program I won't
16 talk about, but right now the biggest thing that we are looking at
17 is making sure that the situational awareness and the cockpit
18 workload goes down because if that doesn't solve the problem, then
19 that's not a solution we want to look at. So that's something we
20 are very, very keen on in terms of the work loading and we're
21 trying to put this into an environment especially given that both
22 airborne law enforcement and EMS and ENG are all operating
23 basically single pilot, so that's been the key to any of the
24 integrations that we're looking at and it's right at the top of
25 our list.

1 MR. BATCHELLER: I guess from the perspective of Data
2 Acquisition Systems as it pertains to flight operations, quality
3 assurance or health -- condition based maintenance, vibration
4 monitoring systems, health and usage monitoring systems, the
5 design intent of those systems is, by and large, to provide
6 information post-flight or pre-flight, such that the operator of
7 the aircraft never sees any indication from the equipment
8 throughout the course of flight, itself, because there's really
9 nothing the operator could do about any of those indications and I
10 think that'll probably remain design convention for the long term.
11 I anticipate that other recorder manufacturers on this panel would
12 concur with that.

13 MS. KINKADE: Great, thank you. Mr. Baxter, you talked
14 about --

15 CHAIRMAN SUMWALT: I'll tell you what, Ms. Kinkade, why
16 don't we do this? We're at about -- and I'll admit I did jump in
17 there and interject a question during your period, an unsolicited
18 question. But why don't we -- there's been about 10 minutes right
19 there.

20 MS. KINKADE: Okay.

21 CHAIRMAN SUMWALT: What I'd like to do is let's go ahead
22 and I'm trying to keep the first round within about 10 minutes
23 each, but we will take -- we'll make provisions. We're doing fine
24 on the time and again, I think it's important that since we're
25 gathered here that we get the information on the record. Why

1 don't we do a full first round and then we'll have up to a
2 five-minute per party second round because we do have the time
3 now, so is that acceptable? Maybe, perhaps, some of the questions
4 that you were going to ask will be asked by others so we'll move
5 on the NEMSPA.

6 MR. SIZEMORE: Thank you, Mr. Chairman. Thank you,
7 panel. Mr. Kallenbach, is there a particular environment that the
8 EGPWS is tailored to, be that day VFR, night VFR, IFR, any one
9 particular of those that would be better suited for that device?

10 MR. KALLENBACH: I would say no. The device is designed
11 to be active in all situations. VFR, night VFR, IFR, it's
12 designed to be on all the time and if it's not on, if it's
13 inoperative, there's either an oral warning in the case where you
14 don't have a display or it's displayed on the front panel of the
15 display that says terrain --

16 MR. SIZEMORE: Okay. You mentioned that it's got an
17 inhibit switch on it. Does the device, itself, limit the use of
18 that or is it a situation where someone could inhibit it and
19 basically leave it inhibited for a long period of time?

20 MR. KALLENBACH: There is some guidance in the pilot
21 manuals on how the inhibit switch should be used. With the
22 display that is part of the minimum operating standard, the
23 display is actually required as part of the TSO. So in an
24 environment where you have a display, the display is always active
25 so that even if you have the inhibit switch on, you will be seeing

1 terrain either, you know, black, green, yellow or red and so the
2 only thing that you won't get is the oral warning and there's some
3 very clear criteria about when to use the inhibit switch in
4 obstacle mode or in the low altitude mode.

5 MR. SIZEMORE: Okay. And you alluded to the fact that
6 airports and stuff would still be in the database. Can you
7 describe a little bit about going into a remote scene area, are we
8 going to come up with a alerts when we're approaching in that area
9 trees, things like that?

10 MR. KALLENBACH: No, you shouldn't receive remote
11 location alerts just because of trees. You'll receive -- I mean,
12 you'll receive information based on the terrain status, your
13 descent rate, your forward velocity and how you're maneuvering,
14 but those are consistent with what we think is a proper operation
15 of a helicopter. So I mean, if you're in a tree line and your
16 forward velocity's about to take you into that hill, if you have
17 the inhibit switch on you're going to -- I mean, you know you're
18 right next to the hill, hopefully, or you shouldn't have it on.
19 And if you are about to fly into that hill, you should get an oral
20 warning that would tell you hey, you've got a problem here.

21 MR. SIZEMORE: Okay, but a normal profile into a
22 confined area --

23 MR. KALLENBACH: Normal profile, you should not have an
24 issue.

25 MR. SIZEMORE: Okay.

1 MR. KALLENBACH: One question. Can we refer back to the
2 exhibits that we submitted during this period? Because it might
3 help with your question.

4 CHAIRMAN SUMWALT: Yes.

5 MR. KALLENBACH: I don't really know that that's
6 necessary and time constraints --

7 MR. KALLENBACH: I would just say just call up Slide 4
8 and we'll just leave it up there so you can study it a little bit,
9 but it gives you a flavor for when you would get certain warnings,
10 so it would be Exhibit 8 kilo, Page 4.

11 MR. KALLENBACH: Okay. And just one other quick
12 question, in your statement, you're not saying that NVGs and TAWS
13 should be used only together or anything like that? One of the
14 statements was that they should enhance one another.

15 MR. KALLENBACH: Yeah, I think what I wish to say and
16 hopefully I said it, was that we think that helo-EGPWS or helo-
17 TAWS is an important piece of safety equipment because it really
18 fundamentally will help break the chain of events that could cause
19 an accident. I also went on to say that we think that enhanced
20 vision systems, especially when used with either EGPWS or
21 synthetic vision are a very nice complement to each other because
22 synthetic vision is a rendering of data in a database; enhanced
23 vision systems or night vision type systems are ways of enhancing
24 the true environment outside. The difficulty with just night
25 vision goggles alone is that if you're in heavy weather or fog or

1 snow or rain, they're not going to be nearly as helpful by
2 themselves as they would be if you had them combined with a
3 terrain-based awareness system.

4 MR. SIZEMORE: Okay. Mr. Baxter, along the same lines
5 there, one of the things that you mentioned is that we shouldn't
6 be using necessarily that piece of equipment in the environment
7 that he just talked about. Your thoughts on that?

8 MR. BAXTER: Well, my opinion on it is that if you are
9 in that environment and you're down low to the ground with low
10 visibility, I think you need to consider why you're out there, not
11 necessarily the time to be there. It's not to take away from the
12 equipment that Honeywell has come up with. I think it's a
13 wonderful device and it should be used, you know, quite often but
14 I still -- you know, one of our problems is we're out there in low
15 visibility, low ceiling and should we be there.

16 MR. SIZEMORE: One of the limitations that you talked
17 about on the NVG, specifically, was field of view. Can you talk a
18 little bit about field of view versus field of regard and
19 training, specifically, how training should be designed to --

20 MR. BAXTER: Right. Well, one of the issues is field
21 of view. Forty degrees generally is the field of view. If you're
22 using a 25 millimeter lens, that means that if the inside lens is
23 25 millimeters from your eye, you should technically get a 40
24 degree field of view. That depends on where you place the
25 goggles. I tend to put my goggles further away from my face

1 because it gives me greater peripheral vision to see other things
2 that are going on and I believe that that vision, that peripheral
3 vision, is as important as what you see through the goggles. One
4 of the hardships with goggles is getting people to recognize that
5 peripheral vision, okay.

6 So it's very important, when you're training somebody,
7 to point out the things that are going by the aircraft and tell
8 them don't turn your head, but I want you to see it with your
9 peripheral vision as it goes by and it's very important to get
10 them to realize that. As far as field of regard, that is the
11 process of moving your head, scanning left and right. One of the
12 things that I see quite often -- in fact, one of the documents,
13 that's one of the exhibits, it mentions an aggressive scan
14 technique. If I move my head very quickly here in this chair
15 right now, I'm probably going to feel like I'm going to fall over
16 so therefore, why do we promote aggressive scan technique with the
17 goggles? It's a nice, smooth transition left to right, looking at
18 the things that are important. I tell people all the time if
19 you're in a field and you're hovering and there's a big oak tree
20 to the right, as long as you have your visual queues, chances are
21 you don't have to keep scanning at the oak tree because it's not
22 going to move, only you're going to move so if you make sure
23 you're not moving by getting other visual queues, that's not
24 something you have to constantly stare at.

25 MR. SIZEMORE: But training is the key to field of

1 regard which is going to mitigate the limitations of the 40 degree
2 field of view?

3 MR. BAXTER: Absolutely.

4 MR. SIZEMORE: All right, okay.

5 MR. BAXTER: Absolutely.

6 MR. SIZEMORE: What kind of feedback do you all get at
7 the academy from pilots that you've trained that go out and
8 utilize the NVGs?

9 MR. BAXTER: Most of them can't believe they've been out
10 there doing it without them. That's the general feedback. It's
11 very, very positive. I think I made the comment before, we've
12 never had a customer not make it through the course. We've had
13 some that we struggled, but we got them to a standard and most of
14 it was in the higher-type tasks, the autorotation, the hovering
15 out of ground effect for -- not that we teach hovering out of
16 ground effect, we use that as a training tool to develop a pilot's
17 ability to see the visual queues that are around him or her. But
18 we've never had anybody come out of it and not make it through the
19 class.

20 MR. SIZEMORE: Okay. And you mentioned having someone
21 else inside other than the pilot on night vision goggles and while
22 we agree that it's important, do you think that's a hundred
23 percent necessary and I'll qualify that by saying would it be
24 safer to allow that single pilot, for instance, to utilize NVG
25 technology going into a remote area as opposed to limiting him to

1 only what he could see with his naked eye?

2 MR. BAXTER: I recently did a pretty in-depth review of
3 the survey that you all sent out and I believe that, in looking at
4 the responses in that survey, the majority of the people felt it
5 would be safer to have crews in the back with the goggles on. As
6 I said before, do I think it can be done safely with just one
7 pilot or one person on the goggles? I do. I think that just adds
8 safety to it and you know, I think that's a huge benefit.

9 MR. SIZEMORE: Okay, thank you. I'm out of time,
10 Mr. Chairman.

11 CHAIRMAN SUMWALT: Thank you. And we will come back for
12 a second shorter round, so good questions. Thank you,
13 Mr. Sizemore. We'll go now to Air Methods.

14 MR. YALE: Thank you, Mr. Chairman and the panel.
15 Mr. Baxter, from a risk mitigation standpoint, which would you
16 choose, NVG or HTAWS if you're put in that position?

17 MR. BAXTER: Personally, with my experience that I have
18 with goggles, I would choose the goggles.

19 MR. YALE: And why?

20 MR. BAXTER: It's probably that's what I'm most used to
21 and I, again, go back to the fact that it is a visual
22 representation. You're seeing what's out there. It's right there
23 in front of you.

24 MR. YALE: Some of the 135 operators have FAA approved
25 training programs allowing them to provide the same training that

1 the Bell training center provides?

2 MR. BAXTER: I believe some do. I don't -- I can't
3 speak on what depth their training program goes to as far as
4 emergency procedure training, but yes, I know that there are
5 groups out there that do have that, yes.

6 MR. YALE: When you talked about the cost of night
7 vision goggles, you talked about the price of an individual unit
8 and the price of converting the cabin, but there's more cost, at
9 least, in current situations with additional goggles required by
10 other crew members and the training costs. Would you give an
11 estimate as to what that total cost would be for implementation on
12 aircraft?

