UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

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In the matter of: *
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INVESTIGATION OF THE ACCIDENT *
INVOLVING HEART OF TEXAS BALLOONS, *
KUBICEK BB85Z N2469L, *
LOCKHART, TEXAS ON JULY 30, 2016 *
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Board Room and Conference Center
National Transportation Safety Board
420 10th Street, S.W.
Washington, D.C.

Friday,
December 9, 2016

APPEARANCES:

NTSB Board of Inquiry

ROBERT SUMWALT, Chairman, Board of Inquiry
NTSB Board Member
MARY PAT McKAY, M.D., Chief Medical Officer
DAVID BOWLING, Chief, Central Region, Office of Aviation Safety

NTSB Technical Panel

BILL ENGLISH, Hearing Officer, Investigator-in-Charge
TOM JACKY, Aerospace Engineer, Aircraft Systems
CAPT. DAVID A. LAWRENCE, Senior Air Safety Investigator
PAUL SUFFERN, Senior Meteorologist Investigator
NICHOLAS WEBSTER, M.D., Medical Officer

Also Present from NTSB

JEFF MARCUS, Office of Safety Recommendations
COLLETTE HURLEY, Audio Visual Support
ERIC WEISS, Office of Media Relations
DR. ELIAS KONTANIS, Office of Disaster Assistance
MAX GREEN, Office of Disaster Assistance
STEPHANIE MATONEK, Office of Disaster Assistance
ED KENDALL, Assistant General Counsel
SEAN DALTON, J.D., Special Assistant

Interested Parties

SAM PARKS, Balloon Federation of America (BFA)
JEFF GUZZETTI, Federal Aviation Administration (FAA)
PETER KUBICEK, Kubicek Balloons

WITNESS PANEL 1: Commercial Balloon Operations - Training and Decision Making

JAMES MALECHA, Aviation Safety Inspector, Balloon SME, General Aviation Operations, FAA, Washington, D.C.

SCOTT APPELMAN, Rainbow Ryders Balloons, Professional Ride Operators, BFA, Albuquerque, New Mexico

DEAN CARLTON, President, BFA
Danville, Illinois

ANDY BAIRD, Cameron Balloons, BFA
Ann Arbor, Michigan

APPEARANCES (Cont.):

WITNESS PANEL 1: Commercial Balloon Operations - Training and Decision Making (Cont.)

TONY SANDLIN, Midwest Balloon Rides, Vice President
Great Lakes Region, BFA, Fishers, Indiana

ALBERT PADELT, Best Aviation Services, Kubicek Balloons, USA, Bally, Pennsylvania

WITNESS PANEL 2: Balloon Regulations and Oversight

JAMES MALECHA, Aviation Safety Inspector, Balloon SME
General Aviation Operations, FAA, Washington, D.C.

JOHN S. DUNCAN, Director, Flight Standards Service
FAA, Washington, D.C.

SAM PARKS, Southeast Regional Director, BFA
Statesville, North Carolina

DEAN CARLTON, President, BFA
Danville, Illinois

PANEL 3: Medical Factors

PHILIP M. KEMP, Ph.D., Senior Research Toxicologist
FAA, Civil Aerospace Medical Institute
Oklahoma City, Oklahoma

JAMES R. FRASER, M.D., Federal Air Surgeon, FAA
Office of Aerospace Medicine, Washington, D.C.

CHARLES CHESANOW, D.O., Chief Psychiatrist, FAA,
Civil Aerospace Medical Institute
Oklahoma City, Oklahoma

I N D E X

I N D E X

P R O C E E D I N G S

(9:00 a.m.)

MEMBER SUMWALT: Good morning, ladies and gentlemen.

My name is Robert Sumwalt and I am a Board Member of the National Transportation Safety Board, and it is my honor to serve as Chairman of the Board of Inquiry for this public hearing.

Today we are opening a hearing concerning the accident involving a hot air balloon operated by Heart of Texas Balloons when the accident occurred near Lockhart, Texas, on July 30th of this year. There were 16 lives lost.

This event is the most deadly aviation accident that we've had in this country in 7½ years, and I know that we have family members who are joining us here live, and those who are watching by webcast, and I'd like to offer our since condolences for your loss and our commitment at the NTSB is to learn from this event so that others don't have to go through what you've gone through.

An investigative hearing such as this is one tool the NTSB may use to help complete an investigation. This hearing is being held for the purpose of supplementing the facts, circumstances, and conditions surrounding this accident. This process will assist the NTSB in determining the probable cause of the accident and in issuing recommendations to prevent similar accidents in the future.

This hearing also provides an opportunity, not only for the commercial balloon community, but also for the public, to get an

inside view of the NTSB's investigative processes. During this hearing, we will examine witnesses and secure, in the form of a public record, facts pertaining to the accident and the surrounding conditions.

The purpose of this hearing is not to determine the rights or liability of private parties, and matters dealing with such will be excluded from these proceedings. I want to emphasize that this hearing is non-adversarial. It is a fact-finding examination.

We will not attempt during this hearing to analyze the testimony we receive, nor will any attempts be made at this time to determine the probable cause of the accident. Such analyses and cause determinations will be made at a later date by the full Board after consideration of all of the relevant evidence gathered during our investigation. The final report of the accident, reflecting the Board's analyses and probable cause determinations, will be available to the public, as are all of our investigative products.

Today’s hearing will concentrate on the following three areas: We'll look at balloon operations; we will look at regulations and oversight, and finally aeromedical factors.

So now let me introduce the NTSB’s staff who are playing a key role in today's hearing. Serving with me on the Board of Inquiry, we have Dr. Mary Pat McKay, who is the NTSB's Chief Medical Officer. And here we have Dr. David Bowling, who is the Chief of the NTSB’s Central Region.

Now members of the Technical Panel, beginning with Bill English, Bill English is the Investigator-in-Charge for the accident but he is also serving as the Hearing Officer for the hearing. Next we have David Lawrence, Captain David Lawrence who is a Senior Air Safety Investigator. We have Tom Jacky, Senior Aerospace Engineer for Aircraft Systems; Paul Suffern, Senior Meteorologist Investigator; and Dr. Nick Webster, NTSB Medical Officer.

On the back row, we have Mr. Jeff Marcus who is of the NTSB's Office of Safety Recommendations, and Collette Hurley who is providing support for the audio visuals. Eric Weiss from the NTSB's Office of Media Relations is here to assist with matters dealing with the news media.

From the NTSB's Office of Transportation Disaster Assistance, we have Dr. Elias Kontanis, Max Green and Stephanie Matonek. They are here to assist the family members during the hearing.

NTSB's Assistant General Counsel, who is seated behind me, Mr. Ed Kendall, is here to provide legal support during the hearing. And Sean Dalton of my office is here to also provide support for the hearing.

Now the federal regulations provide for the designation of parties to an NTSB investigative hearing. Those persons, governmental agencies, and organizations, whose special knowledge will contribute to the development of pertinent evidence are designated as parties. The parties to this hearing have been

designated in accordance with these regulations and have been selected for their technical expertise in their respective fields.

Our rules of practice make clear that a party cannot be represented by anyone occupying a legal position, or anyone who represents claimants or insurers.

So I will now call the name of the parties, and if you would, please introduce the party spokesperson, please introduce yourself and your affiliation. Beginning with Balloon Federation of America.

MR. PARKS: Good morning, Chairman. My name is Sam Parks. I am representing the Balloon Federation of America, Past President, current Board Member, and Chairman of the Safety Education Committee.

MEMBER SUMWALT: Thank you for being here, Mr. Parks, and I believe while you are testifying on Panel 2, Mr. Scott Appelman will be serving as the party's spokesperson during that time. Thank you.

Mr. Guzzetti.

MR. GUZZETTI: Good morning, Mr. Chairman. My name is Jeff Guzzetti. I am the Acting Deputy Director for FAA's Office of Accident Investigation and Prevention.

MEMBER SUMWALT: Thank you for being here.

Kubicek Balloons.

MR. KUBICEK: Good morning, Mr. Chairman. I'm Peter Kubicek. I'm representing Kubicek Balloons as a balloon manufacturer.

MEMBER SUMWALT: Thank you very much.

Yesterday the Board of Inquiry held a prehearing conference right here in this Board Room. It was attended by the Board of Inquiry, the Technical Panel, and the representatives to the Parties.

During that conference, the parties were advised of the witnesses to be called at the hearing, the areas in which the witnesses will be examined, and the exhibits that we plan to proffer during today's hearing. The parties also had the opportunity to introduce any exhibits that they wished to examine this morning or this afternoon.

The way we will work is, in just a few moments, Mr. English will summarize the accident and the investigative activities that have taken place to date. Following this, Mr. English will call for the first Panel of Witnesses.

The witnesses have been selected because of their ability to provide the best available information on the issues pertinent to this accident investigation. Each of the witnesses have been pre-qualified and their qualifications and biographical information is available on the NTSB's website.

Each witness will testify under oath. They will be questioned first by the Technical Panel. After the Technical Panel, each of the parties will have the opportunity to question the witnesses. The Technical Panels, you will each of 5-minute rounds to question the witnesses. We've also asked that if you --

we would like to, that if there is a need for a second round of questions, that is fine, but we would like to keep those questions limited to follow-up questions or things that need clarification.

The NTSB does not determine blame or liability, and this investigative hearing is a fact-finding proceeding with no adverse parties. Therefore, cross-examination in the strict legal sense will not occur, and questions directed to the issue of blame or liability will not be permitted.

As Chairman of the Board of Inquiry, I will be responsible for the conduct of the hearing, and I will make all rulings on the admissibility of exhibits and pertinence of proffered testimony, with the assistance of NTSB Assistant General Counsel, Ed Kendall, and all such rulings will be final.

The record of the investigation, including the transcript of the hearing and all exhibits entered into the record, along with the presentations, will become part of the NTSB's public docket and available on the NTSB's website at www.ntsb.gov.

Witnesses who have completed their testimony, we will ask that you please stay because even though you might be on Panel 1 or Panel 2, we might decide to recall you later in the day. We would like for you to stay in case we recall you. However, if you need to leave early, please check with the Hearing Officer to make sure that we do not plan to recall you.

At this time, I will call on the Hearing Officer, Bill English, to go over housekeeping items, summarize the accident and

the investigative activities, and describe the exhibits to be used during the hearing. Mr. English.

MR. ENGLISH: Thank you, Mr. Chairman. First, the exhibits to be used in this hearing, as Chairman Sumwalt has mentioned, the NTSB Public Docket has opened as of the beginning of this hearing at 9:00, on our website under Investigative Information. The Public Docket for this accident is available, a list of the exhibits used and all exhibits have been made available to all the parties and witnesses to this hearing and are now available to the public.

Before we go further, just some housekeeping items. In the interest of safety, please take a moment to familiarize all of yourselves with the emergency exits from this Board Room. There are two exits from the auditorium, one directly to my left and one to the right side of the folks in the audience in the front. You may also exit to the rear of the auditorium and proceed back out through the glass doors that you entered and out into the street, turn left to follow the sidewalk to the end of the street out there.

In the event of an emergency, please walk quickly to the nearest exit, make your way to the outside following the instructions of NTSB staff who will be wearing logoed or uniformed items. Do not delay. Do not return to the Board Room until instructed or advised. If you have any questions or concerns, please do not hesitate to contact any NTSB personnel.

There is no smoking, eating or drinking within the NTSB Conference Center area. Restrooms are available directly out the rear doors of the auditorium.

At this time, please silence your cell phones or any other electronic devices.

And if there are no questions or concerns, I will provide a briefing on the accident.

MEMBER SUMWALT: Please proceed.

MR. ENGLISH: Thank you, sir.

On July 30, 2016, Kubicek BB85Z hot air balloon, operated by Heart of Texas Balloons, impacted electrical transmission lines and crashed into a pasture near Lockhart, Texas. The pilot and 15 passengers were fatally injured by impact and fire. The balloon was destroyed.

The flight was a commercial sightseeing tour flight operated under the provisions of 14 C.F.R. Part 91.

This is an exemplar photo of the accident balloon. This is one of the largest passenger balloons in commercial operation holding 300,000 cubic feet of air. The gondola, or basket, is rated to carry up to 18 people in 5 compartments.

On the morning of the accident, the pilot received a weather briefing from Flight Service at 5:06 a.m. The briefer noted conditions of 1200 foot ceilings with no temperature dew point spread and said, "Clouds may be a problem." The pilot responded, "We find a hole and we go."

Over the next 2 hours, the forecast and observed conditions dropped, and at the time of takeoff, San Marcos Airport, about 6 miles to the west, reported 700 foot ceilings and 2 miles visibility.

The balloon departed from a private airstrip about 8 miles south of the accident site at 6:59 a.m.

This photo was taken by a passerby as the balloon was preparing to launch. Information from the pilot's iPad was available and provided the GPS route of flight. The red line starting at the bottom center of the map and transitioning to the top of the map is the route of flight, approximately 8 miles long, and you can see San Marcos to the top left.

A graphic of the route of flight and this passerby photo was taken shortly after takeoff, near the junction of Highways 80 and 130. You can see here that the radio tower is partially obscured. The balloon traveled further to the northwest and this is a snapshot from a video taken by another driver heading south. The radio towers would be off to the left side of this picture.

These photos were sent from passenger smartphones just a few minutes before the accident. You can see the low cloud deck and in the right photo, a gap in the clouds and an example of the transmission line towers and lines. We do not think these are the exact set of power lines that the balloon struck, but it depicts the conditions in the accident area.

The pilot sent a position report to his ground crew at 7:26,

which typically means he is preparing to look for a landing site. However, the ground crew had lost visual contact with the balloon. There was no distress call by radio or cell phone, and at 7:42 the balloon struck high voltage lines about 130 feet above the ground. The gondola separated and fell directly beneath the lines and was burned. The balloon envelope traveled about one-half mile further.