13 MR. BAXTER: Well, certainly it would be hard to give a
14 cost. I don't know what size you're talking about. Are we
15 talking -- one operator I know of has two aircraft and they have
16 four pilots, so --

17 MR. YALE: Per aircraft is basically what I'm thinking,
18 but the training cost for an aircraft crew.

19 MR. BAXTER: Well, per aircraft, you know, as far as the
20 goggles, \$10,000 to \$15,000 a piece and again, depending upon what
21 the aircraft is, you're looking at anywhere from 15 for a single
22 engine smaller aircraft, \$15,000 to \$80,000 for a cockpit
23 modification. If you're going to do the training portion of it,
24 if you come to Bell, let's say a 407, it's approximately \$14,000
25 to \$15,000 for one pilot, whereas if we come to your location and

1 do the training, it would be a mandate rate, which is considerably
2 lower.

3 So I would -- in order to modify an aircraft, I would
4 say roughly 407 aircraft modification, maybe \$50,000 for the
5 cockpit, \$40,000 to \$50,000; two sets of goggles, \$20,000
6 to \$30,000; and then training for, let's just say, four pilots,
7 somewhere in the vicinity of probably \$15,000 if we go to their
8 location and obviously, much more if they come to our location.

9 MR. YALE: Okay. Thank you, sir.

10 MR. BAXTER: Yes, sir.

11 MR. YALE: Next question will be for Mr. Kallenbach.
12 The TSO flight data recorders and the cockpit voice recorders that
13 you mentioned, are those crash worthy in the way that they've been
14 built?

15 MR. KALLENBACH: Yes.

16 MR. YALE: Okay. What is the weight of the Honeywell
17 FCRCV are roughly?

18 MR. KALLENBACH: I didn't bring the spec sheet with me.
19 I'll have to get back with you on that one.

20 MR. YALE: Okay. How does Honeywell notify the industry
21 when an update to the basis is released?

22 MR. KALLENBACH: You know, we have a standard release,
23 so all the user information is on file and we basically send the
24 CDs out to them. It's an automatic cycle.

25 MR. YALE: It's an automatic update to the operators

1 that are operating. What would your estimate be as far as the
2 number of -- and I'd like to ask the question two ways. One would
3 be helicopters that are not in the Gulf that are using EGPWS and
4 what percentage of those are EMS, roughly?

5 MR. KALLENBACH: You tossed me a curve ball on the not
6 operating in the Gulf.

7 MR. YALE: I'm just thinking of the challenges that we
8 deal under. HEMS is a little different than flying over water on
9 the Gulf.

10 MR. KALLENBACH: Right. In terms of helo EMS, we
11 believe the number -- and we don't have exact statistics because
12 there's obviously dual use aircraft in this, but we believe that
13 about 200 of the 750 EMS helicopters are equipped with some form
14 of helo-EGPWS.

15 MR. YALE: Okay.

16 MR. KALLENBACH: So that could be either Mark 21 or
17 Mark 22. The retrofits have been mostly Mark 21s. It's equipment
18 I'm pretty sure you guys are familiar with, so that would be -- I
19 don't know on the exclusion around operating in the Gulf.

20 CHAIRMAN SUMWALT: Could I ask you to repeat those
21 numbers because it's a little hard to hear so repeat those.

22 MR. KALLENBACH: Oh, sorry about that. I really do have
23 to be close. What we think is that of the 750 or so EMS
24 helicopters operating in the U.S. -- and there's obviously some
25 movement in that number because of dual use -- that

1 approximately 200 of those are currently equipped with some form
2 of helo EGPWS, either Mark 21 or Mark 22. So that would give us a
3 rate of kind of 28 to 30 percent incorporation.

4 MR. YALE: Thank you. Those are all the questions I
5 have for now, sir.

6 CHAIRMAN SUMWALT: I'm sorry, what did you say?

7 MR. YALE: I'm sorry. I said that's the questions I
8 have for now.

9 CHAIRMAN SUMWALT: Thank you. I guess I am getting very
10 hard of hearing. Thank you. CareFlite.

11 MR. DAUPHINAIS: Thank you, Mr. Chairman. Most of my
12 questions have been asked and answered. I'm not sure where
13 Sandy's going here in a minute, but one of the operators at the
14 table poses a statement, I'm not sure it's a question but I would
15 like comments. A small operator, 15 aircraft, needs to equip his
16 aircraft with NVGs is where we're going. Hello? Small
17 operator, 15 aircraft, estimation for the cost to modify aircraft,
18 goggles, training, is about \$2 million a year. For a small
19 operator, that could be the entire net revenue for that year and
20 it could take a number of years to institute this. This is more
21 comment or as much comment for the Board, that this isn't
22 something that that small operator could do. Do we see the cost
23 of this equipment coming down?

24 MR. BAXTER: Well, I'm not a group that modifies
25 aircraft, we don't do that at the training academy, and I also

1 don't see the goggles, so I don't know -- you know, I can't speak
2 exactly on where the costs are, where they're going, that's why I
3 gave some broad numbers there on the cost. Certainly, though, the
4 prices have come down. I remember a 206B model that I flew to the
5 port in Virginia, that it was going overseas with an NVG cockpit
6 and it cost \$117,000. So it has certainly come down quite a bit,
7 but as far as exact direction, where it is right now and where
8 it's expected to go, I can't tell you exactly.

9 MR. DAUPHINAIS: I appreciate your attempt.

10 MR. DOWNEY: Well, one of the ways that the cost could
11 be driven down is the fact that you're in a completely aftermarket
12 situation and you end up with it as soon as you install a box,
13 even if it's enhanced ground box, and you know, that comes in the
14 aircraft, then you've got to do an NVG mod to it, now you've got
15 this complete system where every time you take a gauge out or
16 anything else, you got to make sure that it's been mod-ed to the
17 same standard, whereas if we could have one set of gauges out
18 there, TSO'd, built to an NVG standard --

19 MR. DAUPHINAIS: Off the production line?

20 MR. DOWNEY: Off the production line. Your costs would
21 go down because what's happening is you've got uniqueness every
22 time we mod a cockpit. If you went to HAL (ph.) or anybody else
23 for a gauge and it was already NVG compatible and wired up with
24 all the right stuff in it, the economics speak for themselves.

25 MR. DAUPHINAIS: And it's kind of getting to my point is

1 that we really need to be looking to the feds to streamline the
2 process and allow us to do the modifications in a different way
3 and the approval process in a different way.

4 MR. KALLENBACH: The way I would say it is that, you
5 know, because these are electro-optical devices, I don't see that
6 there's an inherent sort of cost reduction play like you would
7 have in a computer system where the more volume you get or as the
8 technology advances, the cost typically goes down. Electro-
9 optical systems tend to decrease in cost a lot slower that way.

10 There's not a big volume play. So that's from an
11 industrial economic perspective. I would also say that you're
12 absolutely right, that the standard is really the issue. If you
13 could get a standard, then you could get a breakthrough in the
14 cost because then you could get a single set of research and
15 development yielding a single set of equipment that you could then
16 get some volume on.

17 MR. DAUPHINAIS: Well, I'm glad you spoke up,
18 Mr. Kallenbach. Mr. Baxter addressed the price issue for NVGs,
19 what's the cost for the HTAWS or the -- approximately?

20 MR. KALLENBACH: So we have two systems right now
21 available for helo-EGPWS, the Mark 21 installed is between \$25,000
22 and \$30,000 per unit. The Mark 22 is between \$100,000 and
23 \$120,000 per unit depending on how the aircraft is equipped. Most
24 of the Mark 22s are being installed by OEMs in the factory prior
25 to delivery. Most of the Mark 21s are going in as retrofit.

1 MR. DAUPHINAIS: My fleet's not in the factory anymore,
2 so the \$120,000 --

3 MR. KALLENBACH: Would be if you took it to a service
4 center.

5 MR. DAUPHINAIS: That's installed cost?

6 MR. KALLENBACH: Um-hum, that's installed.

7 MR. DAUPHINAIS: Okay.

8 MR. KALLENBACH: The actual cost of the unit -- the
9 actual price of the unit, the Mark 21 price is about \$16,000. The
10 Mark 22 is fifty-one six, \$51,600. So you can get a sense of
11 approximately how much of that is service center labor and
12 installation, checkout, flyaway.

13 MR. DAUPHINAIS: You mentioned the man hours and the
14 down time -- I'm assuming that 120 hours was man hours for --

15 MR. KALLENBACH: Yes, that's right.

16 MR. DAUPHINAIS: All right. I just wanted to be clear.

17 MR. KALLENBACH: No, no, no. Well, it depends on
18 which 120, so I'm clear. The box, itself, for a Mark 21 is about
19 \$16,000.

20 MR. DAUPHINAIS: I'm sorry, not the cost, the
21 installation time and down time. You used the number of 120
22 hours.

23 MR. KALLENBACH: Yeah.

24 MR. DAUPHINAIS: I'm assuming that was man hours not --

25 MR. KALLENBACH: That's exactly right.

1 MR. DAUPHINAIS: Okay.

2 MR. KALLENBACH: That's exactly right.

3 MR. DAUPHINAIS: Not down time hours?

4 MR. KALLENBACH: That's not down time hours.

5 MR. DAUPHINAIS: Okay.

6 MR. KALLENBACH: That's man hours. So it could be done
7 in as little as, you know, four days or --

8 MR. DAUPHINAIS: Sure. I just wanted to clarify that.
9 I heard the question on the wire strike a little bit different and
10 then the conversation went to wire strike kits. I just want to
11 make the comment that wire strike kits are not avoidance, okay.

12 MR. KALLENBACH: I would agree.

13 MR. DAUPHINAIS: Okay. And while I appreciate law
14 enforcement's use of night vision goggles in the urban
15 environment, CareFlite, anyway, doesn't land in alleys and woods,
16 so I just wanted to make that point. Mr. Batcheller, you
17 mentioned use of your system for behavioral changes and you used
18 the lower-than-expected flight envelope that the one operator
19 found out that his pilots were doing. What other parameters could
20 be monitored with your system that would affect -- or what type of
21 other behavioral changes?

22 MR. BATCHELLER: Sure, I'll speak a little bit generally
23 for this type of equipment. I think that this space is going to
24 see increasing number of manufacturers that manufacture these
25 types of devices, so I think competition's a good thing. In

1 general, with inertial measurement equipment and limited aircraft
2 interface, you're getting the altitude of the aircraft, you're
3 getting accelerations of the aircraft, rates of descent, rates of
4 ascent. You're getting indicated air speed, true air speed,
5 equivalent air speed, altitude, and the things that people monitor
6 with that is, is how someone's coming in for a landing, their
7 pitch altitude on landing, whether or not, you know, a
8 particular --

9 MR. DAUPHINAIS: Can I interrupt you for a second?

10 MR. BATCHELLER: Sure.

11 MR. DAUPHINAIS: That's through accelerometers in your
12 unit, not through tie-ins to the aircraft or --

13 MR. BATCHELLER: Generally speaking, the simplest way to
14 measure rate of descent is just with GPS altitude between 4 and 10
15 hertz, which is pretty accurate, actually, especially if the
16 equipment is moving. And people have very successfully identified
17 issues with aircraft coming in pretty hot in the Gulf or in
18 utility or EMS ops and have worked to curb those issues. And
19 that, I think, is, for our fleet at present, the most common
20 high-risk issue is actually tied to the aircraft's rate of descent
21 under 500 feet.

22 MR. DAUPHINAIS: So yours is an after-flight review of
23 the flight or post-accident incident review?

24 MR. BATCHELLER: That's correct. The type of equipment
25 of our manufacturer is focused on collecting information from a

1 large number of fleet assets or from a small fleet, therefore, you
2 know, one to four ships. Go ahead, sir.

3 MR. DAUPHINAIS: Does it tie into any of the systems? I
4 mean, is a recording voice, intercom traffic, external radio
5 traffic, any of that?

6 MR. BATCHELLER: No. Let me, I guess, back up and
7 provide a little bit of clarification and hopefully I can answer
8 your question sufficiently. There's a product of ours that's in
9 production that records at a minimum with power and ground from
10 the aircraft, the altitudes of the aircraft, you know, roll angle
11 pitching, all the aircraft GPS altitude and associated derived
12 para-metrics like rate of descent and that equipment can take
13 additional aircraft inputs, digital inputs like 0-8 (ph.) on wheel
14 switch, analog inputs. You could interface it to, let's say, a
15 torque trans-fuser and run that information into the equipment and
16 you could tee into the aircraft -- static lines and get your air
17 speed. But the minimum installation is just that power and ground
18 and that gives you kind of a baseline of parameters and there's
19 additional analog or digital input line that you could take
20 advantage of to add some things to that depending on the STC for
21 that aircraft or --

22 MR. DAUPHINAIS: Whether it had a 429 bus or whatever,
23 right?

24 MR. BATCHELLER: Correct.

25 MR. DAUPHINAIS: CareFlite uses outer link and we're

1 going to voice and video recording and we're doing all of that.
2 My concern, without TSOs and without some standard in the
3 industry, that we're either going to miss the boat or we'll be
4 there, we've got Bell coming up with something, we have your
5 company coming up with something. I guess this is for the panel
6 to include the FAA. Is there any work among manufacturers and the
7 OEM folks, the FAA, for a standard in this at any time soon?

8 MR. BATCHELLER: I guess I'll take that question first
9 and hopefully some others here can elaborate. At present, EURO-k,
10 which a regulatory body in Europe, is working through what they
11 call Working Group 77 on a standard called ED155. The current TSO
12 for data acquisition equipment on Part 29 aircraft was
13 extrapolated from ED112 which was EURO-k's first working group and
14 effort to create a standard, a minimum operational performance
15 standard for flight data recorders on larger aircraft and this
16 effort is associated with flight data recorders on smaller
17 aircraft. I could, or a number of folks here, I think, could
18 share with you the current draft of ED155 that addresses some
19 minimal performance issues, minimum survivability issues, but that
20 document may be subject to change before finalization later this
21 year.

22 MR. DOWNEY: Going back earlier on the rotorcraft
23 directorate in my previous life, I was working on a policy called
24 NORSEE, basically Non-Operational Required Safety Enhancement
25 Equipment, basically, no harm/no foul. But getting the mandate

1 that we basically ascribed to as getting something on the aircraft
2 because it didn't meet the TSO because of the cost requirements
3 and the weight penalty, so getting anything -- so actually,
4 Appareo was one of the first ones to avail themselves of that
5 ability. So basically, 1301, 1309 does its intended function, no
6 unsafe feature. So as long as it met those two criteria with some
7 other things in there in terms of a couple other standards, that
8 was the whole idea was get it on the aircraft and that's how --

9 MR. DAUPHINAIS: Right. But when we're looking at a 10-
10 year process to get this stuff approved, then I mean, it becomes
11 problematic for us to meet the requirements of the NTSB or the
12 FAA.

13 MR. SHAVER: If I could, the 10-year process is actually
14 unusual in rule making and rule making is not the only way to get
15 things on the aircraft. There are STCs that, depending on the
16 resources you have, it's through a DAS or an ODA, during a
17 previous life I worked for United Airlines. We were able to do
18 STCs in three to four months.

19 MR. DAUPHINAIS: We still have to have a standard for
20 the equipment that we're going to STC onto the aircraft.

21 MR. SHAVER: Not necessarily, right. That was the whole
22 point was there wasn't a particular standard because if you
23 brought the bar to a TSO level, it was going to take a long time
24 to get a standard out there that people would agree to. So what
25 Mark Schilling (ph.) and the folks at the Rotorcraft Standards

1 staff said was look, why don't we just come up with something that
2 gets this safety enhancement equipment on the aircraft and it's
3 got to make sure that it meets the electrical loads analysis and
4 it won't burn up and a couple of those kinds of things. But
5 basically, no harm/no foul, so if it didn't work you could still
6 dispatch the aircraft. So that was the whole mandate behind that
7 type of a system.

8 MR. DAUPHINAIS: Well, there's a whole MAL issue there,
9 then.

10 MR. SHAVER: But it's not an MAL item.

11 CHAIRMAN SUMWALT: Let's wrap up this line of
12 questioning here and then we can come back, is that okay?

13 MR. DAUPHINAIS: All right.

14 CHAIRMAN SUMWALT: Any clarification points before --
15 thank you. We'll come back for a second round. We'll go to HAI.

16 MR. ZUCCARO: All righty, Mr. Chairman. Mr. Batcheller,
17 I was just wondering, your device, does it have the ability or do
18 you foresee even entertaining real time transmission data download
19 while the aircraft's in flight or does it do it now?

20 MR. BATCHELLER: Thank you, sir. The device is
21 technically capable of that kind of transmission. Now, there is a
22 meaningful certification challenge in approving a device like ours
23 for that kind of operational mode and we're entertaining how we
24 might overcome such a challenge, but the -- you know, in the
25 interest of full disclosure the ability for us to necessarily

1 certify the product in that operational mode is not certain of
2 victory when approaching the tests that are accompanying
3 supplemental type certification, so we're hoping that the
4 technology can get there, but we're unsure as to whether or not we
5 can meet the -- requirements that we need to and all products of
6 this nature would need to in order to become deployed.

7 MR. ZUCCARO: All right, thank you. Mr. Shaver, I know
8 -- I thought we were talking a 10-year period, but I just heard --
9 you indicated that's unusual, so what do you estimate the real
10 period is?

11 MR. SHAVER: Well, I guess for what? For rule making,
12 for --

13 MR. ZUCCARO: Rule making.

14 MR. SHAVER: Well --

15 MR. ZUCCARO: Regulatory change, yeah.

16 MR. SHAVER: -- it depends on the complexity of the
17 rule, the availability of the standards. There's a lot of
18 different inputs. I mean, if you look at it just from a standard
19 process, rule making can take, for a very simple not-significant
20 rule, two years, two-plus years, up to five to six years on, you
21 know, a significant rule. So it really depends on the complexity
22 and the issue that's being addressed.

23 MR. ZUCCARO: Is there any procedure or protocol that
24 you can actually specify a particular rule making initiative and
25 accelerate it through some process?

1 MR. SHAVER: I don't know if I'm the best person to
2 answer that question, so I don't know of anything right off --

3 MR. ZUCCARO: So it just has to go through the normal
4 administrative process no matter what it is?

5 MR. SHAVER: Well, you know, it's very important that it
6 does go through this process because for emergency issues or you
7 know, there's airway directives that can be issued immediately.
8 So when we're talking about rule making, my personal opinion is it
9 does need to go through all the vetting and all the review to
10 ensure that we're not putting something out or making a rule that
11 shouldn't be made.

12 MR. ZUCCARO: Okay, thank you. Mr. Downey, I'm just --
13 kind of reach back in your previous life in your certification
14 criteria for aircraft and some of the technology we're talking
15 about here is certainly applicable to the situation that we're
16 dealing with and I'd like to follow up on some of the comments
17 made by AAMS previously about the pilot workloads and when you
18 have this technology, and if you're in situations where the --
19 I'll call them a critical environment. You're at low altitude,
20 you have restricted visibility, you know, and basically, you're
21 trying to maintain an inadvertent avoidance of IFR, you know, VFR
22 flight.

23 And among that type of an environment where all your
24 decisions are critical and they're time critical, as well, because
25 of being in obstacles, potentially, what's your thoughts when you

1 look at something like that on a pilot workload basis that now we
2 have this technology that is adding all this information that has
3 to be interpreted, looked at, viewed?

4 MR. DOWNEY: If I were to step back and be the galaxy
5 commander and say how I would fix this?

6 MR. ZUCCARO: Yeah, sure.

7 MR. DOWNEY: You'd have a low-level route structure,
8 IFR-like, GPS ADS-B in and out so that you've got situational
9 awareness. You'd have the route structured just like a super
10 highway system. You hop on one place, you hop off someplace else,
11 throw the goggles down and you finish what you got to go do. But
12 all that needs to be integrated, there's no one-point solution in
13 this. And I commend HAI and their collaboration with the FAA on
14 ADS-B in the Gulf. I think that needs to be proliferated because
15 the way I would look at it -- and I know the challenges of DFW,
16 the Class B airspace. I can't go from Alliance to Addison, you
17 know, direct. They won't let me. The FAA has got to change the
18 airspace structure to allow the most expeditious system, but a GPS
19 route structure where somebody hops on at Point Whiskey, zips
20 across in an IFR obstruction clean environment, hops off at Point
21 Bravo because that's where the hospital is or point in space
22 approach, all the workload issues can be mitigated down to there's
23 a route structure.

24 And there's a reason -- I mean, let's face it, you know,
25 if you're in a Part 121 operation -- I mean, no disrespect, sir,

1 but I mean, the guys up front are -- they're monitoring the
2 systems. There's no reason why we can't have that capability from
3 a workload reduction standpoint in our rotorcraft today. The
4 displays can do it, the technology is there. It's just a matter
5 of the implementation. But it has to be done -- you're going to
6 have to have about six paths running concurrently to allow that.

7 You got to have the airspace, you got to have the
8 technology in there, you got to have the training, got to have the
9 ops specs to do it and my hat's off to the folks in 200, the ops
10 specs stuff that the industry put together, I think it's a long
11 way towards that. But you can build a cockpit where it's single
12 pilot. I used to do single pilot stuff in a previous life in the
13 military on goggles, but it was well-structured, I had a cockpit,
14 I had a nav system that knew what it was doing and I knew exactly
15 where I was going because it was all preloaded in there. Now, I
16 wouldn't want to do that in today's environment because I don't
17 have the backstops that existed in that system. But it can be
18 done. So, you know, back to that whole thing. The workload
19 reduction is not that hard to do, but what we need to have is all
20 the pieces in there that allow us to get there.

21 MR. ZUCCARO: I understand the rationale and the logic,
22 and it would seem that, I think, collectively we need to look at
23 the potential, if you agree, that rather than trying to address
24 and solving the current situation, being in those type of
25 environments and enhancing it with technology, it's to change the

1 environment and prevent getting into that situation to begin with?

2 MR. DOWNEY: Absolutely.

3 MR. ZUCCARO: Okay.

4 MR. DOWNEY: Risk mitigation. You know, I've used the
5 example before with the 160th. The 106th, you know, Special Ops
6 Aviation Regiment, had an abysmal record for years and it was
7 because they were kind of cowboy-ing out there and doing stuff.
8 They had new leadership that came in and said we've got SOPs,
9 we've got standards, we've got risk management and they completely
10 reversed their entire accident/incident rate. And it wasn't like
11 rocket science, it was these are the weather standards, you
12 violate them, you're gone. The same types of issues can be
13 addressed in the civilian market today and afford us the same
14 opportunities to save people's lives. If the weather's not --
15 doesn't meet the minimum, you don't go. End of discussion. You
16 use goggles, you use the en route structure, you use your
17 autopilot, all of those elements.

18 MR. ZUCCARO: Thank you very much. Mr. Baxter, the
19 availability, certainly, of the goggles is an issue that gets
20 discussed and obviously, the industry is favorably viewing the
21 technology using it, the operators are installing the equipment
22 and putting the goggles in. But what is your sense or do you have
23 a sense of what the availability of the goggles are to the
24 operators that want to keep installing or initially install?

25 MR. BAXTER: Well, I know that the timeframe has

1 shortened some. I remember a time when it was close to 18 months
2 to get a set of goggles or get an order filled. ITT and Litton
3 are -- they tend to be backed up quite a bit due to them -- they
4 are supplying -- due to the fact that they're supplying the
5 military with night vision goggles. Nivis Systems, again, who
6 just got their TSO, has, my understanding, a much greater
7 availability. I don't know what the numbers would be, but my
8 understanding is they have a greater availability.