Evidence indicates the balloon impacted the high voltage lines completing a circuit which severed the balloon's steel structural cables, separating the gondola. No evidence of any pre-impact mechanical problems with the balloon was found.

In the left photo, the direction of travel is approximately coming out of the screen towards you, the basket fell directly below the power lines as you can see in the right photo and was consumed by fire.

The fuel cylinders and valves were found with no evidence of pre-impact leaks or rupture.

The balloon envelope, with the burner assembly attached, continued about a half a mile further into another pasture. A small area of burning was evident at the base of the envelope. The burners were tested and functioned normally. The accident site is off to the top right of this photo.

The pilot was the owner and sole pilot of the operation. He obtained a commercial balloon certificate in 1993, and a third-class medical certificate in 1996. A FAA medical certificate is

not required for commercial balloon operations. He had no record of prior incidents or accidents.

However, the pilot did have a history of drug and alcohol convictions. The pilot also had a record of multiple medical and psychiatric conditions as well as multiple prescription medications which were detected in toxicology.

Safety issues that will be explored in this hearing include on Panel 1, commercial tour operations in large balloons, balloon pilot training and decision making, weather factors relevant to the accident.

Panel 2 will discuss FAA regulation and oversight of commercial balloons and balloon tour best operator practices.

Panel 3 will discuss medical factors relevant to the accident and medical certification requirements.

Mr. Chairman, that concludes the introductory presentation. Would you like for me now to call the first Panel of Witnesses?

MEMBER SUMWALT: Yes, please. Thank you.

MR. ENGLISH: Panel 1, I call to the stand please, Mr. James Malecha from FAA. You can begin to head to the stand as I call your name. Mr. Scott Appelman from Balloon Federation of America; Mr. Dean Carlton from Balloon Federation of America; Mr. Andy Baird, Balloon Federation of America; Mr. Tony Sandlin, Balloon Federation of America; Albert Padelt representing Kubicek Balloons. You want to head up there and please stand, folks, when you get up for the swearing in. Thank you, gentlemen.

Please raise your right hands.

(Witnesses sworn.)

MR. ENGLISH: Thank you. You may be seated.

Panel 1, Technical Lead will be Captain Lawrence. Captain Lawrence.

CAPT. LAWRENCE: Thank you, Mr. English. Good morning, Mr. Chairman, Board of Inquiry. Good morning, Panel.

Beginning with Mr. Malecha, on the end, if you would, just go down the road and introduce yourselves and please give us your title and organization please.

MR. MALECHA: Good morning. My name is Jim Malecha. I am the FAA policy subject matter expert on Balloons.

MR. PADELT: Good morning, Captain Lawrence. My name is Albert Padelt. I'm a representative for Kubicek Balloons.

MR. BAIRD: Good morning. My name is Andy Baird. I work at Cameron Balloons. I'm here representing the Balloon Federation of America.

MR. APPELMAN: Good morning. My name is Scott Appelman, President of Rainbow Ryders Hot Air Balloon Company, representative of Balloon Federation of America, and the Professional Ride Operators Division.

ME. CARLTON; Good morning. I'm Dean Carlton. I'm the current President of the Balloon Federation of America.

MR. SANDLIN: Good morning. I'm Tony Sandlin, owner of Midwest Balloon Rides, a small operator, part of the BFA and on

the Board of Directors for Balloon Professional Ride Operators.

CAPT. LAWRENCE: Thank you, gentlemen. I'd like to start with Mr. Carlton please. As Mr. English mentioned in his briefing, the accident involved a commercial balloon pilot that had been licensed since 1993. My question to you, Mr. Carlton, is what are some of the tools and guidance material provided by the FAA that commercial balloon pilots use to safely conduct a commercial balloon ride?

MR. CARLTON: Well, obviously the first tools we come up with is to plan every flight, and the plans usually start a whole day before. Weather is a critical component to all kinds of conditions and for us, the form of aviation we're in, weather is very critical as we depend on wind speeds and directions to actually execute our flight.

So typically you would start the evenings before, checking, getting outlook briefings. Obviously just before the flight, you call the Flight Service. You can check in with them, get updates from them. There's also several online sites that are specific to more balloon related activity.

CAPT. LAWRENCE: Okay. For a commercial balloon pilot, when they're in flight, what do they use for navigation typically?

MR. CARLTON: Well, actually I'm going to -- if it's all right, I'll defer to one of the guys that actually does more commercial flights, if that would be appropriate. Scott Appelman would probably be more -- better posed to give you that

information.

MR. APPELMAN: Over the past three decades, there's been significant improvement with technology. Typically we have in-flight instruments that measure rate of climb, descent and temperature of the envelope as well as the ambient temperature. Additionally we have GPS -- typically have GPSes on board.

Once again, with the technology that's available, cell phones, iPads, updates, weather stations, this type of information is easily available and updated continually.

CAPT. LAWRENCE: Great. I'll stay with you, Mr. Appelman, if that's all right.

The accident balloon was one of the largest in operation in the United States. My question is, are there any training programs available to train commercial balloon pilots to operate and fly these larger commercial balloons?

MR. APPELMAN: On a commercial, like -- typically these type of programs are done internally of that, of other balloon companies. An example in our balloon company is that we have several different sizes of balloons. We do our training within the company itself in order for people to get the experience and understand how to operate and manage a balloon of that size.

CAPT. LAWRENCE: And how would you determine whether or not a pilot was proficient enough to operate one of these larger balloons within your company?

MR. APPELMAN: Continual monitoring, continual training.

This is something that's ongoing on a day-to-day basis, one of those kind of items that you live on a 24 hour basis and the culture is that of a total commitment of doing this day in and day out.

CAPT. LAWRENCE: Okay. I understand the monitoring for proficiency. Is there like a minimum number of hours you would have or a pilot would have to have before they check out to go to one of these larger balloons?

MR. APPELMAN: I think that varies between companies. In our particular companies, I do have minimum hours required. Insurance companies pretty much are the determining factor across the board in the industry as to minimum experience, hours, for sizes of balloons.

CAPT. LAWRENCE: Is there a FAA minimum requirement to operate one of these larger balloons?

MR. APPELMAN: No, sir.

CAPT. LAWRENCE: Okay. Your company, Rainbow Ryders, operates small and large balloons as you mentioned. How would a pilot transition from the smaller balloon to the larger balloon? Just give me a little bit of the training program briefly.

MR. APPELMAN: Certainly. Over the previous couple years, in order for us to keep our proficiency going, we have an in-house program that we work. Typically balloon pilots will start in a smaller balloon, 77- or 90,000 cubic foot of air. As they start to get a couple hundred hours of flight time, we bring them in and

if they're interested in doing the commercial aspect or the ride aspect, we'll bring them in. We step them up in size. Typically speaking, our company has a minimum requirement of about 500 hours of flight time in the -- 500 hours of total flight time in a balloon in order for them to be flying one of our larger balloons, at least 50 hours of flight time as pilot in command or serving as dual pilot.

CAPT. LAWRENCE: Thank you. Let's stay with this theme with the balloon performance of the differences of the types of balloons. Ms. Hurley, if you will bring up Exhibit 2T, page 2, please.

This chart shows some limited Kubicek Balloon performance information and the differences between a 90,000 or 90K balloon and the larger 300K, similar to the accident balloon.

My question is to Mr. Padelt please. According to the Kubicek website, Kubicek manufactures balloons ranging from 31K all the way up to a 500K with the ability to carry 24, up to 28 passengers. Based on this chart and your experience with the different types of balloons, can you briefly describe the performance differences between a small and large balloon?

MR. PADELT: The perform difference, as the balloon gets larger, is going to be a slower response time. 300,000 cubic feet is a much larger volume than 90,000 cubic feet. You've got more air to heat. The balloons have more burners on them. The reaction time would be slower. However, the climb rate would be

-- far exceeds the certification requirements that the FAA has in place for certification under Part 31, 1.7.

CAPT. LAWRENCE: Thank you. Staying with this, are there any handling differences between smaller and larger balloons?

MR. PADELT: A little bit slower response time. It's very similar to perhaps a Cessna 172 versus a Boeing 747. With the proper training, a competent balloon pilot would easily be able to handle a larger balloon.

CAPT. LAWRENCE: Thank you. I'm going to go to Mr. Baird please, and the same questions. Are there performance differences in smaller and larger balloons from your standpoint?

MR. BAIRD: Sure. Yeah, there are. There are a variety of features that are different between a larger balloon and a small balloon, and one of the common misconceptions is somehow they're don't have as good of performance.

And a quick example of the differences, if you would have -- in this case, we had a 300,000 cubic foot balloon that was equipped with three burners. If we had side-by-side in flight three 100,000 cubic foot balloons with one burner, and they were flying at level flight and they all initiated a climb at the same moment, say burn for 40 or 60 seconds, at the end of that period, a larger balloon would have climbed higher and be traveling faster than the three smaller balloons. So I some ways, it's performance is better.

There are other features of a large balloon that I think are

conducive to the type of operations. They're much more stable. They're not misdirected or guided by the winds or fickle winds as much as a small balloon would be. On a landing, as I'm sure you know, in ballooning, we use friction with the ground to slow ourselves down on landing. We don't have an undercarriage or landing gear. And, a large balloon will typically stop quicker than a smaller balloon and also the basket which can tip over on a windy landing, is much less likely to do so in the large balloon.

CAPT. LAWRENCE: Is there a greater workload for a pilot operating a larger balloon since you have more of these propane tanks. There are manifolds. There's hoses. There's a lot more going on. Is there a higher workload?

MR. BAIRD: Marginally higher. This aircraft had three burners. So you're managing three fuel systems instead of at least two. Every balloon, even if it has a single burner, has two completely independent fuel systems. So the workload is only marginally higher, but obviously there is a difference.

CAPT. LAWRENCE: Thank you. Ms. Hurley, if we can go to Exhibit 2J, page 7 please.

As she's pulling up this exhibit, I'd like to talk a little bit now about mission pressure and risk assessments that commercial balloon pilots do. What you're looking at right now is an exhibit that shows the page from the manifest for the accident flight. It was an online manifest. Specifically in the right-hand column is a detailed listing for this particular passenger's

multiple cancellations dating back to October 2014, prior to actually being able to fly on the accident flight. My question's going to be directed to you, Mr. Sandlin, as a small balloon operator.

Given that a pilot may face a passenger on a morning of a flight that has had numerous cancellations, either due to weather or other factors, how much pressure does a commercial balloon pilot have to fly on a particular day given that somebody may have had multiple cancellations and are desiring to go on one of these bucket list flights?

MR. SANDLIN: Yes. Well, in my area, we cancel half the time. It just happens because of weather. So I don't feel any pressure from the passengers. I make my decision based solely on the weather. I mean I've had one passenger cancel as many as 13 times. So it does happen.

CAPT. LAWRENCE: Does that provide pressure on the pilot though when they have that?

MR. SANDLIN: No. In my case, no, it doesn't. I mean like I said, I'm about the safety part of it. So if I have to cancel them and sometimes we have to give refunds because of it because they may only be in town for a day or two. So that does happen and that's just part of the business of doing balloon rides in my case.

CAPT. LAWRENCE: Let me follow up on that. Do you have in your operation, or anybody on the Panel, do you have go/no-go

criteria when you show up for a flight that you have to follow and cancel a flight based on that criteria?

MR. SANDLIN: Yes. I mean even my standards are higher than what, you know, other things are as far as the visibility, how low the clouds are and certain speeds at certain heights.

CAPT. LAWRENCE: Can you give me an example of some of that criteria?

MR. SANDLIN: If the winds are 19 miles an hour at 1200 feet, even if it's totally clear, I would not fly. So it just depends on the criteria that I've set and some of my pilots set also.

CAPT. LAWRENCE: Anybody else on the Panel have go/no-go criteria for their particular operation?

MR. APPELMAN: If I may, we fly in Albuquerque, Phoenix and Colorado Springs. Weather, wind speeds significantly are a huge factor in that particular decision. We will take a cumulative number of winds aloft at 6 and 9,000. If they go above 60 miles an hour combined, it's a no fly situation in the Albuquerque area. These type of parameters will change from location to location. Obviously in Phoenix, it's significantly different and then in Colorado Springs, with Pikes Peak sitting on the side, much different. So watching those wind speeds, shears, those are all contributing factors to making a good and safe decision.

CAPT. LAWRENCE: Thank you, and I'll stay with you, Mr. Appelman, for just a moment. I would like to shift over to power line avoidance. Obviously this aircraft contacted power lines

during flight, and I'm curious. How are pilots trained to avoid power lines?

MR. APPELMAN: First of all, having a familiarity of the area that you're flying in, especially in a large balloon, by theory, you would have a fair amount of time flying that particular balloon and hopefully in that particular area.

Lately, there's been some new technology coming out with power line detectors which currently our company is testing out of the manufacturers, Ultra Magic, has provided one for us that we're working with right now.

As far as power line avoidance goes, and I don't want to say old school but basically the way it was brought up 34 years ago when I got my license, is that you're not so much looking for power lines, but you're looking for towers. The power lines tend to bleed in or blend into the ground itself, and they can be very difficult or obscure to see especially if you're flying into the sun. They basically become invisible. However, the towers or the poles or that of existing -- are real good factors to keep an eye on.

Additionally, on any briefing that I do or anyone in our company, we engage that of all the passengers on board, having extra eyeballs and taking a look at those types of things. If there's anything that you see, an obstacle, power lines, trees or anything like that, please let me know.

CAPT. LAWRENCE: Thank you very much. Ms. Hurley, if you'll

bring up Exhibit 2N, page 3 please.

While she's pulling this up, this exhibit will show the Kubicek procedure in the event of a contact with a power line. It's a pilot procedure requiring the venting of the envelope and attempting to strike the lines, the power lines with the envelope instead of the balloon, while also simultaneously trying to shut down the fuel sources to the propane tanks.