9 MR. ZUCCARO: You don't have a sense of if I order one,
10 a set, today when I would get them type thing?

11 MR. BAXTER: No.

12 MR. ZUCCARO: Okay.

13 MR. BAXTER: I would expect that it would not take very
14 long, though. My understanding is they have plenty to supply.

15 MR. ZUCCARO: Okay. Thanks a lot.

16 MR. BAXTER: Yes, sir.

17 MR. ZUCCARO: Mr. Kallenbach, I'm with you. I want to
18 eat the good cookies.

19 MR. BAXTER: I'm sure I'll get in trouble for that
20 later.

21 MR. ZUCCARO: No, that's okay. The technology of HTAWS,
22 if I understood it, it's a fixed wing TAWS foundation, initially,
23 with the database from there and you've changed the protocols
24 within the technology to address helicopter flight regime,
25 basically?

1 MR. BAXTER: Yeah, that's exactly right. The database
2 and the concept is the same, but the algorithms, the way we use
3 the approach, the way we set up the inhibits, which is the methods
4 by which we calculate things has all been changed and altered for
5 helicopter operations.

6 MR. ZUCCARO: Okay. Would that mean that the displays,
7 alerts and warnings are all available from point of moving out of
8 a hover forward through the whole flight regime at low altitudes
9 where helicopters operate, or does anything have the capability to
10 automatically disable itself if certain parameters aren't there?

11 MR. BAXTER: I'm not sure I understood your question.

12 MR. ZUCCARO: Well, I'll give you an example. The alert
13 system, does it stay active throughout the entire flight regime
14 and airspace or is there an airspeed that if you're below that
15 airspeed the alert will disable itself?

16 MR. BAXTER: Okay. So a couple of things. One, the TSO
17 requires a display to be compliant. The display is not disabled
18 in any regime. In the case of airspeed, there is an airspeed
19 switch and you can either set it, I think, at 50 knots or --
20 excuse me, 60 knots or 70 knots forward speed to disable the oral
21 warning. I'd have to go back and look at the manual and
22 specifics. But in any case, the display is active.

23 MR. ZUCCARO: But am I understanding correct that if you
24 get below that preset 60, 70 knots, the alert warning disables
25 itself when you're slower than that?

1 MR. BAXTER: There is a combination of circumstances
2 that have to occur. I don't think it's just speed. I'd have to
3 go back and do some research to make sure I answered the question
4 properly. I'll be happy to do that, as well.

5 MR. ZUCCARO: Yeah, I'm just curious because that's
6 obviously one of the most critical flight regimes is being below
7 that airspeed and at a lower altitude where you wouldn't have the
8 alert available to you.

9 MR. BAXTER: Right. And so there's a couple of things
10 to make sure that I'm clear on. If, for some reason, let's say
11 you lose GPS signal or something like that, there is a definitive
12 terrain in op, both audible and visible --

13 MR. ZUCCARO: Right.

14 MR. BAXTER: -- that occurs. What you're talking about
15 is essentially kind of a prescheduled alert or a prescheduled
16 disablement?

17 MR. ZUCCARO: Yes.

18 MR. BAXTER: Yeah. Okay, let me go back to do a little
19 bit of research on that and I'll get back with you.

20 MR. ZUCCARO: Thank you. Those are my questions.

21 CHAIRMAN SUMWALT: Thank you, Mr. Zuccaro. PHPA.

22 MR. DUQUETTE: Thank you, Mr. Chairman. We're very
23 interested in all the -- I want to thank the panel for their
24 testimony, but I'd like to focus on, as far as the -- Mr. Baxter,
25 this is one issue, the night vision goggles. It's the first time

1 I've ever had agreement with all the pilots I've ever talked to.
2 Up to this point, I have not run across a pilot that was against
3 night vision goggles, so I think that's definitely an area we need
4 to be going towards.

5 MR. BAXTER: Yes, sir.

6 MR. DUQUETTE: But Mr. Batcheller, I'd like to talk to
7 you about the gathering of data, FOQA and HOM (ph.), is a
8 direction that obviously a lot of operators are going for the
9 purpose of safety. I happen to work for an operator that, in
10 fact, has some of these pieces of equipment. But one question I
11 would like to ask is you mentioned that yours is a self-contained
12 unit, so how many events can you, in fact, track with your piece
13 of equipment?

14 MR. BATCHELLER: I guess I'll address the question in
15 two parts. As everybody here well knows, helicopters are business
16 machines that address a lot of different verticals and the
17 expectations for what constitutes an event, so to speak, something
18 of interest worth triggering on, differs within those verticals,
19 within the emergency medical service community or the pipeline
20 patrol utility community or the offshore community, their
21 expectations for those things are different.

22 And as such, the end use of our products actually
23 defines what, within their SOP, is of interest to track and uses
24 whatever para-metric set of information is available to them at
25 that time in order to do that. Most of our clients track

1 somewhere in the neighborhood of 20 to 30 different events they've
2 put together which will increase as the supplemental type
3 certifications for their product are amended to incorporate
4 additional aircraft para-metrics to trigger on those para-metrics,
5 as well, but the baseline would be about two dozen.

6 MR. DUQUETTE: Two dozen, okay. And you mentioned about
7 altitude and airspeeds and et cetera. Can we also include the
8 controls of the aircraft, in other words, cyclic positioning,
9 collective pedals, would that also be something we could track?

10 MR. BATCHELLER: Technically, it's possible with string
11 pots and other things to try to track position of cyclic
12 collective, but those technologies are fallible in a significant
13 sense and understanding those in an automated fashion is of
14 interest, but it's one of those parameters that the expense
15 associated with doing so for a lot of operators negates the value
16 that it provides. And I think the counter to that, from the
17 technical community, has been the resurgence of at Bell
18 Helicopter, Textron (ph.) and other places, in interest of cockpit
19 image capture where you can get the control positions and you can
20 get the panel where you're getting engine para-metrics that are
21 very expensive to pick up, retrofit on analog aircraft, where you
22 get a significantly larger bang for your buck.

23 MR. DUQUETTE: Okay. What might be lost -- and although
24 I think I heard you mention it when you first started talking
25 about your program is the fact -- what benefit to the pilot is

1 there by having either a FOQA program or having your equipment
2 installed onboard your aircraft?

3 MR. BATCHELLER: Sure. Generally, from a very, very top
4 level, Flight Operations Quality Assurance is fundamentally about
5 what a -- like myself might call normalization of deviance and
6 this is where you find the real benefit to the pilot. I live in
7 North Dakota and North Dakota is not a highly populated place and
8 as such, there's a stop sign by my house that I, shortly moved
9 into it, started to assume was superfluous. I would come to this
10 stop sign and there was never anybody in sight and I started to
11 roll it as a matter of practice. I started to roll it. And what
12 happened is I took my SOP stop at a stop sign and I expanded it.
13 I deviated and then I normalized that activity. So I just rolled
14 through the stop sign all the time and then I just about got T-
15 boned one morning. And that was the negative correction that
16 brought me back to where I should be in my SOP. And the same type
17 of thing happens in aircraft where you do something, you bring the
18 aircraft around a little bit, you know, faster than maybe you
19 should and nothing bad happens, nobody really mentions it, and you
20 normalize that and quite unconsciously.

21 It's not the intent of me, as my automobile operator, to
22 be negligent and malicious in the way I was driving my car, or
23 unsafe, but things happen that are more convenient and you
24 stabilize there, normalize there, but in the right set of
25 conditions with the right failure mode, the right ambient

1 conditions, that can be really dangerous. And understanding that
2 you've gotten there over the last five, six, seven years of
3 operating that type, you might not have even realized it.

4 Knowing that you need to correct is, I think, at the
5 pilot level where you get a profound benefit from this and having
6 someone, an analyst with 15,000 hours in type come in and say you
7 know, there's a reason that we don't do this and it's this and if
8 you stop doing this it's going to be safer, you need to move in
9 this direction, has been -- you know, our experience with the
10 distribution of our equipment, something that pilots have been
11 profoundly receptive to. You know, oh, I didn't really realize
12 that I had gotten to that point. I see your position and I'm
13 going to make changes.

14 MR. DUQUETTE: So would you agree that the success of a
15 FOQA or a HOM program is, in fact, a pilot buy-in in the fact that
16 the program needs to be non-punitive and be administered non-
17 punitively?

18 MR. BATCHELLER: Absolutely, 100 percent. Having the
19 pilots behind the program and having someone apply the program,
20 those are two critical variables in the success of any HOM or FOQA
21 program. If you don't have anyone that's looking at the equipment
22 with any -- or the data that comes off the equipment with any
23 regularity, understanding where issues start to manifest
24 themselves, the program, the distribution of the equipment, is of
25 limited value in a proactive safety sense and that's where you're

1 starting to position the technology more as a reactive technology;
2 oh, something happened, let's go back and look at this.

3 And also, pilots being receptive to the equipment and
4 most of our operators that have started to roll the equipment out
5 and in a larger sense, you're starting to actually see self-
6 reporting, self-disclosure, where pilots are calling up the
7 analysts and saying this happened, either I'd like to see it or I
8 want you to be aware of the context in which it happened and that,
9 I think, is -- when you've reached that point you really know
10 you've got an effective FOQA program in place.

11 MR. DOWNEY: There are some other benefits. One
12 advantage the pilots can bring back to an operator and share with
13 us, they were looking at EGT traces on a particular landing
14 profile and to a particular platform. The EGTs kept going up.
15 And then what they did is they did a profile and they found out
16 that the -- whatever the stack is that burns off the excess gas
17 was actually trailing through the approach course. So all of a
18 sudden, you've got this situation where the pilot has got an --
19 you know, they're not doing anything wrong, they're doing exactly
20 what they're supposed to be doing, but the construct of the
21 platform, necessarily, has induced risk. So they were able to
22 reorient the stack and thus alleviate the situation. So it's a
23 benefit to the operation, itself, by having these types of things
24 you can go look at because nobody looks at EGT when they're on
25 final.

1 MR. DUQUETTE: Thank you. And that's all my questions
2 for this time.

3 CHAIRMAN SUMWALT: Thank you, Mr. Duquette. And now to
4 the FAA.

5 MR. HARRIS: Thank you, Mr. Chairman, and thank you for
6 the opportunity to address the arrangement of the questioning.
7 We'll start with Mr. Shaver. I have a couple of questions that I
8 think are designed to draw back towards center here in terms of
9 understanding the relationship between rule making and other
10 activities. Are TSO development and STC approvals rule making
11 activities?

12 MR. SHAVER: No, they're not.

13 MR. HARRIS: Can you give us a general timeframe that
14 you could expect a TSO -- I'm sorry, an STC approval to consume?
15 How much time should that typically take?

16 MR. SHAVER: Again, that's dependent upon several
17 things; the complexity of the STC project and the resources that
18 are being used. DASs or ODAs that have full delegated authority
19 to do all that activity can turn those fairly quickly and like I
20 said -- my past experience, it's been 10 years ago, but while I
21 was at United, we could do things in three or four months for STCs
22 and also while I worked at Timco (ph.), we had a similar thing but
23 it was on basic systems, you know. So looking at that, that's
24 probably the biggest driver is the availability, is it a DAS, STC
25 or is it an FAA STC and the prioritization of that.

1 MR. HARRIS: And basically, just to make sure we're
2 clear on that, you're talking about the use of designated
3 personnel as opposed to FAA employees to do the product review or
4 installation review?

5 MR. SHAVER: Sure.

6 MR. HARRIS: Very good. And those designated employees
7 are under FAA control and surveillance and qualification, correct?

8 MR. SHAVER: Yes.

9 MR. HARRIS: Okay. Using that as the background, then,
10 I need to ask some questions to some of the other witnesses and
11 these really go to the current level of technology fielding and
12 the vehicles that have been used to field those technologies and
13 I'll start with Mr. Batcheller. At Appareo, how many systems have
14 been fielded in the total U.S. aircraft fleet utilizing your
15 systems?

16 MR. BATCHELLER: Just to clarify the question, that
17 would be systems flying today in N numbered aircraft?

18 MR. HARRIS: Yes.

19 MR. BATCHELLER: In civil operations. I would say it's
20 in the hundreds, but I'd have to actually touch base with my
21 marketing people to get an exact number for you. Would it be
22 possible to follow up on that?

23 MR. HARRIS: Actually, I'm satisfied with an order of
24 magnitude --

25 MR. BATCHELLER: Okay.

1 MR. HARRIS: -- and I would offer that to the remaining
2 witnesses, also, just to minimize the complexity of the question.
3 And do you have a rough order of magnitude, an idea of what the
4 ratio might be or the percentage of those that are installed in
5 helicopters?

6 MR. BATCHELLER: I would estimate approximately 90
7 percent of those are installed in helicopters.

8 MR. HARRIS: Okay. On what basis were those installed,
9 what FAA approval basis?

10 MR. BATCHELLER: The majority of those pieces of
11 equipment that are flying today were installed under STCs SR-49086
12 and 49087 RC on Bell 206B and Bell 407 aircraft.

13 MR. HARRIS: Thank you for your specificity.

14 MR. BATCHELLER: No problem.

15 MR. HARRIS: It now brings the question of the numbers
16 in question but nonetheless --

17 UNIDENTIFIED SPEAKER: He didn't know the numbers, but
18 he sure knew the rule.

19 MR. HARRIS: No, sir. Thank you very much for that
20 specificity. And then I would ask Mr. Kallenbach, the Honeywell
21 helicopter Enhanced Ground Prox Warning Systems, I know that you
22 have answered already a question of approximately 200 helicopter
23 EMS aircraft currently equipped occupying about 30 percent of the
24 fleet. Do you have an estimate as to the total number of aircraft
25 -- correction, helicopters with this system installed in numbered

1 helicopters?

2 MR. KALLENBACH: So this will be a good example of when
3 you can ask a marketing guy the marketing questions, right?

4 MR. HARRIS: Yes.

5 MR. KALLENBACH: Because I've got all these numbers.

6 MR. HARRIS: Outstanding.

7 MR. KALLENBACH: So there are about 50,000 EGPWS systems
8 for fixed wing and helicopters. Of that, 1300 of those are helo-
9 EGPWS. Of the 50,000, 20 percent of these are Class B TAWS,
10 terrain awareness. Forty thousand are Class A TAWS. Of
11 the 1300, 389 are Mark 1 and 942 are Mark 22s.

12 MR. HARRIS: And that was Mark 21, not Mark 1, right?

13 MR. KALLENBACH: Yeah, Mark 21. Okay.

14 MR. HARRIS: Okay, very good. Thank you.

15 MR. KALLENBACH: Yeah. Mark 21, which is a Class B
16 TAWS.

17 MR. HARRIS: Very good. And those were installed under
18 what methodology?

19 MR. KALLENBACH: Well, I'm not going to be able cite you
20 chapter and verse like my colleague. They were done under STC.

21 MR. HARRIS: Thank you very much. Mr. Downey, although
22 this may not be in your direct experience as a representative of
23 Bell, but in your experience and knowledge of the aviation or the
24 civil helicopter certification in manufacturing efforts, can you
25 give us a rough order of magnitude estimate as to the number of

1 wire strike protection systems installed in the U.S. civil fleet?

2 MR. DOWNEY: I'm going to guess. Probably somewhere
3 between 15 and 20 percent.

4 MR. HARRIS: Okay.

5 MR. DOWNEY: The preponderance of the aircraft do not --
6 I mean, let's put it -- you know, Robinson produced 800 aircraft
7 last year and 893 this year and none of them have a wire strike
8 kit, so you can do the proliferation.

9 MR. HARRIS: Perhaps being more focused, within the
10 turbine powered helicopter fleet.

11 MR. DOWNEY: It's not that great a penetration.

12 MR. HARRIS: Okay. You would say in the order of what?

13 MR. DOWNEY: Oh, I'd say probably right now it's in
14 the 30 to 40 percent installed.

15 MR. HARRIS: Okay.

16 MR. DOWNEY: MD and Bell have both committed to -- they
17 will be, you know, in new type design, so that answers that
18 question going forward.

19 MR. HARRIS: Thank you. And again, what basis were
20 those installed under?

21 MR. DOWNEY: STC. And ours, we're just going to take
22 the STC and roll it under the type design --

23 MR. HARRIS: Right.

24 MR. DOWNEY: -- so it comes off the line that way.

25 MR. HARRIS: Very good. Thank you, sir. Mr. Baxter,

1 approximately how many students go through your night vision
2 goggle course at the Bell Helicopter Training Academy each year?

3 MR. BAXTER: Our highest level was about 150 students in
4 a year. We currently have a much a lower rate of initial
5 students, however, we still bring some in. Most of ours now is
6 refresher non-141 flying. And I would say that we probably bring
7 through now 80 to 90 students a year.

8 MR. HARRIS: Are those typically the initial cadre of
9 students for -- or pilots for a 135 operation?

10 MR. BAXTER: No. The only 135 students that we have
11 that came through as initial students was HALO-Flight out of
12 Corpus Christi. We do get 135 operators that send their folks
13 back for aircraft refresher and then we will throw -- like I said
14 before, we'll throw them into a one-hour NVG flight for a training
15 flight there for emergency procedures.

16 MR. HARRIS: And I realize that as a Part 141 pilot
17 school, you may feel free to say that you're not familiar with
18 this answer, but I believe you probably know it. Are there FAA
19 standards for the installation -- or for the configuration of a
20 helicopter for the use of night vision goggles as a civil
21 aircraft?

22 MR. BAXTER: That would be done under the STC process
23 and I believe that's done out of the RTCA documents that came out.

24 MR. HARRIS: Okay. Thank you, sir. And that answers
25 the second question, also, as to what method is used. And then

1 are there FAA standards in place for Part 135 operations for the
2 approval for use of NVGs?

3 MR. BAXTER: Again, I'm not real familiar with that,
4 with 135.

5 MR. HARRIS: Thank you, sir. Okay. That's our
6 questions, sir.

7 CHAIRMAN SUMWALT: Thank you. I'd like to go back for a
8 second round. I'd like to keep the second round five minutes in
9 nature per party. And we will start with AAMS.

10 MS. KINKADE: Thank you, sir. First question is for
11 Mr. Baxter. I'm hoping it's a yes/no. We've talked about night
12 vision goggles with one or two sets of eyes on there. Knowing
13 that in HEMS operations, coming back, there's usually a patient in
14 the back and the medical crews are on board. Would you say would
15 your preference be or would your recommendation be to have the
16 pilot flying unaided or aided in that condition?

17 MR. BAXTER: Aided.

18 MS. KINKADE: Okay, thank you. And Mr. Batcheller, you
19 mentioned you were making some changes to your equipment
20 specifically for HEMS and I'm not sure that I understand what kind
21 of changes specifically those might be.

22 MR. BATCHELLER: Sure. I'm going to elaborate as
23 briefly as possible on that. The product was designed, I'd
24 mentioned, in the partnership with Bristow and we took a
25 tremendous commercial vector from Bristow in the technical

1 requirements for the product. And as such, it was better built
2 around offshore ops than it was around HEMS. Specifically, the
3 equipment required post-processing after flight, the data that
4 comes off of it, and HEMS operators don't always have dedicated
5 computing resources at the 60, 70, 80 different hospitals their
6 aircraft might land at. To reconcile this in our
7 product development road map of sorts, the product is planned to
8 be adjusted to do all of its time in real time, all of its
9 processing in real time and to reduce the computing workload
10 necessary on individual landing sites and make the product, in
11 that sense, better conducive to utilization in an EMS environment.

12 MS. KINKADE: Thank you very much. Thank you, Chairman.

13 CHAIRMAN SUMWALT: Thank you very much. So next would
14 be NEMSPA.

15 MR. SIZEMORE: Yes. Mr. Baxter, again, after utilizing
16 NVG in training and so forth, can you imagine just from your
17 experience and environment a place, if you will, that you wouldn't
18 want to go into with NVGs and you would rather not use those NVGs?

19 MR. BATCHELLER: I would always want to have my NVGs,
20 but the environment sounds like it's a pretty nasty environment so
21 it might be time to not go into that environment regardless of
22 whether it's aided or unaided.

23 MR. SIZEMORE: Okay. Can you talk a little bit about
24 proficiency and how that relates to your training program and what
25 you feel proficiency requirements post-training would be?

1 MR. BATCHELLER: We currently use a 90-day window for
2 our instructors at Bell. I believe that is also what is being
3 recommended for the EMS community. I really don't have any
4 problem with that. I think that's perfectly fine.

5 MR. SIZEMORE: Okay.

6 MR. BATCHELLER: I do think, though, if you have a crew
7 that is consistently not flying goggles and then suddenly coming
8 in one night to get their one hour, I think that can start to be
9 detrimental.

10 MR. SIZEMORE: Okay.

11 MR. BATCHELLER: If you're going to go with goggles, you
12 should use them.

13 MR. SIZEMORE: Okay. Mr. Downey, final questions. You
14 talked a little bit about the 160th and the problem. Do you feel
15 like technology is a cultural enhancement or is culture a
16 technology enhancement?

17 MR. DOWNEY: I would say both and the reason is that if
18 you look at -- here's my best example. Guys like you and I that
19 have -- this is experience. Walk into a Wal-Mart and go over to
20 the Xbox and watch those kids flip from one box to the next box
21 and you look at those controllers and I go I can't even run the
22 first one let alone run three of them and they move from one to
23 the other.

24 I think that our younger pilots today are much more
25 attuned to a digital world, they're much more attuned to it. The

1 best example, my wife says I can't teach the kids how to drive, he
2 just jerks the wheel. Well, the reason is they got jerk
3 controllers. It's flip the switch all the way over this way, flip
4 the switch all over this way, so what we have to do is think
5 about, from a workload standpoint, what it is we're presenting and
6 what the expectation is out of it and that takes a lot of work.

7 The 160th was very careful about constructing their
8 cockpits so that you got, from a mission application standpoint,
9 you got to your target plus or minus 30 seconds. And they do it
10 in Indian country all the time, being the training environment,
11 plus or minus 30 seconds all the time. It's there but it requires
12 all those pieces. You know, you got to learn how to use a map,
13 you got to learn how to do obstacle clearance and all the rest of
14 it. You give the people the tools, you offload the workload and
15 you can make it successful, so both.

16 MR. SIZEMORE: Thank you. That's all the questions I
17 have.

18 CHAIRMAN SUMWALT: Thank you, Mr. Sizemore. Air
19 Methods.

20 MR. YALE: Mr. Downey, if I could ask you, to clarify,
21 we keep discussing IFR solutions. Is the infrastructure currently
22 in place that will allow for IFR to scenes and most hospitals?