Mr. Appelman, I'll stay with you again. What is the typical procedure for a pilot that he must do to avoid a potential collision with a power line?

MR. APPELMAN: Without being elementary, first of all being aware of your flying conditions around you, making sure that you're flying in the type of weather that is supportive of safe flying. In this case, it would be visual flight rules would be an absolute minimum to start with.

As far as avoidance of the actual power lines themselves, flying high enough around them, there's a 1,000 foot minimum distance above congested areas to fly per the FARs. Does that answer?

CAPT. LAWRENCE: Yeah. Let me follow up with this. What is a rip out procedure? Are you familiar with that term?

MR. APPELMAN: Yeah.

CAPT. LAWRENCE: Can you explain it?

MR. APPELMAN: Yeah. If imminent contact with power lines is in front of you, the rule of thumb is to rip and basically the

idea here is to try to get below or be landed before you actually hit the power lines. Because of a slower reaction time or a reaction time and depending upon the speed of the wind, the most prudent and most conservative approach is what they call is to rip and pray and that's basically what it is. You rip out the balloon.

CAPT. LAWRENCE: Okay. That would result in a high descent rate potentially, correct?

MR. APPELMAN: Yes, sir.

CAPT. LAWRENCE: Could injuries occur in a rip out procedure?

MR. APPELMAN: Yes, they can.

CAPT. LAWRENCE: Can that procedure be practiced during training?

MR. APPELMAN: Yeah. Yes, they can be under controlled circumstances. Obviously you would not want to simulate an emergency as such. However, there are rip out landings that we do in high wind landings without obstacles in front of us, a 15 or 20 mile an hour landing where you go on out and you pull out the top of the balloon or rip out landing to stop, to end the flight.

CAPT. LAWRENCE: Okay. Let me direct this to anybody on the Panel because we have a lot of experience with ballooning on the Panel. With the rip out procedure, given the possibility that that procedure would result in a fast descent and could result in injuries, what is the likelihood of a pilot when confronted with a collision with a power line first attempting to try and climb out

of it as opposed to the rip out procedure which they know would possibly incur injuries?

MR. BAIRD: I'm happy to answer that question. I think going back to basic training, the rule of thumb that's drilled into the heads of every pilot is, if in doubt, rip out.

I was taught and have taught my students and I think is a common phrase, you know, where do you find power lines? Well, to every house, every road has a house, so along every road and everywhere below 200 feet.

So if we're flying low level, we're vigilant for power lines. That is the number one training factor, and we're also trained to avoid areas that could have power lines that you can't see. If you're flying along, and there's a row of trees, and there's a gap in the trees, you're taught never to fly through that gap in the trees because there could be power lines on the other side. You just can't see the poles. So avoidances is the number one key.

However, I think it's again part of basic training, and it's reinforced at every safety seminar and every continuing education program I've ever been involved with, is that the consequences of contacting power lines are far more severe than a hard landing. Even if you break somebody's leg in a hard landing, that's a much better option. So if there's any doubt in your mind, if you're low level, and you suspect there are power lines ahead or if you know there are power lines ahead, and there's any doubt in your mind that you can't clear them, the option is to rip out, risk

damage to the aircraft, risk hurting somebody with a broken leg, but it's a far better option than contacting the power lines at basket level.

CAPT. LAWRENCE: Thank you. And I'll say with you, Mr. Baird. This is related to the performance questions I had earlier. Is the ability to escape a collision with a power line different in a smaller balloon versus a larger balloon?

MR. BAIRD: It depends on the series of maneuvers immediately preceding the approach to power lines. I mentioned earlier, this one had three burners and the small balloons only have one. Much like a car, the bigger car you have, has a bigger engine, the more horsepower, balloons are structured the same way. So the option to put on all three burners in order to climb rapidly, the big balloon would actually have a better ability to climb and avoid an obstacle.

However, if you are transitioning from a descent to an ascent, where the mass of the aircraft comes into play, then it would take longer to respond and convert it from a descent to an ascent, and that's one of the things you learn as you -- through experience as you fly the balloons.

CAPT. LAWRENCE: Just to be clear, it takes longer for a larger balloon.

MR. BAIRD: Correct. The transition time from descent to climb for a larger balloon is longer.

CAPT. LAWRENCE: Very good. Thank you. I'm going to finish

up with Mr. Malecha. First off, if we can, Ms. Hurley, bring up Exhibit 2P, page 2.

While she's bringing this up, shown here is the Guidance on Power Line Avoidance from the FAA that was published I believe in the 1980s. And my question to you, Mr. Malecha, has the FAA published any additional guidance on power line avoidance for balloonists since this publication?

MR. MALECHA: Yes, sir, the FAA has in the form of the *Balloon Flying Handbook.* That publication is roughly 250 pages long and it is continually updated. So the latest is well after the 1980s publication being the date of this publication.

CAPT. LAWRENCE: Is the *Balloon Flying Handbook* required knowledge for commercial balloon pilots?

MR. MALECHA: No. However, the *Balloon Flying Handbook* helps in preparation for a balloon pilot to prepare for a knowledge exam or a check ride, and the practical test standards show that they must, you know, be trained in emergency procedures and tested in that.

CAPT. LAWRENCE: Thank you, gentlemen. That's all the questions I have at this time. Mr. Suffern.

MR. SUFFERN: Thank you, Captain Lawrence.

I'd like to dive into the weather a little bit with Mr. Baird here. What are the greatest weather challenges for balloon pilots and operations if you could describe that for us?

MR. BAIRD: The factors affecting a safe flight vary a little

bit by geographic region and certainly the prevailing general weather conditions but always we're concerned about winds, surface winds primarily. Surface winds because that's the wind that we're going to be taking off and landing in. Upper winds are also indicative of what's going to happen to the surface winds as time goes on, and also are very important for flight planning. Where are we going to be? Are we going to be in a suitable area for landing an hour from now?

Stability of the weather is an important one. Visibility, ceilings, precipitation. Those would be the common core, if you will, of factors that we're concerned about.

MR. SUFFERN: Thank you. If you could describe the steps that you take reviewing the weather before taking a flight. Thank you.

MR. BAIRD: I think most balloon pilots have a very similar set of steps that they go through. I'll obviously describe what I do, and again it varies a little bit by geographic region because there are some areas where certain specific weather phenomena or indicators might be important, especially in mountainous areas for example.

But, for me, it starts with a big picture approach. The first step or the first phase of three or four phases is to look at the big picture. I want to know where the high pressure systems are, where the low pressure systems are, where the frontal boundaries are, what the pressure gradient is like, how close are

those isobars on the map, where are the areas of precipitation and in general, what's the stability or instability of the region that I'm going to be flying in. So that's the first phase.

And a decision then is either made to go further and look at little closer at the weather on a more granular level or if it's, you know, if there is a low pressure over the top of you, you're going to say, no, it's not conducive and you cancel and go no further.

The next step for me is to look at specific sites within the area that I'm going to be flying. What are the current conditions? If I'm say within 12 or 15 hours of flight, if I'm looking the night before or even the morning of the flight, I'm going to look at the current conditions. I'm going to look at the local forecast for each of the areas surrounding the flight path that I'm planning. At that point, I would probably also get an official weather briefing, look at the official weather data from the FAA, whether that's through a live briefer or online through DUATS or something else. There's a variety of online tools that we use.

If we're still looking good so far, then personally I would go to the next step and look at what's called a Skew-T chart which is a valuable tool for looking at how much moisture is in the air, are we likely to get low visibility or low ceilings.

It also gives you a great indication of not only surface winds but winds at various levels for the bottom 4 or 5,000 feet

which is what we're very interested in, and the last, well, two aspects of that, it also gives you an indication of the strength of the inversion.

So without getting into too much detail, very often there's an inversion, an increase of temperature with altitude and that can be an important factor for ballooning because it indicates how quickly surface winds might pick up. If you have a strong, deep inversion, that surface wind is likely to remain very light and very conducive for flight.

And the last thing it gives which is not always relevant is how much energy is in the air. Therefore, how much instability is possible.

MR. SUFFERN: Thank you. Do you find that the weather briefings that are provided to you by Lockheed Martin Flight Service or DUATS, are those pre-weather briefings helpful to you in the balloon community?

MR. BAIRD: They're certainly very helpful. They're not the only tools we rely on. Twenty-five years ago that was the only source we had for weather, and we'd be on the phones to Flight Service constantly. Now with all the information that's available to us through the internet, a Flight Service briefing is just one of the tools that we use to get the complete weather picture that we need to make a good go/no-go decision.

MR. SUFFERN: Thank you. Going back a little bit to what you were discussing earlier, as far as the step points, where you

make, you know, you go through step 1 and then you have a go decision to continue to look at the weather, is there any point before a flight where you could not review the weather, if you step through all the steps, you've gotten out into the field, the balloon is starting to get ready, you're getting passengers in, is there any point in there where you could not recheck the weather?

MR. BAIRD: Well, again 20 years ago, it was very different. We used to search for a payphone to get an update from Flight Service. Now we have it on our phones. So we can get up to the minute weather information even while we're in the basket preparing for takeoff. And there are certainly times where you've gone through all the motions, and you've got everybody gathered, you're inflated, you're on the field, and then you look at radar and the weather picture has changed and you decide to cancel the flight at that moment.

MR. SUFFERN: Stepping to a little bit different area as far as the weather products that you review, you were discussing looking at weather products that are very small in scale. Are there particular -- the larger scale products of the National Weather Service puts out, are those helpful to you in the form of area forecasts or AIRMETs or is it more helpful because of the particular flying that you're doing to have a microscale, more in depth products that you review?

MR. BAIRD: We definitely need both. As I mentioned, the first step for me is to look at the big picture. What's the air

mass in general doing? How is it moving? Is the high pressure moving through very quickly? If what I'm seeing on the launch field doesn't match the forecast, that'll give me an indication as to why that could be. Maybe the high has moved away more quickly than forecasted and so on. But, the real meat of the weather information that we need is micrometeorology. You know, a TAF is valid for a 5-mile radius around the location, and we're generally flying outside of that region.

So we're using the largest scale data provided by the FAA and other sources to sort of interpolate where we are in relation to what all those stations are reporting, but we are really focused on what's going to happen in my immediate area. A typical balloon flight is probably 5 to 10 miles, and so we need to focus on what's going to happen in that 5 to 10 miles. And, sometimes the only thing we can base that on is what's happening in all the areas -- all the regions around us.

MR. SUFFERN: Based off of what you have available, are there other tools that you wish that you had available or other weather products that you had available that would be helpful in the kind of flying you're able to do?

MR. BAIRD: With all the data that's available on the internet, I think we have a great deal of information. Sometimes I get to go fly in other countries, a championship, and I feel at a loss because I don't have some of the tools that we have here in the U.S. So, in general, I think we have the weather tools that

we need although many of them are not official weather products. They may be government products, NOAA products, et cetera, that may not be from an official FAA source.

MR. SUFFERN: Thank you. Going a little bit deeper into, you know, dealing with a cloud there and foggy conditions, if a pilot is already flying, and he checked the weather and the weather comes in, in a surprising way, are there any tools while the pilot is up in the basket or the ground crew that allows them to review when those weather conditions could subside?

MR. BAIRD: Well, as I mentioned, the weather data is available on cell phones and iPads and so on. And that's true throughout the flight. Although typically when not reviewing that weather data in flight, you know, we've made presumably a good decision to fly, we know what the conditions are going to be in our area, and so there's no need for the pilot to really check those and it would be a distraction to be trying to be online to check that information.

But, it would not be impossible to radio your crew and say, hey, can you look at radar and see if that area of precipitation is moving closer or if it's developing. It was forecasted to dissipate. It looks like it's getting darker. Can you check it? That sort of thing does occur.

MR. SUFFERN: Thank you. Ms. Hurley, could you bring up Exhibit 5A, page 23 please? And while she's bring that up, it'll be a Skew-T chart of near or area around the accident site at the

accident time there. What formal training is available for balloon pilots as far as understanding how to interpret this information?

MR. BAIRD: I had never heard of a Skew-T chart until a number of years ago, maybe 6 or 7 or 8 years ago, when attending a BFA safety seminar. There was a presentation made by a meteorologist who was also a balloonist and ever since that continuing education seminar, I've used this Skew-T chart ever since. And I know weather is one of the core topics in every seminar we put on, and so this information is being disseminated that way, but it is a relatively -- in general aviation, I think the Skew-T chart is not well known but it's becoming more and more popular as people realize how useful it is to analyze the atmosphere on a very local and sort of micrometeorology scale.

MR. SUFFERN: Thank you. Captain Lawrence, that's all the questions I have for right now.

CAPT. LAWRENCE: Thank you very much. Mr. Jacky.

MR. JACKY: Yes. Good morning. This question is related to Mr. Appelman or Mr. Sandlin or any of the operators who would like to answer it. Is there any guidance or differences in the guidance regarding power line avoidance with regard to the high powered transmission lines versus say local feeder power lines?

MR. APPELMAN: No, I mean power lines are power lines, and that's the bottom line on understanding these were extremely large transmission lines in this discussion. Myself personally, I go

higher and farther away but there's no specific training. Power lines are power lines.

MR. SANDLIN: Yeah, same thing along those lines. Power lines are power lines but my crew is also trained to always be watching out for power lines regardless of the size for me. I'm watching also, of course. So sometimes I'm seeing the same thing they're telling me about but they're trained to do that also for us.

MR. JACKY: Okay. Thank you very much. My other question is with regard to the technology, and you've mentioned GPS and cell phones and having iPads in the basket with the pilot, is there any use of charts or moving maps or any of that technology to help locate where these power lines are located?