23 MR. DOWNEY: No.

24 MR. YALE: And just a little bit of elaboration on that.

25 MR. DOWNEY: Well, what you need is an infrastructure

1 that has the obstruction clearance and the ability to execute
2 point in space approaches to the particular environment. There
3 are aspects or there are locations where that has become the norm,
4 but is not proliferated and quite honestly, helicopter IFR is so
5 far down the priority list with the next gen system and I'm not
6 throwing rocks particularly at the FAA because they get told
7 capacity, capacity, capacity, but we're like, you know, the little
8 kid in Oliver, more please, sir. All we want is a few approaches.
9 And the airspace, you know, in such a manner that we can execute
10 that.

11 MR. YALE: Is it also true that many, if not even most
12 of the helicopters are not capable of IFR?

13 MR. DOWNEY: That's true.

14 MR. YALE: And then the last question --

15 MR. DOWNEY: But I think the distinction is IFR-like,
16 where you had a GPS infrastructure where you could operate with
17 obstruction clearance and stuff like that, you could operate --
18 you can technically operate in an IFR-like environment and not be
19 IFR, you know, which most people don't realize, but a GPS
20 environment that has all that en route structure set up would be
21 conducive to a very safe environment.

22 MR. YALE: It would seem like one of the other problems
23 is that, you know, is weather information readily available and is
24 it a significant issue for both the IFR and VFR at these
25 locations.

1 MR. DOWNEY: Absolutely. And somebody said it in one of
2 the panels this morning, I remember one of the problems we had in
3 the Gulf of Mexico when I first got down to the directorate was we
4 couldn't have alternates, you know, it was like why not? There's
5 AWASs all around there. They weren't hooked up to the system. So
6 it's back to the dollars that go with it. The ATO organization
7 doesn't have the dollars to hook up all the AWAS stations so that
8 you got the weather available.

9 So it's back to the same thing. And I cannot emphasize
10 enough, the HEMS weather tool ought to be taken out of the
11 experimental mode and put into full production and available. I
12 mean, that is just the best thing in the world. You know, I sit
13 there and watch weather all over the country just to see how it's
14 moving with that system and it's great. It just needs to be
15 codified so it can be used.

16 MR. YALE: Thank you, sir. That's my --

17 CHAIRMAN SUMWALT: That's it? Thank you. CareFlite.

18 MR. DAUPHINAIS: We have no questions.

19 CHAIRMAN SUMWALT: HAI.

20 MR. ZUCCARO: No questions.

21 CHAIRMAN SUMWALT: PHPA.

22 MR. DUQUETTE: I do have one question for
23 Mr. Batcheller. Earlier, we were discussing the importance of
24 pilot buy-in and as well as the fact that the program must be non-
25 punitive. Of course, what affects pilot buy-in is the possible

1 misuse. Could you briefly discuss or mention what mechanisms can
2 be put in place to prevent the misuse of data collected?

3 MR. BATCHELLER: Certainly. For our operators that have
4 pilots unions, usually the union is brought in pretty early in the
5 discussion regarding the implementation of this type of equipment
6 to make the union aware of it. In some cases, a union pilot is
7 actually the individual who does the analysis of the information
8 and presents upwards to the organization only reports of activity
9 and no specific names are attached to those reports.

10 Very fundamentally, Flight Operations Quality Assurance
11 is about the application of safety efforts and associated with
12 anonymous flight data and that I can't stress enough, you can be
13 effective in Flight Operations Quality Assurance without knowing
14 necessarily who was behind a particular action and in giving an
15 analyst that is trusted by the pilots the opportunity to address
16 pilot specific issues has been effective to date. There's also
17 the Flight Operations Quality Assurance approval route. Having an
18 approved FOQA program provides to operators some protections and I
19 believe AC120-76 is the right advisory circular to reference in
20 respect to the protections afforded to pilots of operators that
21 have an approved Flight Operations Quality Assurance program.

22 MR. DUQUETTE: Thank you. And those are all my
23 questions.

24 CHAIRMAN SUMWALT: Thank you. And back to the FAA.

25 MR. HARRIS: We have no more questions, sir.

1 CHAIRMAN SUMWALT: Great, thank you. And I think that
2 worked well to have a follow-up round, so thank you for that. And
3 Technical Panel, any follow-ups for you?

4 (No audible response.)

5 CHAIRMAN SUMWALT: Great. And I'll turn to the Board of
6 Inquiry. Mr. Haueter.

7 BOARD OF INQUIRY QUESTIONS

8 MR. HAUETER: Mr. Kallenbach, with the potential of
9 ADS-B in and out-coming, is there any disincentive to going to
10 EGPWS now and in the future having it overcome by technology or --

11 MR. KALLENBACH: I would say no. I think that ADS-B and
12 ADS-B out are much more helpful from a traffic and aircraft
13 position perspective and so I think it's a much better improvement
14 for collision avoidance as opposed to terrain awareness and
15 obstacle awareness. So I think, from a ground proximity
16 standpoint, we would say no, there's really no impact there. We
17 do thing that ADS-B is a much better, more technical and higher
18 fidelity solution for collision avoidance.

19 MR. HAUETER: Okay. I guess my next question would be
20 to your self, Mr. Downey and Mr. Shaver. What is the down side to
21 an operator to install EGPWS now rather than wait for the TSO?

22 MR. KALLENBACH: Well, since the TSO is out, I would say
23 none.

24 MR. HAUETER: Mr. Downey.

25 MR. DOWNEY: There's two things that come to mind. One

1 is cost and the second one is configuration of the aircraft. You
2 know, once you start adding more boxes into the aircraft, you've
3 just raised your operational cost and depending upon what's
4 available, you may have an MAL problem or dispatch issue whereas
5 my two cents worth is you put a glass cockpit in the aircraft,
6 then you've got the systems up by exception, so you have them up
7 when you need them, you only get them when you want them and then
8 you're in a much better situation so I think advances in the
9 cockpits which speaks to the workload issue, as well, so you have
10 it all integrated on one display so you're not looking at one box
11 over here or this over here or this over here.

12 MR. HAUETER: Mr. Shaver.

13 MR. SHAVER: Yeah, I don't see any down side from my
14 perspective for installation of a unit on an STC.

15 MR. HAUETER: Finally, Mr. Batcheller, have you received
16 any interest from the fixed wing general aviation manufacturers
17 for your product?

18 MR. BATCHELLER: At this time, Appareo's not in any
19 discussions with fixed wing OEMs about installing any of this
20 equipment in particular, although in our work with ED155 and with
21 the General Aviation Manufacturers Association, a survey was
22 conducted and it appears that most, if not all, major general
23 aviation manufacturers are at this time working on some kind of
24 data recording solution.

25 MR. HAUETER: Thank you.

1 CHAIRMAN SUMWALT: Dr. Ellingstad.

2 DR. ELLINGSTAD: Thank you. I have a number of recorder
3 questions and I'll start with Mr. Downey and I would like to
4 recognize first of all, that Dave, along with Jim Cash, co-chaired
5 the RTC Future Flight Data Recording Committee a few years ago, so
6 he has been working in this area. With respect to your cockpit
7 image recorder from Bell, am I correct in understanding that what
8 you're recording is images but that you have a real time
9 processing going on that is capturing para-metric data?

10 MR. DOWNEY: It's not real time, it's downloaded. Once
11 the file is downloaded it goes through a post-processing, but
12 yeah.

13 DR. ELLINGSTAD: Okay, so all of the para-metric capture
14 is post-processed?

15 MR. DOWNEY: That's correct.

16 DR. ELLINGSTAD: Okay. And this is all your format for
17 your storage is on a flash memory type of --

18 MR. DOWNEY: That's correct, sir.

19 DR. ELLINGSTAD: Okay. What sort of a parameter set do
20 you generate out of this post-process data?

21 MR. DOWNEY: We can take anything that's on the cockpit,
22 so any analog gauge, and we can pick up the differential on a
23 needle against the background of a particular gauge and that can
24 all be calibrated and in fact, the vibrations don't inhibit that
25 and that can be all pulled down into engineering units and then

1 it's just a matter of converting it into torque or percent or
2 temperature or altitude.

3 DR. ELLINGSTAD: Okay. Is your data storage format
4 proprietary? What I'm trying to get at is accessibility of
5 whatever data extraction software is required.

6 MR. DOWNEY: I think what we're using -- we're using
7 something that's already out on the market, but if I share what it
8 that we're using, then that gets into intellectual property, but I
9 would share I think what the Board's concern would be would you
10 have access to it and the answer is clearly yes.

11 DR. ELLINGSTAD: Okay. That's reassuring.

12 MR. DOWNEY: Well, back to the same thing, you know, as
13 long as we've got a protection system from an accident
14 investigation standpoint under Part 193, we're right there.

15 DR. ELLINGSTAD: Okay, thank you. With respect to the
16 potential application of these recorder to data to FOQA-type
17 programs, do you operate or have you developed FOQA software to
18 complement your data recording and your parameter extraction?

19 MR. DOWNEY: Not as yet.

20 DR. ELLINGSTAD: Okay.

21 MR. DOWNEY: But as Dave said, it's pretty easy. All
22 you have to do is have an operator set the thresholds and then
23 it's just a matter of post-processing.

24 DR. ELLINGSTAD: Okay, thank you. Mr. Batcheller, I
25 want to go after the same kinds of things with you. Now, my

1 understanding is that your installation in the Eurocopter
2 incorporates both para-metric data that you're generating from
3 your box along with images?

4 MR. BATCHELLER: That's correct.

5 DR. ELLINGSTAD: And that, again, is stored on some kind
6 of a flash memory device and SD card or whatever?

7 MR. BATCHELLER: It's stored to both an internal flash
8 memory --

9 DR. ELLINGSTAD: Okay.

10 MR. BATCHELLER: -- nonvolatile, just chip storage, and
11 also written simultaneously to a removable nonvolatile memory --

12 DR. ELLINGSTAD: Okay.

13 MR. BATCHELLER: -- namely the SD card.

14 DR. ELLINGSTAD: Yeah. Why don't I just go back to
15 Mr. Downey real quickly. Are you doing any kind of a redundant
16 recording to a more protected memory card?

17 MR. DOWNEY: No, sir.

18 DR. ELLINGSTAD: Okay. And Mr. Batcheller, the data
19 that you are storing, again, is that a proprietary storage format?
20 Are the routines to extract that data certainly available to us
21 but also, you know, to a company?

22 MR. BATCHELLER: At present, the recording solutions
23 that are marketed by Appareo Systems require some Appareo
24 proprietary software in order to process the raw information into
25 engineering units and from the Board's perspective, that software

1 and our assistance is available, presently, in any events in which
2 that recorder may become the temporary property of the Board and
3 you might require to either our engineering assistance or just the
4 software to access that information. Our end user is provided,
5 the software is a service that's a portion of the procurement of
6 the recorder and that's what they use to make that transition.

7 DR. ELLINGSTAD: So they can get the raw data if they
8 desire it. With respect to the FOQA applications, now I assume
9 this is a post-processing or did you say, in an answer to another
10 question, that you're doing some of that onboard?

11 MR. BATCHELLER: The existing --

12 DR. ELLINGSTAD: The event kinds of determinations.

13 MR. BATCHELLER: The existing solution is a post-
14 processing solution. The camera product that'll be available next
15 year will have the ability to do some real time processing, but
16 again, the product is not configured in its design intent to
17 provide any information real time to an operator, so unless that
18 information was broadcast by other means or was configured to
19 interact with a display of some kind, the real time processing of
20 events wouldn't bring any real time value.

21 DR. ELLINGSTAD: With respect to the whole development
22 of FOQA event definitions and that sort of a thing, are you -- do
23 you produce any kind of a generic sort of a set of events? You
24 mentioned that you had something like 24 or so as a baseline set
25 or is that available to be tailored to the particular applications

1 that a user would have?