MR. APPELMAN: If I may, it's interesting you should bring that up. There is obviously power line grid map that's available for the United States. There's also an app that's called hot air ballooning. Right now there is an effort afoot in order to try to chart those maps within that app. That would be incredibly great information because this is real time tracking, and this would also give you an idea as to what's down the road during your flight.

As far as today goes, very limited information relative to that. Sometimes they're marked on sectionals. Sometimes if you're using Google Earth you can disseminate those if you're using that to navigate during the flight.

MR. JACKY: All right. I have time for one more question, and this is to any of the operators, even the manufacturer. What sort of guidance is provided to operators with regard to an in-flight fire? What are the procedures when a pilot has or encounters an in-flight fire?

MR. BAIRD: The in-flight fire, it depends on the nature of the fire. If it's a basket fire or something that's not fuel related, you put that out with a fire extinguisher. However, if it's a fuel related fire, the only option is to shut off the fuel. If there's a fuel leak, trying to extinguish the flame doesn't do anything because you still have a fuel leak. This is a pressurized fuel. So we are taught to shut off the fuel. That is the training for dealing with a fuel fire.

MR. JACKY: Mr. English and Captain Lawrence, that is all my questions.

MR. ENGLISH: Thank you, Mr. Jacky. I'd just like to have one follow up question. I think it was Mr. Appelman mentioned pilot gaining familiarity with his local area. Could you elaborate a little bit on the methods that a pilot who might be new to a geographic area would use to familiarize himself? Is it using more maps and charts, an apprenticeship program or how would one go about doing that?

MR. APPELMAN: As an individual who has flown in 45 different states doing different types of work with the hot air balloon, the first thing that I typically do is familiarize myself with the

balloonists that are in that local area, in order to find out those type of areas that are friendly to ballooning, by that meaning less obstacles, staying out of air traffic areas, military operation areas. First of all, using that.

Second of all, of course, there's sectional maps. There's all kinds of apps these days in order for us to be able to become more familiar with it on a general sense. You can look at Google Earth. You can do flight paths. You can do all that type of stuff, but I'm an individual that's brought from the grain of you learn it by doing it and you do it by being taught by somebody that knows those type of areas.

So practical application and experience is what should be done in my opinion.

MR. ENGLISH: Very good. I think Captain Lawrence has one follow up to that question.

CAPT. LAWRENCE: I just have one last question. This is to Mr. Sandlin. Obviously this accident occurred -- it was an operator that was a small operator, a single pilot, a single balloon in Texas. I'm curious, as a small operator, how easy is it to start up a commercial balloon operation? What's the process?

MR. SANDLIN: Well, having plenty of experience and knowing what you're doing, I mean I worked with a lot of other big operators to get the experience I have. So that's kind of where you start with. And then you try, even though I'm a small

operator, I fly with other balloon pilots that may not be part of my company because in teams we can kind of share the weather data, share the area we're flying in. I have pilots who fly 10 miles away. We will still talk before a flight, so we can talk about the weather that's going on. So even though I'm a small operator, and a lot of times flying all by myself, I will talk to other operators within a certain geography area or if they're not even flying, I'll talk to them to get an idea, what do you think today, if I'm a little bit not sure.

CAPT. LAWRENCE: I'm more interested in the business aspects, getting a business started, a small business, commercial balloon business? How hard is that? How easy is it to start a business as a balloon ride operator?

MR. SANDLIN: Well, it depends on what you want to do with that. I started off with a small balloon, a 90,000 cubic foot balloon, just doing it on a part-time basis and from there it worked up, getting the right equipment, having new equipment. It could be very expensive. So that's the biggest thing, is I choose to have new equipment as opposed to used equipment. So that's a big factor in what I do.

CAPT. LAWRENCE: Thank you, Panel. Thank you, Mr. Chairman, Mr. English. That's all the questions from the Technical Panel.

MR. ENGLISH: Thank you, Captain Lawrence. We'll move now to the Party tables for witness questioning. The first Party will be Balloon Federation of America, Mr. Parks. It's your floor.

MR. PARKS: Thank you, sir.

Mr. Baird, would you explain within the emergency procedures your technique of -- if power lines strike is imminent, what is the procedure in which the pilot would manage the fuel on board to help prevent the fire that was mentioned earlier by Mr. Jacky?

MR. BAIRD: The procedure really is almost the same for a high wind landing as for an emergency landing, but we're trained obviously to fly the aircraft first but before touchdown or before contact with any part of the ground, we would shut the fuel off. You can shut the pilot lights off. If it's not an emergency or high wind landing, but if it's an emergency landing, certainly landing in front of power lines or trying to avoid power lines, making that kind of landing, you would shut the fuel off on all of the active tanks.

MR. PARKS: Okay. Thank you, sir. One last question then. It was referenced a moment ago by Mr. Sandlin. Mr. Carlton, can you explain the role of your ground crew in the landing process and the power line detection?

MR. CARLTON: Yes, sir. Ballooning is a team sport. That's how we describe it. It's really hard to do by yourself, and as part of the culture of ballooning, we bring crew on board. The ground crew are critical, and this is something that has evolved actually through the years in ballooning. The ground crew used to be called the chase crew, and they would follow the balloon. We've kind of in the past few years changed that concept in the

BFA seminars, that we support to actually have that crew being an advance crew. We -- the goal is for the crew to be at the landing site before the balloon gets there.

The crew can provide valuable information as in, you know, is there access to this landing site? Are there potential hazards in the way? Trees, power lines, perhaps a television antenna. All of those things, if you're flying into the sun, sometimes those things are hard to see, and the crew can be incredibly helpful. You know, they can also give you the lay of the land, you know. From the air, this green grass looks beautiful, but it's actually just full of mud.

To have the crew in advance and helping you in the process is part of the crew management techniques that we try to train.

MR. PARKS: Thank you, sir. Mr. Chairman, that's all the questions I have.

MR. ENGLISH: Thank you, Mr. Parks. Next Party, FAA, Mr. Guzzetti, the floor is yours.

MR. GUZZETTI: Just a couple of questions to further elaborate on the commercial balloon business. Mr. Appelman, it indicates in your bio that Rainbow Ryders is the largest commercial balloon ride operation in the United States. So I'll address this first question to you. How many balloons do you operate? And do you like lease them for the season and then they go somewhere else? How does that work?

MR. APPELMAN: We currently have 26 hot air balloons

registered to Rainbow Ryders, varying in size from 90,000 to 275,000 cubic foot. Our ride operation itself, we'll use somewhere between 17 and 18 of them, between 2 different locations on a year round basis. We do do a seasonal product in Colorado Springs which is typically during the daytime and tourist season. We own the balloons. We finance them through a bank and the amount of use being in the geographic area that we're in, in the southwest, we fly about 310 days a year, and we probably do upwards of over 2,000 flights per year.

MR. GUZZETTI: And how are the -- how many pilots do you employ? And are they employed on a full-time basis? Are they full-time employees or do you bring them in and out on a seasonal basis?

MR. APPELMAN: We employ about 10 or 11 pilots on a full-time basis, year round. We do bring seasonal pilots in or subcontractors if you will. A good example of this is as we go into the wintertime, like here in the Northeast, there's some very competent pilots up here that obviously are not flying as a result of weather conditions, and they'll fly into our Phoenix or Albuquerque location to help support us in peak times during the wintertime where we can help.

During the Balloon Fiesta, which is obviously a very large time for doing rides, we will have as many qualified pilots as we can. We quite frankly are incredibly picky relative to that and then we also have subcontractors that come in and fly for us, and

we'll have about 38 balloons flying rides during that event.

MR. GUZZETTI: And when you say picky, with regards to pilots, can you just generally describe how you vet and look into the backgrounds of pilots?

MR. APPELMAN: It's a very small community. Of course, references are gigantic. Hours, experience. Doing this for 34 years and seeing the evolution of hot air ballooning and the ride business going the way that it is, you pretty well know those that are very, very good at it and those that you probably don't want to be part of your operation. So the experience, time, the way they carry themselves and references.

MR. GUZZETTI: Okay. Thank you. That's all the questions I have.

MR. ENGLISH: Thank you, Mr. Guzzetti. Party table, Kubicek Balloons, Mr. Kubicek, the floor is yours.

MR. KUBICEK: Good morning. We don't have any questions, sir.

MR. ENGLISH: Very good. We'll transition to the Board of Inquiry. Mr. Chairman, Board of Inquiry round of questions.

MEMBER SUMWALT: Thanks. Before we do that, any follow ups from any of the parties at all? Mr. Parks?

Great. So as Mr. English said, we'll now come to the Board of Inquiry, and we'll start with Dr. McKay.

DR. McKAY: Thank you, Mr. Chairman. This is really sort of a general question for the balloon operators. We talked a lot

about the go/no-go decision based on wind and shear, et cetera, but one of the major issues in this accident was clouds and visibility. Can you talk a little bit about the decision making around cloud cover, ceilings, diving through holes and the way that you would make those decisions in your own operations?

MR. APPELMAN: We don't deal too much with that on a day in and day out basis in Albuquerque and Phoenix. However, with that being said, the sensitivity relative to visibilities and ceilings is exceptionally high. The rules are the rules. They exist there, and we stay within the parameters of those.

As a commercial ride operator, we are under the scrutiny and expected to uphold and do that of what is expected of us to provide a safe and enjoyable ride.

And if I may, going in and out of the clouds really is not an option, and it's not a very comfortable feeling as a pilot being up there and being faced with that type of choice.

MR. SANDLIN: And for us in Indiana, 80 percent of our flights are evenings because of fog. So we don't fly a lot in the mornings, but if the cloud level is at 3,000 feet, typically we won't fly. So for us, the parameters are pretty high just because we know it can come lower. And then again on the holes, we don't fly in and out of the clouds.

DR. McKAY: And then again on the weather issue, it seems on the morning in question, there was a change from the time that the pilot got his formal weather briefing until a couple hours later

when he was actually taking off.

In your practice, what is sort of the last weather check that you would routinely do?

MR. APPELMAN: The last weather check is at the end of the flight, not to be curt about it, but the simple fact is given the technology of today, you know, yes, we are tasked to make sure that we are flying during our flights, but there are different type of weather reporting stations throughout the flights. Whether I'm flying across town, I can see weather just with weather bug type of reporting stations.

So as far as a go/no-go decision, literally those decisions happened in mid inflation when things change. Weather does change. In the microclimatology, with all due respect to Mr. Suffern and stuff, the simple fact is sometimes the forecasts are just not what they are and there's unique geographical conditions that will change it at the time and it can happen during inflation. I've had flights that I've canceled after the balloon is inflated with passengers in the balloon.

MR. SANDLIN: Same thing along those lines. We'll cancel right as we're starting to inflate, and I've even had a time before where we'll actually get off the ground and come right back to the ground. It's a 5-minute flight, if we see that the weather has come in as in fog.

DR. McKAY: Thank you very much. This may be a question for Mr. Malecha. Several members of the Panel have talked about

safety seminars and their utility in the process of ongoing training and education for commercial balloon pilots. What safety seminars are required?

MR. MALECHA: Thank you, Dr. McKay. There are no required safety seminars for a balloon pilot to attend. However, a balloonist is required to take a flight review every -- biannually, every 24 calendar months.

DR. McKAY: Okay. Thank you. I think I have time for one more question. Mr. Appelman, this is for you. You talked about power line detectors and the Panel has also discussed some of the differences between flying a small versus larger balloon. How much of a distance do these devices potentially have? How far from the power lines are you likely to be able to detect them? I know you're just testing them. They're not out yet.

MR. APPELMAN: There's a sensitivity range on these particular detectors that we're working with, and I in now way want to present myself as an expert in them. However, the feedback that I've gotten from our pilots at this point is that they are fairly sensitive. Sometimes they do give a lot of what I'll call false positives because the directional capability is the challenge right now on the detection. So I think that at least as far as it goes now, there's new technology out there. We're testing it. We have very, very committed manufacturers in our industry that want to make sure that this stays safe, and I certainly see more perfection and technology that will allow us to

utilize this more effectively in the future.

DR. McKAY: Thank you. Mr. Chairman.

MEMBER SUMWALT: Thank you. Dr. Bowling.

DR. BOWLING: Thank you, Mr. Chairman.

Mr. Appelman, good morning and thank you for being here. What is the typical size of the average ride balloon that's operating in the United States today?

MR. APPELMAN: Thank you, sir. Good morning. The size of ride balloons will really vary upon that of geography. You will not find a whole bunch of large or 275s, 300s, 250s, up on the Northeast because you've just got a much more congested area. From an economical standpoint, it's hard to justify that cost for say a 90 or 100 day season.

So seeing an average cross the United States, I can't give you a direct number, but I will say that the larger balloons are in the western United States where there's more of a longer flying season as well as there's a larger demand and quite frankly, there's areas more conducive of supporting that. The average area I would say would probably be about 160 to a 210 which ranges from a 6 to 10 passenger size balloon.

DR. BOWLING: And following up on that, can you give us kind of an idea, general idea of just how big a balloon that is? Kind of compare it to the size of the building or, you know, height, diameter, that kind of thing.

MR. APPELMAN: We'll use a 210. It's about 82 feet tall. I

believe it's 55 feet wide at the equator and the analogy that I use with my passengers when I'm flying it is it's essentially 210,000 basketballs, the volume.

DR. BOWLING: Thank you very much. Mr. Sandlin, how does a passenger who wants to take a hot air balloon ride go about researching if the company they are going to ride with is a reputable one?

MR. SANDLIN: Typically my rides, they get on Google and they research balloon rides. I mean that's where it starts, is the website. That's how they make their first contact with me. A lot of it's word of mouth, repeat customers but most of it comes straight from the website.

DR. BOWLING: Okay. Thank you very much. Mr. Padelt, we've talked a little bit this morning about the differences between the flight characteristic differences between a smaller balloon and the larger balloon as a 300,000 cubic foot balloon. Is there difference training that's offered in the country for a pilot who wants to go from a smaller balloon to the larger balloon?