2 MR. BATCHELLER: The event sets that most users utilize
3 are tailored for specific software or specific helicopter
4 operations and input by the user. Appareo has gotten approval
5 from a number of our fleet operators to circulate their event
6 sets, the constraints that they've assembled to monitor their
7 flight, for utilization, adaptation or evolution by other
8 helicopter operators and Appareo interfaces in a limited fashion
9 with our helicopter operator end users as we're primarily an
10 electronics and software design company and make it pretty clear
11 to our clients that although we're there to technically assist, we
12 lack the flight operations expertise to advise them as to what
13 constitutes a trigger that would be intelligent for them to use in
14 one operational area or another.

15 DR. ELLINGSTAD: Okay, thank you. And you had
16 indicated, I believe, that you're targeting something under a
17 \$10,000 cost?

18 MR. BATCHELLER: That's correct, sir. All --

19 DR. ELLINGSTAD: I think you said four digits?

20 MR. BATCHELLER: Four figures, yeah.

21 DR. ELLINGSTAD: Spans of range.

22 MR. BATCHELLER: Our products retail from between \$5,000
23 per aircraft to about \$7500 per aircraft depending -- product
24 configuration, installation kit and the peripheral components
25 required to install it.

1 DR. ELLINGSTAD: And you had indicated that you either
2 have or are pursuing an STC for at least the Eurocopter version?

3 MR. BATCHELLER: That's correct. The camera product
4 that there was a single slide about and is currently in
5 development, the first target aircraft models for that have begun,
6 I guess, the supplemental type certification effort at least
7 internally to assemble the data package necessary for the Federal
8 Aviation Administration to approve that and we'll continue to
9 approach new airframes on a market-driven as-needed basis by our
10 clients, either the OEM or operators, end users, and we'll
11 aggressively pursue additional supplemental type certifications.

12 DR. ELLINGSTAD: Okay. And Mr. Downey, you also either
13 have or are pursuing an STC?

14 MR. DOWNEY: That's correct, sir.

15 DR. ELLINGSTAD: And if I understood Mr. Harris
16 correctly, that's as good as a rule, so -- Mr. Shaver, let me make
17 that question to you. With respect to rule making and the
18 establishment of these kinds of requirements, we understand the
19 time that it takes both to get a TSO, to get from a TSO to some
20 kind of a rule. We've heard some discussion about performance
21 based rules in some informal conversations with our friends at the
22 FAA. Could you comment about the applicability of that sort of a
23 concept to a recorder standard or a recorder rule?

24 MR. SHAVER: I guess I could try. I think even today
25 the flight recorder requirements are basically performance based.

1 There is a specific performance that you're trying to capture in
2 an operation and how you capture that data and that can depend on
3 several different things, but you try to pick -- you define the
4 operation that you want to capture versus a very specific
5 technical detail. I hope that helps a little bit, anyway.

6 DR. ELLINGSTAD: Is that sort of an approach likely to
7 be any more expeditious?

8 MR. SHAVER: I don't know, I couldn't answer that, so --

9 DR. ELLINGSTAD: Okay, thank you.

10 CHAIRMAN SUMWALT: Dr. Mayer.

11 DR. MAYER: Thank you so much. This has been a very
12 educational panel and in fact, I found that I have been clarified
13 on a number of matters that I didn't even know I was confused
14 about and I really learned quite a lot this afternoon. Many of my
15 questions have already been asked and answered, so it's left me
16 with kind of a random hodgepodge of questions and there are not
17 many of them. First, I wanted to address a question to
18 Mr. Batcheller and Mr. Downey about the camera systems that are
19 either in place or will be soon and it kind of relates to the data
20 protection issue. I'm just wondering, perhaps the proprietary
21 nature of encoding the data takes care of this, but I'm wondering
22 if there's any technology in place to protect the image data from
23 misuse or inappropriate viewing?

24 MR. DOWNEY: We haven't pursued that and I'll go back to
25 Gemini went down this road with encryption keys and all the rest

1 of that sort of stuff. It became unmanageable. The issue,
2 really, from at least the position that I've proselytized with --
3 it's protected data. You know, it's accident data, it's protected
4 under 193 as long as it's within a FOQA program, so we're going to
5 have to base it on the fact that yeah, we can do that, but because
6 we hold some intellectual property rights against how that stuff
7 gets converted into engineering units, that's kind of the key that
8 allows us to be able to protect it, but I'm very sensitive to the
9 issue around, you know, an image in a cockpit.

10 MR. BATCHELLER: Thank you, Dr. Mayer. Appareo Systems
11 would answer the question in a similar fashion. The way that the
12 information is encrypted is not significant and requires a fairly
13 simple tool to convert, but yeah, I think the idea fundamentally
14 is to prevent recorders in very sensitive situations, namely
15 accident situations, from having a passerby collect an SD card and
16 that information ending up on You Tube.

17 DR. MAYER: Essentially my concern exactly. A question
18 about the EGPWS database update cycle, we had a number of
19 questions about that earlier and it seems to me that especially in
20 an urban environment, obstacles may come and go faster than the
21 update cycle and I just wondered, I'm thinking like construction
22 cranes and whatnot and I'm wondering if there's any consideration
23 to end users being able to make modifications not necessarily to
24 the database, but to add temporary obstructions or avoidance areas
25 into their own data?

1 MR. KALLENBACH: Yeah, we certainly can update the
2 database more frequently. The question becomes how frequently do
3 we publish it back out, so -- and that's one of the points I did
4 try to make was, you know, the rapid reporting of new obstacles
5 coming online is really important to us and so if there are
6 obstacles that are being manufactured, there's no reason why we
7 can't also replicate that back into the data and also have another
8 update cycle.

9 DR. MAYER: A question I had intended to ask to
10 Mr. Batcheller but I think may have already answered, you had said
11 quite some time ago now, in talking about data acquisition for the
12 EMS environment, that you'd made some modifications to optimize
13 acquisition or maybe it was really post-processing for the EMS
14 environment. Was that specifically to address the issue of the
15 inability to do processing at a variety of hospitals or were there
16 some other optimizations that you've done?

17 MR. BATCHELLER: That was specifically to address the
18 availability of processing resources to move information from more
19 distributed nodes from which that information would be collected
20 than we, in our product design, originally anticipated.

21 DR. MAYER: Great, I appreciate that. My last question
22 -- let's see here, where did it go? I think it's directed to
23 Mr. Downey and it has to do -- I can think of a handful of reasons
24 why you might not be able to answer the question, but are you able
25 to explain to us why the cockpit component of the night vision

1 goggles system, the gauges, displays, lights, codings, reflective
2 surfaces or whatnot, why that is controlled by ITAR?

3 MR. DOWNEY: Because is was originally developed for the
4 military application and as such, that's what the law says. And I
5 want to segue back on to something else.

6 DR. MAYER: Sure.

7 MR. DOWNEY: One of the things on this whole processing
8 issue that just drove me nuts and still drives me nuts is you
9 can't do processing on the aircraft and this is because the FAA
10 software guy said well, it's got to have this validity of, you
11 know, Level B software or Level A software because you might make
12 some other decision -- so I said okay, great, that's a wonderful
13 reason. So let's put all the engineering units together, put it
14 on a flash card, pull it out and then what do you process it with?
15 X-L. So what level software is that? So this is where I think we
16 need to have this transition back to I completely commend them,
17 the ability to do some processing on board the aircraft, but then
18 you get into this what's used for and all the rest of it. But if
19 you download it or if you're taking -- if you're doing your engine
20 power assurance, so what's the software level of a Number 2 pencil
21 that you write in the log book?

22 So this is where -- you know, it's precision without
23 accuracy and I think that one of the things that, to the credit of
24 the Rotorcraft Directorate and the folks even in their 130
25 and 110, has been the fact that if you got to look at this, you

1 got to look at what the safety benefit of this over precision and
2 what it is you really intend to do with this.

3 This is not designed to change component overhaul times.
4 This isn't what -- you know, the military's doing that right now
5 and to be honest with you, they're doing a great job of it and we
6 ought to be able to look at that and use those same elements, that
7 further down the road we've got to get away from this level of
8 software invalidation just simply because this is what we've done
9 in the past.

10 DR. MAYER: Thank you, but just to return to the ITAR
11 question, it is not a technical reason of a specific product
12 nature, it's what the product was initially designed for?

13 MR. DOWNEY: That's correct. Because once you put it on
14 the aircraft, you can export it. We can't go investigate the
15 accident if it happens overseas unless we've got the TAA signed,
16 the technical assistance agreement, so this becomes absolutely
17 ludicrous in terms of we want to find out what happened, we can't
18 go there because it's ITAR. It's precision without accuracy
19 again.

20 DR. MAYER: Thank you. Mr. Baxter.

21 MR. BAXTER: Yes, sir, if I may. One of the other
22 things that's covered under ITAR is the transfer of technology and
23 knowledge. We currently are getting ready to go overseas with the
24 training academy to go overseas to teach night vision goggles with
25 the customer's aircraft, customer's night vision goggles which are

1 not American made. We have to get approval to use those goggles,
2 we also have to have approval just to teach the class, so it's
3 much deeper than just hardware.

4 DR. MAYER: Thank you, I appreciate that. That was my
5 last question.

6 CHAIRMAN SUMWALT: All right, thank you. Ms. Ward.

7 HEARING OFFICER WARD: Mr. Chairman, we've been at this
8 for four hours and I think everybody's asked every question I
9 could think of, so --

10 CHAIRMAN SUMWALT: Well, I wanted to ask Mr. Downy, do
11 you have an opinion on ITAR. You don't have to answer.

12 MR. DOWNEY: Yes, sir. Yes, sir. Yes, sir, I do.

13 CHAIRMAN SUMWALT: Thank you. Mr. Kallenbach, an
14 argument that I would hear from reading about the helicopter
15 industry and the HEMS community, reporters would ask me this, one
16 of the things they said, one of the arguments I would hear for why
17 we don't want to install TAWS is because the TSO is not out. The
18 TSO was issued on -- just December the 17th. Now, there are
19 some 12-1300 helicopter operators that went ahead and installed it
20 and about 200 HEMS operators that installed TAWS prior to this
21 TSO. And perhaps Mr. Downey would take a stab at it, too, based
22 on all of your experience, but wonder why it is that that number
23 of operators made that commitment without waiting for this TSO.

24 MR. DOWNEY: Well, I will sing the praises of
25 Steve Fingar (ph.) at Sikorsky. He made the call when

1 Fred Brisboy (ph.) went in after one of their accidents and they
2 did the ROE (ph.), return on investment, and they said 18 months
3 and Steve Fingar says we will not deliver another S-92 or another
4 S-76 without enhanced ground prox. And he stopped the delivery of
5 an S-92 one time without it. So the proliferation really is
6 S-76s, EC-225. Actually, I think they got embarrassed because the
7 S-92 came out with it, so it's a matter of I think people are
8 suddenly realizing that it's kind of a dumb thing when you figure
9 what your return on investment is based on what you're going to
10 pay out in terms of liability. So I commend the people that have
11 done it.

12 CHAIRMAN SUMWALT: I do, too, and for those who have hid
13 behind that argument, the TSO is out now, so -- okay.

14 MR. DOWNEY: So I guess there wasn't really a question
15 there.

16 CHAIRMAN SUMWALT: Well, there was a question.

17 MR. DOWNEY: I would say, though, that Sikorsky,
18 Eurocopter and Agusta have all been actively incorporating, which
19 is a good thing, and a number of operators, some here today, have
20 been actively incorporating. And so we like to think that that
21 has been the removal of an excuse because now we should be able to
22 move this thing forward.