MR. PADELT: Like Mr. Appelman was saying, generally a person would step up in size of balloons and he would do that with usually the right operator that he's working with, and he would accumulate so many hours and then step up into the larger size balloon.

If your question is, is there a school in the country to go to, to learn to fly a large balloon, there's schools in the

country that train hot air pilots, not necessarily in large balloons, but the training that they receive in the smaller balloons applies to the larger balloons, and they would receive that training with normally a ride operation such as Mr. Appelman's.

DR. BOWLING: Okay. Thank you very much. And just based on your expertise, do you think the flight characteristics of a large ride balloon are so different from a smaller balloon that maybe a special logbook endorsement or a type rating would be proper?

MR. PADELT: I would have to defer that question to Mr. Appelman. My experience is more in the maintenance, repair and manufacturing and engineering side of it. My experience in flying large balloons of the size we're talking about is minimal. So I would prefer to defer that.

DR. BOWLING: Mr. Appelman.

MR. APPELMAN: There is a difference in flying the two. They can perform the exact same. I feel that having the experience and having that noted is definitely an asset. That's one of the reasons we felt we brought our own internal training program into our company. So, yes.

DR. BOWLING: Thank you very much. I have no other questions, sir.

MEMBER SUMWALT: Thank you, Dr. Bowling. So I've got a few.

Mr. Carlton, as President of the BFA, can you tell us approximately how many people ride each year in the United States

on commercial air tour balloon operations?

MR. CARLTON: Thank you, Mr. Chairman. We don't really have a tracking mechanism that keeps track of every flight similar to -- it's hard to tell how many people actually fly in small airplanes. This would be the same kind of process. We think we've got some ideas. You know, the Balloon Federation membership is about 2100 people. We know that we have not captured all the people that do, and that's pilots and crew. The Balloon Federation is for all forms of ballooning, on land or in flight. We know that there are more than that and obviously it's our goal to bring more into the Federation so we can expand our education plans and continue to provide service to our members.

MEMBER SUMWALT: So you really don't have even an estimate of the number of people who pay money to ride on air tour balloons each year. Is that correct?

MR. CARLTON: We do not.

MEMBER SUMWALT: No estimate at all?

MR. CARLTON: Mr. Appelman has done some research. It's effective to his business. If it's all right, I'll defer that to him.

MEMBER SUMWALT: Yes, please. Thank you.

MR. APPELMAN: This question and challenge has been put in front of us at the Ride Operators Division of the FAA. We've currently done a survey, with not all balloon rides being reported. We've surveyed in excess of 100,000 passengers have

done paid rides. Our estimates could go anywhere from 100 to 200, maybe 250,000 passengers per year for paid rides throughout the country, and we are working towards being able to further define that.

MEMBER SUMWALT: Thank you very much. Mr. Baird, I know you're not expected to be a meteorologist but you are a licensed pilot. So I will ask your opinion of this. If you have a temperature dew point spread of 0 degrees, what might that indicate to you as a balloon pilot?

MR. BAIRD: A low, very low or zero differential in temp dew point is obviously an indicator of saturation, moisture saturation of the air mass which is very likely to lead to cloud formation or certainly low visibilities meaning fog or mist, et cetera.

MEMBER SUMWALT: Okay. So how many of you are experienced balloon pilots? Raise your hands. So everybody on that Panel.

Now if you had a temperature dew point spread of zero, as an experienced balloon pilot, how many of you would fly with that? Raise your hands. And for the record, let the record reflect that none of the witnesses raised their hands for that.

Okay. Let me probe on that just a little bit further, and again I'm not asking you to comment -- well, when this accident pilot received a weather briefing, the weather briefer said, "Yeah, those clouds may be a problem for you. I don't know how long you plan to stay, but" -- and then the pilot replied, "Well, we just fly in between them, we find a hole and we go."

So without commenting specifically about this flight, is finding a hole in the clouds and going above that, is that a safe or prudent practice? And I'd like to hear from each of you. Just key your mic and go down the line beginning with Mr. Malecha.

MR. MALECHA: No, sir, it is not safe or prudent.

MR. PADELT: This practice would be very unsafe.

MR. BAIRD: Definitely not a safe practice.

MR. APPELMAN: Not a consideration.

MR. CARLTON: Agreed, not a consideration.

MR. SANDLIN: No, we would not fly.

MEMBER SUMWALT: Okay. Thank you. I guess my time is up. So I'll go to Dr. McKay.

DR. McKAY: Thank you, sir. Changing subjects slightly, this question is for those of you who have pilot employees in your operations. What type of review or what policies do you have for oversight of your pilot's medical conditions or medications?

MR. APPELMAN: Over the recent 2 years, our company has implemented annual flight reviews. We do internal safety seminars. My pilots are also expected to participate in other types of safety seminars that are BFA approved. Over the past year, I have required a second class medical for the pilots that are working with us that are employee pilots, and I guess that would be it.

DR. McKAY: As a follow on, what was the reasoning in your organization for requiring a second class medical certificate?

And just so we're clear, I'm assuming you mean a second class medical certificate from the FAA?

MR. APPELMAN: Yes, second class medical done by an AME. My reasoning for this was truly as managing personal risk inside of our company itself. The balloon pilots are getting -- are aging, and I want to make sure that they're fit and I want to make sure that they're -- well, that they're fit. So it really comes to an internal risk management aspect and my biggest part of that is the vision.

DR. McKAY: And, Mr. Baird or Mr. Sandlin, do you have any --

MR. SANDLIN: I also have a second class medical. That was something I did recently just because our insurance company has now asked that of larger balloons that I'm using. So I have for that reason, and I only use one other pilot, and he's a fixed wing pilot. So he already had his second class medical. So that made it easy.

MR. BAIRD: I don't have any employee pilots.

DR. McKAY: Okay. Thank you very much, gentlemen. I yield the remainder of my time, sir.

MEMBER SUMWALT: Thank you. Dr. Bowling.

DR. BOWLING: Thank you, Mr. Chairman. This question is for Mr. Padelt. Has the industry given any consideration for using non-metallic envelope load cables? And wouldn't that make the balloon less conductive and therefore make power line accidents less hazardous?

MR. PADELT: In this country, Kevlar cables which is non-metallic cables that you're referring to, is very common. The idea behind Kevlar cables is simply that they are non-conductive. In some situations, Kevlar cables will perhaps save a pilot and passengers. In other circumstances, they will not. So Kevlar cables are being used in this country.

DR. BOWLING: And is Kubicek one of those manufacturers that's using Kevlar cables?

MR. PADELT: All balloon manufacturers offer Kevlar cables as an option and, yes, Kubicek Balloons also offers Kevlar cables as an option.

DR. BOWLING: Okay. Thank you. And has the industry or manufacturers looked at ways to minimize the effect of in-flight fire within the fuel systems?

MR. PADELT: There are fire suppression systems that have been offered on balloons in addition to all balloons are required to have fire extinguishers on board. As Mr. Baird was saying, a fire extinguisher will put out a small basket fire or perhaps a grass fire on the ground. If you have a full blown propane fire on board, the only way to put that fire out would be at the source. They do offer on the majority of the balloons, Kubicek in general will sell nothing but a particular type of ball valve on the tank that is on and off. It does not require to be turned off like a faucet, and all other balloon manufacturers as well offer this.

DR. BOWLING: Thank you very much. And, Mr. Baird, is that the same for Cameron Balloons as well?

MR. BAIRD: That is essentially the same. One of the challenges in developed a system that would shut off fuel in an emergency is to ensure that it won't go off inadvertently in flight actually causing an accident rather than preventing one. So the whole issue of fire suppression, fire mitigation, is a challenging one because again we're not really dealing with a fire. We're dealing with the fuel release from the pressure vessels, from the fuel cylinders.

So it's really a challenging situation to manage. One of the things that we avoid in ballooning -- balloons are very simple aircrafts. There is no electrical system. There are no pumps. The only moving parts are moved by hand, and that's one of the strengths of ballooning. They're very simple, and they have multiple levels of redundancy. So that if one component fails or stops working, you have other ways to get fuel into the burners to give you the lift that you need.

And so, for example, routing all of that fuel through a device that could shut off fuel in the event of a fire, creates a single point of failure and removes that redundancy and creates the likelihood that instead of preventing a fire that is the result of an accident, like contact with power lines, it may actually result in an accident.

DR. BOWLING: Thank you, Mr. Baird. I have no other

questions at this time.

MEMBER SUMWALT: Great. Thank you very much. Mr. Sandlin, Captain Lawrence asked a question about could, if a flight had been canceled many times, if that could put pressure on a pilot, and you said, well, it wouldn't pressure me. I'm the one that makes the decision, but -- and I realize that you're not expected to be an expert in human performance, but do you think as a pilot yourself, do you think there is the potential for that, for other pilots to perhaps be motivated by that sort of pressure?

MR. SANDLIN: I guess there could be if there's pressure from the customer pushing you to fly, and that's happened before, but I still don't let that be a factor in my business practice.

MEMBER SUMWALT: Thank you. I just wanted to hear that because it's not -- I mean I was a pilot myself and even though -- so pressure, external pressure can influence our launch decisions under certain circumstances.

So I'd like to pull up, Ms. Hurley, Exhibit 1P, and I guess, Mr. Appelman, I'll go with you since it has your name at the top of this. Well, in some form or fashion it does. I see where this document -- we'll talk probably about it in Panel 2, but this is the BFA FAA action plan for basically how to improve the safety of the industry I believe. Is that what that is?

MR. APPELMAN: Yes, sir, it is.

MEMBER SUMWALT: Right. I noticed in that document in three or four pages, three or four occasions on that first page, it said

that BFA has a strong safety culture. And I'm through with that document as far as having it up there, but what does that mean, to have a strong safety culture?

MR. APPELMAN: One of the primary functions of the BFA is that of safety, continued safety education. I believe there's 27 seminars that are done that are BFA approved. In order for that approval to be done, which I know that Mr. Parks on the later Panel is head of the Safety Committee, the seminars have to be approved with content that are applicable to safe ballooning, and that's what I would imagine that's referring to.

MEMBER SUMWALT: Okay. Thanks, and I'll probably ask questions about that during Panel 2, but what's involved in developing that safety culture? And the reason I ask you is because I thought I saw you name on that document, and I don't -- I can't see it on the screen, but that's why I'm asking you. I mean what really is a safety culture and how do you achieve it?

MR. APPELMAN: Well, I think first of all, there's raising a level of awareness of exactly what we are doing and how we're doing it, whether it's recreationally or commercially. Item 2 is making sure that we don't get lethargic, slow or lose respect for what's happening and what you're doing while you're up there and operating a hot air balloon. So it's that continual awareness of safety. It's a continual awareness of what can be done, what new techniques are available for us to adopt in making a decision to go/no-go in our flights themselves, making ourselves aware of what

the manufacturers have brought out new and an overall discussion.

One of the things that balloonists are very, very committed to is talking about their flights and sharing the experiences, whether they're good or bad and making sure that we call all get the best our of a situation that may have happened.

MEMBER SUMWALT: Thank you very much. Mr. Carlton, I'll ask this to you, and it may have already partially or fully been answered. If it has, just let me know. But describe what someone would need to do if they wanted to get into the commercial air tour balloon operation. What would they need to do? Just buy a balloon and put an ad on the internet.

MR. CARLTON: Well, it seems that simple but it's really not. Obviously they would need a commercial license to do it legally. We talk about the difference between legally and safely.

However, in order to operate a business like that, especially in a commercial ride operation, you're going to need to have liability insurance. Virtually all of the liability insurance companies, and there's not very many in our world, they have limitations. You have to achieve so many hours of certification. You have to have so many hours of flight time in that type of aircraft before they will insure you.

Obviously they're doing it to protect their interests, but it dovetails with our safety culture that in order to fly something bigger and to take on more responsibility, and that's probably the

key word, more responsibility, whether it's a small group or a larger group, you need that experience. And the insurance companies have worked hand-in-hand. They're very supportive of the Balloon Federation, our safety culture. We bring them into our fold on a regular basis. We get advice from them. We include them in a lot of our safety training processes because obviously they're trying to mitigate their losses. It just makes for a great partnership.

MEMBER SUMWALT: And I realize that you're not an expert in underwriting, perhaps not, but you are. Do you happen to know if the insurance carriers or underwriters, if they do diligence in terms of checking on the pilot's background, the operator's accident history and things like that?

MR. CARLTON: Typically you have to fill out an application when you apply for insurance. As Mr. Appelman indicated, this is a very small community. There's no hiding in this group. There's too few of us, and we're too visible. If you've had an accident history, more than likely those guys are going to know about it, and they're going to expect if you had that, you would need to include that on your application. That's part of their job is to, you know, they only want to insure safe pilots, and that is also conducive what we do.

MEMBER SUMWALT: Right. Thank you. Are there any further questions from the Board of Inquiry?

DR. McKAY: No, sir.

DR. BOWLING: No, sir.

MEMBER SUMWALT: Great. Thanks. We'll go back to the Technical Panel.

MR. ENGLISH: Thank you, Mr. Chairman. We do have just a few quick follow ups for the witnesses.

I'd like to ask just -- this could be for Mr. Padelt or whoever feels they would like to answer this. We talked some before about the performance of the balloons, large and small balloons. If you could, I would like to ask how does the environmental conditions, the weather conditions, affect the performance of the balloon in climb rate, ability to climb rapidly, any other maneuvering. Things like high density altitude or high humidity, in what ways, if any, does that affect the way the balloon operates?

MR. PADELT: Temperature inversions, density altitude, wind shear, these are all types of things that could affect the performance of a balloon system. I'm sure Andy would have more things to say on that.

MR. ENGLISH: Okay.

MR. BAIRD: Balloons, everybody thinks of hot air balloons as being driven by temperature. They're not. They're driven by density, air density. Density is a big factor. So we all know from flying at higher altitudes or takeoff locations at a higher altitude, that the performance of the aircraft is degraded, and that's true of all balloons.