23 CHAIRMAN SUMWALT: Good. I come from an air carrier
24 background and the air carrier community and Boeing and Airbus
25 said, in about 1997, we, the manufacturers, Boeing and Airbus,

1 said you can't buy an airplane from us unless it has TAWS on it.
2 There's not a governmental mandate yet, but we're going to go
3 ahead and make that commitment and Mr. Downey, I am pleased to
4 hear that a couple of manufacturers have made that commitment.
5 When can we expect that same commitment from Bell?

6 MR. DOWNEY: I'll let you know, sir, once I've talked to
7 the marketing guys. I stay on the safety side of the equation.
8 It keeps me in a non-advocate position.

9 CHAIRMAN SUMWALT: Understand. Another argument that I
10 hear -- I think I was interviewed by NPR and the reporter asked
11 this question, this TAWS, it weighs a lot. How much does a TAWS
12 installation cost?

13 MR. KALLENBACH: Costs a lot or weighs a lot?

14 CHAIRMAN SUMWALT: I'm sorry, how much does it weigh?

15 MR. KALLENBACH: It weighs about a pound and a half.

16 CHAIRMAN SUMWALT: A pound and a half. And it's
17 probably the box, itself, is probably about the size of a shoe
18 box? Or you tell me.

19 MR. KALLENBACH: Well, yeah. Maybe my wife's shoes.
20 Pretty small shoes.

21 CHAIRMAN SUMWALT: Very good. That's great. Because it
22 doesn't weigh a lot and doesn't take up a lot of space.

23 MR. KALLENBACH: Right.

24 CHAIRMAN SUMWALT: Now, does it save lives? Well, my
25 understanding -- again, I come from an airplane background. I

1 don't know anything about a helicopter. I saw one. And but from
2 an airplane point of view, Mr. Kallenbach, is it correct that
3 there has never been a Controlled Flight Into Terrain accident
4 involving an airplane or a helicopter equipped with TAWS?

5 MR. KALLENBACH: In operating --

6 CHAIRMAN SUMWALT: An operable TAWS. There's never been
7 a CFIT accident with an aircraft equipped with an operable TAWS.

8 MR. KALLENBACH: With a Honeywell operable --

9 CHAIRMAN SUMWALT: Okay.

10 MR. KALLENBACH: No, no. I can't -- no, seriously, I
11 can't --

12 CHAIRMAN SUMWALT: Okay, okay.

13 MR. KALLENBACH: -- speculate on someone else's.

14 CHAIRMAN SUMWALT: So with those cookies.

15 MR. KALLENBACH: Yeah.

16 CHAIRMAN SUMWALT: But have there continued to be CFIT
17 accidents for aircraft not equipped with TAWS?

18 MR. KALLENBACH: That's correct. Or somehow made
19 inoperative.

20 CHAIRMAN SUMWALT: So there's your argument right there.
21 Does it have, by the way, nuisance warnings? That's another thing
22 I'm hearing a lot of.

23 MR. KALLENBACH: Well, we've done quite a bit of work to
24 limit the number of nuisance warnings and to give the pilot in
25 command flexibility, especially in helicopter operations, to avoid

1 the oral nuisance warnings, so if they're in the low altitude mode
2 or they're in a hover mode near an obstacle, the pilot has that
3 inhibit switch and with a display, which again, is also part of
4 that TSO. That proximity warning is still there, it's still
5 highlighted, but he's not hearing the oral warnings.

6 So we've tried to balance the nuisance fault against the
7 warning fault because as you know, one of the difficulties in
8 safety systems is if you design a safety system that tends to
9 generate nuisance faults and people ignore it and it's a little
10 like the rolling stop sign example, then you're not listening to
11 the critical warning, so we, too, also want to reduce the warning
12 faults or the nuisance faults to the minimum so that we don't have
13 an occurrence where the pilot was disengaged and simply not
14 listening to the warning fault.

15 CHAIRMAN SUMWALT: Exactly. And we certainly saw that
16 with older generation ground proximity warning systems whereby we
17 have cockpit voice recorders that Mr. Cash has listened to, no
18 doubt, where the ground prox warning is warning and the crew isn't
19 responding.

20 MR. KALLENBACH: And the crew is not responding for
21 whatever reason.

22 CHAIRMAN SUMWALT: Now, again, in airplanes, I never had
23 a nuisance warning in a TAWS system for the six or eight years
24 that I flew a TAWS system, so -- and also, we heard a question
25 about a workload. Would it be true that the way that the system

1 is designed, it's transparent because the pilot doesn't see, is
2 not distracted by it unless there's a real need to know it or if
3 they specifically call it up on a multifunction display to see it
4 on a display.

5 MR. KALLENBACH: Right. There's two ways that the
6 display works. It can be on and active at all times if it's its
7 own separate display and then the only thing the pilot would see
8 is either a green or black terrain or in the case of a warning,
9 yellow or red terrain. So that's true. I mean, that's a
10 non-invasive -- if they happen to be using another display, for
11 instance, like a weather radar display and the EGPWS detects a
12 potential warning, it will flip the weather off and pop the
13 terrain up, so that's one of the features so that if they want to
14 keep it in weather mode, they can. And then obviously, you have
15 the oral warnings.

16 CHAIRMAN SUMWALT: Thank you. So many of the arguments
17 that I would hear, in preparation for this hearing, I think we've
18 shown today that those arguments aren't really valid. We have
19 people that wanted to wait for the TSO. Well, here's the TSO.
20 And by the way, did -- people were concerned. Why would we invest
21 in a device that doesn't meet the TSO but did -- are any of the
22 TAWS that are out there that people installed not meet this TSO?

23 MR. KALLENBACH: We've now run checks on our current
24 production standard Mark 21 and Mark 22s. They are compliant with
25 the TSO. We've also checked a couple of subsequent versions. We

1 have not run checks on every single version of the part number
2 that we've put out yet. We're still in the process of doing that.
3 So I'd have to say so far we haven't found one that's
4 noncompliant, but we're still in the investigative process.

5 CHAIRMAN SUMWALT: Thank you. So for those who did go
6 ahead and invest in the TAWS before the TSO, it appears, from what
7 you know so far, that the TAWS is going to be valid, is going to
8 meet the requirements of the TSO. The TSO is available now. For
9 those nay sayers who say that it weighs too much, it doesn't weigh
10 much at all. We know that it does save lives because we have the
11 statistics that there's never been a CFIT accident involving an
12 aircraft with an operable TAWS, but there continue to be CFIT
13 accidents for airplanes without operable TAWS, so we know it saves
14 lives. We know that the workload is minimum for the pilot and we
15 have heard questions about that. So --

16 MR. KALLENBACH: I think you about covered it.

17 CHAIRMAN SUMWALT: Very good. So there's a couple of
18 ways we can do this. I don't think that the status quo is good.
19 The industry can't continue going the way that they are. I mean,
20 I'm not the ones writing the newspapers. You read what the papers
21 are saying. So things will change and I think they're going to
22 change a couple of different ways. They can change by the
23 industry voluntarily, going ahead and equipping their aircraft
24 with them. We've seen that about 200 HEMS operators have done
25 that. It's the moral thing to do, it's the right thing to do.

1 They've made that commitment.

2 We can wait for the FAA to mandate, which may or may not
3 happen. We're going to find that out if not today, on Friday,
4 when the FAA -- John Allen comes in. Or we can wait for Congress
5 to come in and legislate it and we know how -- you know, we can
6 wait for that one, too. But the status quo isn't going to cut it.
7 So let me ask the FAA now, Tim, how long -- what are the FAA's --
8 we may have to wait for John Allen to come in on Friday, but to
9 your knowledge, do you have any knowledge of the FAA's intent for
10 a rule making on TAWS, for HTAWS?

11 MR. SHAVER: Only that it's being considered. That's
12 the only thing I can say.

13 CHAIRMAN SUMWALT: It's being considered. Thank you.
14 Mr. Downey, I'm not sure that I heard this correct, but I want to
15 make sure. Is Bell going to, at some point, begin making standard
16 equipment on Bell helicopters the installation of these light
17 weight, low cost recorder?

18 MR. DOWNEY: That's in consideration right now, sir.

19 CHAIRMAN SUMWALT: Okay.

20 MR. DOWNEY: Again, we're looking at weight versus cost
21 versus -- you know, pay load.

22 CHAIRMAN SUMWALT: Thank you. Mr. Batcheller, is your
23 understanding of a FOQA program that it is to look at individual
24 performance, to look for the individual deviations or look for the
25 more systemic deviations? Are you looking -- go ahead, I'm sorry.

1 MR. BATCHELLER: Thank you, Mr. Chairman. It's my
2 understanding that Flight Operations Quality Assurance is
3 fundamentally about the understanding of fleet-level risk areas
4 and identification of corrective action for those areas and the
5 subsequent substantiation of the impact of that corrective action
6 such that you not only understand where your areas of risk are,
7 but you understand whether or not your corrective action to
8 address that risk has been effective and to what degree such that
9 you can work until that risk area is mitigated and you can move on
10 to what was previously and now has become your most significant
11 area of fleet level risk.

12 CHAIRMAN SUMWALT: Thank you. So yes, it is -- you
13 would agree that it's more to look at the system and see where
14 your systemic issues are rather than going after the individuals,
15 it's not a watchdog for individuals, necessarily?

16 MR. BATCHELLER: That's correct, sir. The most
17 impact-ful approach to improving, as a helicopter operator, is an
18 operational community. Safety is, of course, to address the
19 larger fleet issues, you know, the 20 percent of your issues that
20 cause 80 percent of your problems than to nitpick individual
21 flights.

22 CHAIRMAN SUMWALT: Yes, thank you. Mr. Shaver, one last
23 question. A question came up during the parties questioning about
24 if TAWS was mandated and perhaps for TK Kallenbach, if TAWS was
25 mandated, would that put such a demand on the market that that

1 demand couldn't be met, but I went back and looked at the final
2 rule for when TAWS was required for aircraft, for airplanes, for
3 turbine powered airplanes with six or more seats, and the final
4 rule on that was issued on March the 29th of 2000. By the way,
5 the industry had already agreed to voluntarily equip their
6 aircraft prior to that time, but the final rule was March 29th
7 of 2000.

8 It said after March 29th, 2002 any airplanes being
9 produced will have to have -- and we're talking airplanes -- any
10 airplanes would have to -- production airplanes would have to be
11 equipped with it, so it gave a two-year window for the production
12 aircraft manufacturers to get ramped up. And then the final rule
13 to retrofit was March 29th of 2005. So there was a staged
14 approach which allowed the industry to, either through the
15 production methods or through the retrofits, to come into
16 compliance, so hopefully, that would alleviate those concerns, as
17 well. I actually am out of paper, so I really want to thank
18 again, great witness panel, thank you very much; the parties,
19 thank you so much for your cooperation. I think you're asking
20 great questions to get to the pertinent issues. Technical Panel,
21 the Board of Inquiry, audience, thank you all. We will start
22 tomorrow at 8:30 again. We are, frankly, right on schedule and I
23 thank all involved for helping us to keep on schedule. This
24 hearing is adjourned until 8:30 tomorrow morning.

25 **(Whereupon, at 5:15 p.m., the hearing in the above-**

1 entitled matter was adjourned, to be reconvened on the following
2 day, Thursday, February 5, 2009 at 8:30 a.m.)

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CERTIFICATE

This is to certify that the attached proceeding before the
NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF: PUBLIC HEARING IN THE MATTER OF THE
ISSUES ON EMERGENCY MEDICAL SERVICES
HELICOPTER OPERATIONAL SAFETY

DOCKET NUMBER: SA-530

PLACE: Washington, D.C.

DATE: February 4, 2009

was held according to the record, and that this is the original,
complete, true and accurate transcript which has been compared to
the recording accomplished at the hearing.

Timothy Atkinson
Official Reporter