We also have a temperature limit on the balloons. So the hotter the day, you know, an evening flight, the balloon -- every balloon is going to be a little less responsive, a little more sluggish to maneuver than on a cold, crisp morning. So it feels like it's driven by temperature, but it's really driven by density.

MR. ENGLISH: And would that include the high humidity as well affecting density and performance such as we had at the accident?

MR. BAIRD: High humidity is a tougher one to analyze because you're creating a very humid environment inside the balloon. Moisture is a product of combustion or a byproduct of combustion. So you always have a very humid environment in this is air mass, this huge air mass inside the balloon. But, humidity is a factor on performance but it's much less important than temperature and general atmospheric conditions.

MR. ENGLISH: Okay. Thank you. I believe Mr. Jacky has a follow-up question as well.

MR. JACKY: Yes. Thank you, Mr. English. This is a follow up for Mr. Appelman. Before you had mentioned that your company is evaluating the power line or a power line detector system. Without giving away too much, can you say whether that system is currently available or on the market?

MR. APPELMAN: Yes, as a matter of fact, it was introduced at the beginning of October and the announcement was made at the

Balloon Fiesta by Ultra Magic.

MR. JACKY: Okay. Thank you. And then as a follow up to you and to everyone on the Panel, are any of you aware of a power line detection system that would have been commercially available on the day of the accident?

MR. APPELMAN: There are power line systems out there economically, practical not. The ones I had seen in the past were that used for helicopters and inside of avionics and such. This is the first one that I've really seen available for hot air balloon application directly.

MR. JACKY: Anyone have any other thoughts? Go ahead, Mr. Baird.

MR. BAIRD: There used to be one available quite a few years ago, about 20 years ago, from another manufacturer. It did not have a good reputation as to being really beneficial. The technology has been around for a long time, but as of the time of this accident, I'm not aware of one that was commercially available at that time, and not for certainly in the few years, maybe 5 or 10 years preceding the accident.

And the other comment I want to make is that it remains to be seen how effective they are. One of the downsides to this kind of technology is it can lull into a false sense of security where you're relying on a device to give you information that it may not be able to in all circumstances and really, as pilots, we need to be vigilant. We need to be making smart choices about where we

land and making sure we have clear visibility of that landing area or any time we're operating a low altitude, rather than relying on a device that may or may not function well enough.

MR. JACKY: Thank you. I'll cede to Captain Lawrence.

CAPT. LAWRENCE: Thank you very much. Ms. Hurley, if you'll bring up Exhibit 2M, page 2. And as she pulls this up, this will be the Kubicek standard takeoff checklist that's in the operating manual for this particular balloon. My question's going to be to you, Mr. Malecha, and I'll tee this up with the knowledge that during the investigation, we conducted numerous interviews with pilots that had flown with the accident pilot and the ground crew, and learned that typically and rarely did this accident pilot ever use checklists during the course of his setup preparation and flight operations. So my question to you is, is there a requirement for commercial balloon pilots to use checklists?

MR. MALECHA: Yeah. Well, during preflight operations, it is required to use a checklist for preparation in the different phases.

CAPT. LAWRENCE: Okay. Could you expand on what the term use the checklists? Are you actually reading the checklists and is reading similar to what they do in aircraft, airplanes?

MR. MALECHA: Yeah, this is an aircraft. So, yes, some may use it as a to do list. Some may use it as a list to verify, you know, like, for example, during, you know, standing up the balloon. You can't be reading from the checklist as that is

happening, but once you have stood the balloon up, you may be able to go ahead and -- or you would be able to go ahead and read the checklist to ensure that you have accomplished all the tasks.

CAPT. LAWRENCE: I'd like to shift down to Mr. Appelman and Mr. Sandlin, too. As a large and small operator, can you tell me what your philosophy is, company philosophy is in the use of checklists for setup and during flight?

MR. APPELMAN: The actual use of a checklist such as that of maybe what I'm envisioning inside of a cockpit, we do not do. We have checklists that we go through on reviews and in safety seminars and our pilots are pretty in tune as to what they do on a daily basis. So there is a procedure. As far as an actual checklist that we go against, there is not one we do for every flight.

CAPT. LAWRENCE: Mr. Sandlin, as a small operator.

MR. SANDLIN: Same thing. We have a checklist that we use to get prepared, getting out of the van, getting ready, but once we start setting the balloon up, we're more of a mental checklist at that point because we're busy doing the things on the balloon. But we review those checklists, what needs to be added to them, what needs not to be added to, so the crew is aware of what we're doing.

CAPT. LAWRENCE: Okay. And my final question is for any of the operators on the Panel. We learned that typically passengers are required to sign waivers prior to flight. My question is why?

MR. APPELMAN: The waivers are a function of validating the insurance policy in order to inform the passengers that -- inform consent relative to the dangers or potential dangers ranging from injury to death to trespassing. Also in some of the waivers, there are verbiage in there relative to listening to the pilot and safety aspects of the flight.

CAPT. LAWRENCE: Thank you, Mr. English. That's all the Technical Panel's questions.

MR. ENGLISH: Okay. Thank you, Mr. Chairman. The Technical Panel has no more questions.

MEMBER SUMWALT: Great. Thank you very much. Do the parties have any follow-up questions?

MR. PARKS: No, sir.

MR. GUZZETTI: No, sir.

MEMBER SUMWALT: Thank you very much. And, Mr. Kubicek?

MR. KUBICEK: No, sir.

MEMBER SUMWALT: Okay. Well, great. We're doing quite well on the time, and I know, just for your planning, it's probably going to be around 12:45 or 1:00 before we break for lunch. So with that, we'll give a little bit longer break. Let's come back at 11:05, and so we are in recess for 24 minutes.

(Off the record at 10:41 a.m.)

(On the record at 11:06 a.m.)

MEMBER SUMWALT: Okay. We are back in session. This next Panel will concern regulations and oversight and, Mr. English, I'm

going to turn it over to you, sir.

MR. ENGLISH: All right. Thank you, Mr. Chairman.

Panel 2, our witnesses are Mr. James Malecha from FAA, Mr. John Duncan, Director of Flights Standard Service, FAA, Mr. Sam Parks, Balloon Federation of America, and Mr. Dean Carlton, Balloon Federation of America.

Will the witnesses please rise and raise your right hands?

(Witnesses sworn.)

MR. ENGLISH: Thank you. You may be seated.

For Panel 2, the Technical Panel Lead, Captain Lawrence.

CAPT. LAWRENCE: Thank you, Mr. English.

Good morning again, Chairman, Board of Inquiry. Good morning, Panel. For introductions, if we could start again with Mr. Malecha on the end of the table and go down the row and if you could just introduce your name and title with the organization you're representing.

MR. MALECHA: My name is Jim Malecha. I am the FAA Subject Matter Expert for Policy on balloons.

MR. DUNCAN: Good morning. I'm John Duncan. I'm the Director of Flight Standards with the FAA.

MR. PARKS: Good morning. My name is Sam Parks. I'm representing the Balloon Federation of America Board of Directors as well as the Chairman of the Safety Education Committee.

MR. CARLTON: And, I'm Dean Carlton. I'm the current President of the Balloon Federation of America.

CAPT. LAWRENCE: Thank you, gentlemen.

Mr. Guzzetti, I understand the FAA has a brief presentation that Mr. Malecha would like to make. You may proceed at this time.

MR. GUZZETTI: Yeah. Thank you. We do. We have just a 3 to 5 minutes PowerPoint presentation just to kind of lay the groundwork, high level overview of FAA's oversight of balloons, and Mr. Malecha will walk us through that.

MR. MALECHA: Thank you, Mr. Guzzetti. Thank you, Captain Lawrence.

The FAA has, like the NTSB, is concerned with the man, the machine and the environment. And the man receives certification from the FAA in accordance with Part 61. Commercial pilots with lighter than air category in balloon class ratings, during training, the ground or flight training, will be in 11 specific areas of operation, and those will include among others, some technical subjects, preflight preparation, launches and landings, performance maneuvers, emergency operations and post-flight procedures. There are others, but those are rather germane to what we're talking about today.

Aeronautical experience, as it shows on the slide, they must have 35 hours of pilot time as a pilot including 20 hours in balloons, 10 flights in balloons, 2 flights as a pilot-in-command and 10 hours of flight training including 10 training flights. And it's noted that there is no FAA requirement for a balloon

pilot to hold a medical certificate.

I'm skipping the machine for a second and going to the environment. The operational requirements are set forth in Part 91. There are numerous subparts in Part 91, but the ones that balloons are typically most concerned with include, but are not limited to:

The general rules and that's things like civil aircraft airworthiness, the prohibition on interference with crewmembers, careless or reckless operation or dropping objects.

Flight rules which include the rules of the road, like the right-of-way rules, minimum safe altitudes or operations in different types of airspace.

Equipment, instrument and certificate requirements will address items such as the required certifications and instrument requirements for the aircraft.

The preventative maintenance and alterations subpart will address the maintenance that's required, inspections required and the maintenance records.

Again, there are other sections in each of those subparts, but those are some of the more germane and just examples of what are in each of those four items that are bulleted there.

And I'd like to point out that like any other Part 91 operator, the FAA may perform oversight of commercial balloon operations to ensure compliance with these items.

The airworthiness standards was brought up briefly in the

last panel. Part 31 discusses the certification requirements of the machine itself, and there's a list of seven items here and those are everything from the lighting that may be required if they were to fly at night or strength requirements of the basket or the fabric or that type of thing.

Now that I've talked about the man, the machine and the environment, I also want to bring up one other topic, and drug and alcohol reporting requirements are very clearly set forth in Section 61.15, and that requires any certificate holder to report any of the following: convictions for certain drug offenses; motor vehicle actions and motor vehicle action is a conviction related to the operation of a motor vehicle action while under the influence or driving while intoxicated, and any of these actions must be reported to the Civil Aviation Security Division within 60 days of the action.

We again earlier in Panel 1, you had asked about some publications. These are some of the FAA publications that are available regarding balloons and balloon flying. There's a *Balloon Flying Handbook*; an Advisory Circular 91-71 which is the Operation of Hot Air Balloons with Airborne Heaters; the commercial pilot practical test standards for lighter than air; and there is a private pilot practical test standards as well but for the sake of this hearing, commercial is appropriate.

There are a couple of pamphlets, the balloon safety tip pamphlets. One's entitled Power Lines and Thunderstorms which you

asked about in Panel 1, and there's another one called False Lift, Shear and Rotors.

The last bullet is the Flight Standards Information Management System, or FSIMS, and that contains FAA Order 8900.1 which is guidance to inspectors on how to conduct surveillance of Part 91 operators in general, how to conduct balloon inspections and events that balloon may be at. That is available to the public as well which is why I include it here because the public is welcome to read it to familiarize themselves with the regulatory environment. All of these publications are available on faa.gov.

I have completed my presentation, Captain Lawrence, if you have any other questions.

CAPT. LAWRENCE: Thank you, Mr. Malecha. I appreciate that informative presentation. We will have some questions. I appreciate you bring up the 61.15. We'll touch on that in this Panel and also with Dr. Webster on the third Panel, but I would like to begin with Mr. Duncan.

Thank you for being here today. My question, I'm going to start from a global perspective right now. How does the FAA conduct operational oversight of commercial balloon operations?

MR. DUNCAN: Yes, sir. Thank you. All of our oversight is risk-based oversight. We determine where we will use our resources based on an operational risk evaluation of the system, and we have used for a long time something we refer to as a safety

continuum. At the high end of the continuum in large scale commercial operations, Part 121, we spend a great deal of resources dealing with that because of the exposure there. At the other end of that scale, in the general aviation industry, we spend a lesser amount of resource dealing with those.

Particularly with the commercial balloon operations, our folks have a charge to look at commercial balloon operations, but they do it at a much lower frequency than we would other operations because of the lower risk involved in those kinds of operations.

CAPT. LAWRENCE: So for clarity, the general aviation public are operating under the same Part 91 rules as commercial balloon operators. Is that correct?

MR. DUNCAN: That's correct.

CAPT. LAWRENCE: Okay. Considering the differences between Part 91 and Part 135, which tends to cover commercial airplane operations, I wonder why aren't commercial balloon operations regulated to the same level as commercial airplane operations?

MR. DUNCAN: In general, it's a risk analysis as well. We looked at that situation and made the determination that it wasn't necessary to have the same constraints and limitations on that community as we do in the 135 community.

CAPT. LAWRENCE: Thank you. Mr. Malecha, as an Aviation Safety Inspector, are commercial balloon operators subject to any operational surveillance activity by any FAA inspector? And if

so, what are those?

MR. MALECHA: Well, they certainly may have surveillance conducted by FAA inspectors. It may be at an aviation event. It may be, you know, a surveillance out, you know, if one is taking off, a ramp check may be done there. There's the repair station that works on balloons may receive oversight or will receive oversight if it's a Part 145 repair station. So there is an amount of oversight that is conducted by aviation safety inspectors on the balloon community.

CAPT. LAWRENCE: You're a Safety Inspector, too, as well, correct?

MR. MALECHA: Yes, sir.

CAPT. LAWRENCE: When was the last time you did an operational surveillance activity on a commercial balloon operator?

MR. MALECHA: Well, personally, sir, I've been with the Headquarters Policy Division for 3½ years. However, I'm stationed in the center of the country, and there was an aviation event and none of the inspectors in that FSDO had operational knowledge. So I conducted some OJT for those. So although it is uncommon for me to be conducting surveillance because I'm with the Policy Office, it's been within the last 3 years that I have.

CAPT. LAWRENCE: Fair enough. How often do you think an inspector actually goes out in the field and does an operational surveillance of a commercial balloon operation?

MR. MALECHA: That would be dependent upon the area. I can say I began my career in the Albuquerque Flight Standards District Office which is the home of Balloon Fiesta, and that's a 9 day, very -- it begins the beginning of October. It's a very, very intense 9 days of balloon flying in the morning and the FSDO brings in inspectors from other offices to assist in conducting that. So in Albuquerque, in October, there's a lot of surveillance done on balloons.

On the other hand, you know, there may be none -- there may be no balloon activity in some states and obviously a FSDO inspector would not conduct any surveillance there.

CAPT. LAWRENCE: Thank you. I notice that you mentioned that you provided some OJT, on-the-job training for some other inspectors. Is there any kind of special training that an inspector receives relative to oversight of commercial balloon operations?

MR. MALECHA: From an operational standpoint, no, there is not. There is -- the surveillance that would be required of a commercial balloon holder is typically airworthiness in nature, but there certainly could be some operational as well, and that would be more of an OJT and familiarization type.

CAPT. LAWRENCE: What are some examples of operational? You said they were different than the airworthiness.

MR. MALECHA: Well, the operational is the actual flight. The airworthiness might be a ramp check or a spot inspection or an

AD records check, where as an operational ramp check may be, you know, pilot's certificate, conducting a surveillance, watching the balloon being inflated and stood up and ensuring that all of the equipment is functioning on board.

CAPT. LAWRENCE: Thank you. Mr. Hurley, if you'll bring up Exhibit 2Q, page 2.

This exhibit shows some of the FAA responses to NTSB inquiries relative to the investigation that states that the FAA does not track commercial balloon operators as there is no regulatory basis for those operators to be certificated or authorized to conduct those operations.

And we heard earlier from the BFA personnel about the membership and that they alluded to that's not all the commercial balloon operators out there because it's a voluntary organization. They have a limited number of membership.

My question to you as an inspector, how would you know where one of these operations, if they're not part of the BFA, one of these smaller operations similar to this accident operation, how would you know where they operate so you can go out there and do a surveillance activity on them?

MR. MALECHA: Numerous websites will have listings of balloon ride operators that are operating in an area. So if FSDO management determined that oversight of ballooning in an area is necessary, they could certainly go, you know, use a search engine to find ballooning in their area or one of these websites that

does have that.

CAPT. LAWRENCE: And so the knowledge of where these operations are occurring is based on websites that the FAA uses? That's their source of information to find out where these operations are?

MR. MALECHA: That would be one. You know, common knowledge, you know, this is not a very transient community. You know, like for example, the balloon in question operated in the same area for several years. So an office would know -- could know what is going on in their area.

CAPT. LAWRENCE: Thank you. I want to move a little bit to balloon training, and we touched on some of the procedures in Panel 1, one of which was that rip out procedure where you pull the parachute valve out of the envelope to conduct an emergency descent. Are emergency procedures required to be demonstrated by pilots in flight testing?

MR. MALECHA: Yes.

CAPT. LAWRENCE: Okay. For the rip out procedure, how would an inspector evaluate a pilot's performance on that particular procedure? Would they have to see it during a practical test?

MR. MALECHA: They may, if conditions warrant it. But if it is -- if there is not a high wind situation, they may simulate it or it may be done via discussion to ensure that the airman has a knowledge of that.

CAPT. LAWRENCE: Very good. On Panel 1, we heard earlier

about performance differences between larger and smaller balloons. Pilots on larger airplanes, and I think one of the panelists mentioned the difference between a 172 and a 737. Sometimes there are performance differences and handling differences, that extreme on balloons. Pilots of larger airplanes are required to have type ratings as you move up in complexity and performance differences in these aircraft, and even foreign countries, several foreign countries require pilots to have some type of checkout or certification as they move up in the larger balloons, and my question to you is, does the FAA require any checkout on a larger balloon similar to a type rating before a pilot can operate as a pilot-in-command on that larger balloon?

MR. MALECHA: No.

CAPT. LAWRENCE: Why not?

MR. MALECHA: Well, I can't speak to the rulemaking that has occurred in the past, as I was not on any of those ruling teams. However, from a risk standpoint, as the industry has evolved, more balloons -- more larger balloons are becoming more prevalent, but rather than using the difference between a 172 and 737, a little more accurate may be the difference between something like a Cessna 172 and a Cessna Caravan which, you know, is an entirely different aircraft from, you know, the engine standpoint, but it still has a fixed gear. You know, it has all of the same systems in concept but they're executed a little differently, but a 172 will fly differently than a Caravan.

CAPT. LAWRENCE: Thank you. I appreciate the analogy. I'm actually type rated in the Caravan because it does require a type rating even though it's a fixed wing.

MR. MALECHA: Some may not.

CAPT. LAWRENCE: Right. Let me ask, is the FAA doing anything since the advent of an introduction of these larger balloons into the U.S. airspace, are they considering doing any checkouts for the larger balloons?

MR. MALECHA: We are working with the Balloon Federation of America to have industry being, you know, more proactive and able to educate their personnel more and the community more, but at this time, to the best of my knowledge, there is no rulemaking.

CAPT. LAWRENCE: Thank you. This question is to Mr. Carlton. And, Ms. Hurley, if you'll bring up Exhibit 1N, page 12. Thank you.

Mr. Carlton, first off, this is the BFA's industry best practice document that was in effect at the time of the accident. The next to last bullet references a desire for the BFA to have more stringent standards for commercial balloon pilots in regards to currency and flight reviews. Can you give me examples of what the BFA would consider to be more stringent standards for commercial balloon pilots?

MR. CARLTON: Yes. And we're still in the process of refining this document to try to add more value to what we can get. I guess the contrast I would like to look at is, you know,

we talk about, you know, from a regulation side, is it legal? And then from an operational side, is it safe? We find sometimes you can still be legal but maybe perhaps you're not being safe.

So from an industry standpoint, we're trying to set some standards and a range of opportunities for operators to enhance their skills to verify that they have those skills because we have the, you know, a ride operator may not have to show the FAA that they have balloon ride insurance. In order to be a member of our ride operator's association, you have to.

So there's certain things that we can, even though it's a voluntary organization, we can encourage people to do that because inclusion in that list would -- basically we're trying to create an opportunity for the general public to be able to separate a rider or a ride operator that's willing to step out farther, you know. They perhaps have more hours in this type of an aircraft. They have a certain number of years of experience, those kinds of things.

CAPT. LAWRENCE: Thank you, and I appreciate you talking about the experience levels. I'm sorry. Mr. Parks, you have more.

MR. PARKS: Sure. Captain Lawrence, yes, just to follow up on that. Regarding the words, more stringent, one of the requirements for pro membership as outlined in the document was a yearly review. It could be a yearly audit instead of perhaps a standard FAA flight review that takes place every 2 years. So it

would be a more stringent testing in overview within that organization.

CAPT. LAWRENCE: Thank you. And you mentioned experience and flight hours. I want to go back to Mr. Malecha a moment. Compared to a commercial airplane pilot who is required to have a minimum of 250 flight hours to get their license, as we saw in the presentation, a commercial balloon pilot is only required to have 35 hours before they can begin flying paying passengers. And my question is, does the FAA consider that sufficient flight experience and are they reviewing those requirements at any point in time?

MR. MALECHA: Well, I was not in on the rulemaking team when that rule was made a long time ago. However, other forms of aviation, like gliders, for example, also have a similar number of hours in order to get a commercial pilot's certificate. You know, if you look at the number of commercial accidents that have occurred, it's actually fairly small, you know, fatal accidents is very, very small over a decade and, you know, I would submit that although 35 hours is a minimum, that's not necessarily at the point at which somebody would get the commercial certificate.

CAPT. LAWRENCE: Thank you. Mr. Duncan, I saw your light on. Do you want to add anything?

MR. DUNCAN: Yes. My problem is I can't tell what's on and off I think is part of the problem.

I would jump back just a minute to include the question about

the necessary training as well as the number of hours involved, I should say transition training, to say that we evaluate those things through our certification process and associated with our certification process, and we look at the complexity, the change in complexity that's required.

Now having said that, there is an existing regulation that covers all operations that requires that you be familiar with the aircraft that you're going to fly. You have to understand, you have to be competent in the aircraft you're going to fly. So that covers all balloon operations including the big ones and the little ones in that regard and addresses those issues.

We do those evaluations and we are constantly looking to determine whether we need to change those rules or not. Changing of the rules is very cumbersome. The rulemaking process is a very deliberative process. It takes a lot of effort. A more effective and a more timely way to deal with that is with what these gentlemen have been describing and that is the community recognizing that they would choose to operate with higher standards and require those standards, and we support them and want to leverage that in the work that we do.

CAPT. LAWRENCE: Thank you. I'd like to move on to a specific regulation that was addressed in your opening presentation. Ms. Hurley, if you'll bring up Exhibit 2S, page 3 please.

This exhibit shows a FAA memorandum indicating that in 2013,

the FAA was aware that the accident pilot had a history of drug and alcohol related convictions. My question is to Mr. Duncan.

First off, 61.15 requires a pilot to provide the FAA with written notice within 60 days of one of these type of drug or alcohol convictions, and according to the investigation, the accident pilot never provided any notification to the FAA of this written report.

Globally, why does the FAA require a pilot to disclose these drug and alcohol convictions?

MR. DUNCAN: Generally a pilot has a responsibility to be fit to fly when they fly. So that means that they have a responsibility to not take inappropriate medications, to be properly rested and do all the things they're supposed to do. These particular issues raise themselves to a level that we feel it's appropriate that the FAA should know so that we can be involved in the conversation and the regulation of those kinds of events.

CAPT. LAWRENCE: And as Director of Flight Standards, you have oversight of the certificate process for airmen, correct?

MR. DUNCAN: Correct.

CAPT. LAWRENCE: Okay. Can the FAA suspend or revoke an airman's certificate for failure to make any of these reports?

MR. DUNCAN: Yes.

CAPT. LAWRENCE: If we can go to Exhibit 2S, page 5 please.

This is a letter that the FAA send to the accident pilot

indicating that although they were knowledgeable of five previous unreported alcohol violations, there was no enforcement action that was going to be taken against the pilot due to the FAA considering that those violations were "stale" and instead an education letter was sent to the pilot.

My question, Mr. Duncan, could a history of non-reporting of alcohol and drug violations warrant suspension or revocation of an airman's certificate?

MR. DUNCAN: Yes.

CAPT. LAWRENCE: What part of the FAA is responsible for that?

MR. DUNCAN: The action is taken by the ASH, Aviation Security Organization, is the organization that takes those actions.

CAPT. LAWRENCE: They take the suspension or revocation action against the certificate?

MR. DUNCAN: Yes, they bring those actions, yes.

CAPT. LAWRENCE: How is that information coordinated with Flight Standards since you have the oversight of the certificate?

MR. DUNCAN: They work with us to make sure that we understand what's going on and we collaborate in that way along with the medical organization as well.

CAPT. LAWRENCE: Okay. Are you aware of any FAA guidance on how many times a pilot -- a history, how many times a pilot can fail to report any of these violations to the FAA and that rise to

a revocation or suspension of the certificate?

MR. DUNCAN: The details of the circumstance matter. So that's where the medical folks get involved and talk about the nature of what's implicated by the report and a decision will be made based on the circumstances in a particular event. So a single one could be enough.

CAPT. LAWRENCE: Ms. Hurley, if you'll bring up that same exhibit, Exhibit 2S, page 5 as well.

As she pulls that up, the education letter that was sent to the pilot, that the FAA sent to the accident pilot, they reminded the pilot to answer question 18V of his airman's medical application correctly, so that they could seek information about arrests, convictions, license suspensions, revocations, including substance abuse.

My question is, to be clear, and maybe Mr. Malecha, you could answer this, a commercial balloon pilot doesn't even need to apply for a medical certificate, do they?

MR. MALECHA: That is correct.

CAPT. LAWRENCE: Okay. Thank you. We're going to explore that a little bit more in detail with Panel Number 3. Staying with Mr. Malecha, given the potential large impacts -- I'm sorry.

Actually, that's all the questions I have at this point in time. I'd like to pass to Mr. Suffern please. We'll handoff to Dr. Webster.

DR. WEBSTER: This is Dr. Webster. I just wanted to explore

that question a little bit more. In the letter that was sent to this pilot -- if we could bring that letter up again please, 2S.

Again, it asks the pilot to report on his next medical if he's had some drug or alcohol issues. Can somebody up there explain the rationale for asking for somebody to report something on a medical certificate when he's not required to have a medical certificate?

MR. DUNCAN: I don't know that I can explain this rationale particularly. I wasn't involved in the issuance of the letter. I can speculate that that letter is used under a number of different circumstances and that it would apply or that logic would apply when someone was replying for a medical. The advice is accurate. Nonetheless if that pilot chooses to apply for a medical, then they should answer that question honestly.

DR. WEBSTER: Okay. Thank you very much.

I'd like to go back to an earlier question that we answered, that you answered. You mentioned that safety improvement in the balloon industry is coming from working through the community to improve the safety culture. I don't know if you can answer this question or not, but was the pilot involved in this accident a member of the community?

MR. PARKS: Yes, Dr. Webster. I can say that he was not a member of the Balloon Federation of America.

DR. WEBSTER: I have no further questions.

CAPT. LAWRENCE: Mr. Suffern.

MR. SUFFERN: Thank you. We'll step a little bit of a different direction here going back to some weather questions.

Mr. Malecha, given the potential large impacts that we discussed earlier in Panel 1 about micrometeorology and those conditions there, is there any thought or idea to change or adjust the weather minimums specifically under VFR conditions to allow for a safer buffer zone for balloon operations?

MR. MALECHA: Well, balloon operations typically are either in Class G airspace or Class E airspace again as a general rule, and each of those have specific weather minimums that must be met for operations in those airspaces.

But something I do want to point out is that these aircraft are moving very slowly. They're moving at the speed of the wind. Prior to takeoff, they will put up, it's called a pibal. It's effectively a helium balloon. And so they're able to tell the winds at certain levels of air right above them. And that's a part of the preflight for most balloon pilots, including the accident balloon pilot. He set up two. So he knew what the winds were doing.

And, you know, a cloud typically doesn't magically form around somebody. You know, as you are flying, if it is so low that there is a possibility of the cloud forming, of fog forming or a lowering of ceilings, then, you know, it's prudent to maybe not fly, but the minimums are in place. Whether or not an airman chooses to obey the minimums is another thing.

MR. SUFFERN: Okay. Following up on that a little bit, as far as the FAA guidance and training and when balloon pilots are getting their commercial balloon license, has there been any thought to providing weather questions that are more particular, that would apply more to a pilot that is operating balloon operations as opposed to fixed wing operation?

MR. MALECHA: Well, the practical test standards for commercial balloon pilots requires some questioning on weather, and a designated pilot examiner who will most likely be the person who is conducting that check ride, will ask about balloon related weather. It would make no sense for a designated pilot examiner to ask about, you know, the tropical weather systems, you know, or high altitude weather when the micrometeorology is more important. So the testing is already there.

MR. SUFFERN: All right. Thank you. Ms. Hurley, if you could bring up Exhibit 1M, page 26. It should be a part of the BFA best practices, and this will be for you, Mr. Parks or Mr. Carlton.

On the checklist at page 26, it has a exemplar weather checklist that is available to the pilot as far as what they should be checking, you know, weather-wise. Has there been any thought to operating that matrix and putting surface temperature and surface dew point like the question we had in Panel 1 up on that matrix there?

MR. PARKS: Yeah, that's a good question. Regarding the

Skew-T chart, it was indicated earlier in the previous Panel, as that reporting and that technology has become more and more widely used within the ballooning community, I'd say absolutely. That new information tool could be imported into this particular document which is going through a most recent rewrite right now.

MR. SUFFERN: Also not only including Skew-T information, but also, you know, something in the particular matrix, there's a discussion about taking off, the conditions you would need to have before sunrise or after sunset, something like that, and also including surface temperature and dew point in that matrix as well, not just Skew-T information?

MR. PARKS: It could, but we've got to remember, whether it's a private pilot or a commercial pilot, they still have to maintain the weather minimums regardless of if it's an AM or PM flight. They still have to fly by the FARs but, yes, it's a good point. The PRO Division Board has already talked about that. It is incorporating some of this new weather technology reporting into the best practices guidelines.

MR. SUFFERN: Thank you, Mr. Parks. Mr. Carlton, did you want to respond.

MR. CARLTON: As Mr. Parks indicated, we are working on developing that. One of the challenges with basically trying to establish a firm set of weather guidelines is weather is different in different places. Where Mr. Appelman flies, the dew point temperature spread is generally not an issue. They only see

clouds 3 days a year in his area. If you fly in the Northeast, it's a completely different environment. So we need to make sure that we're encouraging the individual pilots to encompass their local area as part of their analysis because it can make a difference.

It's weather related to also environment. If you're in an area where there's a lot of wide open spaces, you can probably land the balloon safely at a faster speed because you have less obstacles. If you're flying in Vermont where there's a lot of trees, those wind speed minimums are going to be lower for you in your area.

MR. SUFFERN: Thank you, Mr. Carlton. That's all the questions I have.

MR. ENGLISH: All right. Thank you, Mr. Suffern.

Mr. Chairman, that ends the Tech Panel's round.

MEMBER SUMWALT: Thank you, Mr. English. We'll now go to the parties. We started with BFA first last time today. With this round, why don't we start with the Federal Aviation Administration, Mr. Guzzetti.

MR. GUZZETTI: Thank you, Mr. Chairman. I have several follow-up questions. If I could have Exhibit 1S I think pulled up. That was the package -- yeah. It was 2S, excuse me, 2S with page 11, and I wanted to ask Mr. Duncan this question.

As you know, Mr. Duncan, in this package there is a copy of a FAA medical certificate with a block checked by the accident pilot

that indicated he has no history of any convictions involving driving while intoxicated, yet he filled this out and checked that one year after his first conviction. Do you think it's possible that the counseling letter that was sent referenced this exact checkbox, was perhaps a way to let the pilot know that if he does complete another application, he needs to take care in checking that properly?

MR. DUNCAN: I can't speak to the motivation specifically for doing it, but clearly that's the intent. The intent is if you're going to fill out that form, you need to be honest and provide all the information. That's the purpose, I'm sure.

MR. GUZZETTI: Okay. Thank you. And also since this was brought up with regard to the violations, you know, this document that we provided Safety Board with the convictions, the letter that was sent or the memo behind the letter that was sent which is on page -- just a moment -- the investigator, the agent's statement, I think it's on page 4, it indicates that it was determined that the violations were stale and enforcement could not be conducted. And so in place of an enforcement, an educational letter was recommended which is on page 5. Can you tell us a little bit about what a stale complaint is?

MR. DUNCAN: Sure. Through precedent for all practical purposes, in a complaint or any information we come about that is over 6 months old is considered stale and will be dealt with in that way unless we can show that we take appropriate diligence to

work on the case as we move it forward.

Apparently in this case, the determination was made by the folks who were working this that that didn't exist, that appropriate diligence had not been handled and therefore the case was stale and we wouldn't be able to prevail.

MR. GUZZETTI: When you say wouldn't be able to prevail, what do you mean by that? Prevail for --

MR. DUNCAN: It would have been considered stale by the appealing authority or the authority to whom it would be appealed, and we wouldn't be able to -- our case would be lost.

MR. GUZZETTI: And who would you lose that case to?

MR. DUNCAN: NTSB.

MR. GUZZETTI: So it's a NTSB rule that says that if the FAA is going to take a pilot to task, they really should have due diligence. There should be some standard of aggressiveness so to speak in that regard or else the FAA may lose its appeal?

MR. DUNCAN: Correct.

MR. GUZZETTI: Okay. Mr. Malecha, there's been some discussion about big balloons versus small balloons and endorsements. From the previous Panel, I just wanted to reiterate or I wanted to ask you, in your opinion, is there a significant change in complexity between a small balloon and a big balloon?

MR. MALECHA: If you say complexity, you know, I assume you mean system complexity and there's not. As I believe Mr. Baird mentioned in the previous Panel, you know, they have fuel systems.

This large balloon had three, whereas all balloons have two. It may be a single burner but there are two fuel systems feeding that single burner.

MR. GUZZETTI: Okay.

MR. MALECHA: This, you know, again it has, you know, this aircraft has a basket. It has a fuel system that you turn off and on just like a small balloon. It has, you know, a mechanism for deflation in the top, just like a small balloon. It may have rotational vents to rotate it on its vertical axis which is a nominal increase, you know, one more rope that's hanging down into a basket, but from an aircraft complexity standpoint, they're very similar.

MR. GUZZETTI: Okay. Thanks. I see my time is up.

MEMBER SUMWALT: Mr. Guzzetti, thank you for watching the time, and you'll certainly have an opportunity to follow up in the next round. Kubicek Balloons.

MR. KUBICEK: We don't have any questions.

MEMBER SUMWALT: Thank you, sir. And Balloon Federation of America.

MR. APPELMAN: Mr. Parks or Mr. Carlton, do you feel that there are any rule changes that may have affected or prevented this particular accident?

MEMBER SUMWALT: Well, excuse me. I'm going to intervene there. So we don't want people to speculate --

MR. APPELMAN: Okay.

MEMBER SUMWALT: -- on this particular accident. So if you could rephrase the question in a manner that perhaps would not be speculative for this accident. Maybe what rules could you see that could enhance balloon safety overall, something along those lines.

MR. APPELMAN: Thank you, and I apologize for that.

MEMBER SUMWALT: Yes, sir. Not a problem.

MR. APPELMAN: Sometimes I'm too direct. As far as the balloon industry itself, is there any recommendations or thoughts or proposals that might be able to help improve a situation as such?

MR. PARKS: Yes. I can't speak to federal regulations, but as what's been mentioned in this Panel and the previous Panel, regarding the community at large, the ballooning community at large, taking a vested interest into the safety of our sport and our business practices, I do think that the combination of the best industry practices, the guidelines that have been referenced as well as the CAP such as the Call to Action Plan that we're currently working on, with the Federal Aviation Administration, would have a positive effect on safety within our industry, yes.

MR. APPELMAN: Mr. Baird, I would like to ask a question directly relative to the performance of the aircraft and it's a little bit engaged. Is it okay for him to do that?

MEMBER SUMWALT: Certainly. Thank you.

MR. BAIRD: I just want to bring clarity to an issue that's

been raised on both Panels a couple of times and from a variety of people. There's been reference to comparing ballooning to the fixed wing world and specifically a 172 to a 747 or a 172 to Caravan, et cetera. And this question is directed to anybody on the Panel, but it might be better served by Mr. Parks or Mr. Carlton based on ballooning experience.

We know in the fixed wing world that changing from one aircraft type to another or one aircraft brand to another, brings about a whole bunch of operational changes, whether it's stall speed, rotation speed, trim tab setting, carb heat setting, mixture control, throttle settings, all of those types of things, and then once in flight, airspeed and so on.

However, is there anything along those lines that would be true of a balloon in switching from one particularly sized balloon to another? In other words, is there a comfortable change in the operational procedures when going from one size balloon to the next size balloon to the next size balloon?

MR. CARLTON: I'll take that, Mr. Baird. As we've indicated, really the only difference operationally between a small balloon and big balloon is the big balloon is bigger. All the same parts are there. The operating skills, the techniques are exactly the same. If there are some differences, it might be you've got more passengers to manage. If anything, that's probably the biggest difference that I would see, but as far as operationally, comparing balloons really between 172 and 737, from a size

perspective may apply, but a complexity, they are definitely indifferent.

MR. APPELMAN: No other questions at this time, sir.

MEMBER SUMWALT: Thank you very much, Mr. Appelman, and back to you, Mr. Guzzetti.

MR. GUZZETTI: Yes. Thank you, Mr. Chairman.

Mr. Duncan, regarding the endorsements. Why is there currently no endorsements from going from a small balloon to a big balloon in your view?

MR. DUNCAN: It relates back to the conversation that just occurred. We require endorsements in situations where we believe the complexity or the operational requirements from moving from one aircraft to another warrants that kind of proof of having achieved that skill level. In the case of balloons, we don't have information that leads us to believe that's necessary.

MR. GUZZETTI: And if that information did become available through the data, would FAA consider such a requirement?

MR. DUNCAN: We would consider such a requirement certainly if the information was available. In many cases, those kinds of determines require rulemaking.

MR. GUZZETTI: Okay.

MR. DUNCAN: So we would also leverage the community standards in order to get something in place ahead of time or as early as possible. If it is an issue that means a safer operation, then we want to leverage the community standards first

as we consider whether rulemaking is appropriate.

MR. GUZZETTI: Okay. Thank you. And, Mr. Parks, the previous Panel, Mr. Baird indicated that other than the three burners, a bigger balloon is more stable. It's not as influenced by wind, it will stop quicker and typically when the basket does or the gondola hits the ground, it won't spill over quite as easily as a small balloon. Would you agree with that?

MR. PARKS: I don't have any experience in a balloon bigger than a 105, 105,000 cubic foot compared to the 300 accident balloon. So I can't speak --

MR. GUZZETTI: Okay.

MR. PARKS: -- to that point.

MR. GUZZETTI: How about you, Mr. Carlton?

MR. CARLTON: Well my experience is from -- I also don't generally fly balloons of that size. However, we fly in Albuquerque and have for a number of years. We land in the same spots as some of the ride balloons that are in the range of this balloon and some even bigger. I will tell you my small balloon will slide farther, it takes longer to stop. Those big balloons, when they come in and they pull the vent, that basket hits the ground and it stays upright. It's stable.

MR. GUZZETTI: Okay. Thank you.

MR. CARLTON: You know, I can't speak from flying it but I can tell you from being right next to many of them. They do have advantages to that point.

MR. GUZZETTI: Okay. Inspector Malecha, Captain Lawrence asked questions regarding an LOA. And, in fact, could I just put up a slide or two from that the backup slides. I think it's -- I forget the exhibit number, but there was just one page of that I wanted to pull up.

But in your opinion, based on your policy experience, based on the fact that you're the balloon subject matter expert, would imposing a requirement on balloon operators for a letter of authorization the same type of imposition for Part 91 air tour helicopters that fly within 25 nautical miles? Do you feel that would have a significant improvement on safety in the commercial balloon industry?

MR. MALECHA: In my analysis of the date, no, I do not believe it would have a significant impact on safety.

MR. GUZZETTI: And when you say analysis of the data, what do you base that on or can you just give us a thumbnail sketch?

MR. MALECHA: Yes. Approximately 3½ years ago, through my position, I received the duty of or the assignment of analyzing a recommendation from a FAA inspector that mirrors the NTSB's safety recommendation regarding the requirement of a LOA. I had looked at -- that safety recommendation only researched or only brought into light 2½ years of accident data.

So I referenced 10 years using the fiscal year that had just ended, I looked at 10 years of the safety data. In the 10 years, there were 4 balloon commercial ride operation fatalities in 4

separate accidents.

You know, a LOA would require a drug testing program. None of the accidents, you know, that I researched or that the NTSB specifically stated was a commercial operation, none of those accidents had either probably or proximate cause of alcohol or drugs.

MR. GUZZETTI: Okay. I've run out of time, so maybe I'll get an opportunity for a third round, but thank you very much.

MEMBER SUMWALT: Mr. Guzzetti, thank you very much.

Does either Kubicek Balloons or the BFA have any follow-up questions?

MR. KUBICEK: No questions.

MR. APPELMAN: No, sir.

MEMBER SUMWALT: Great. With that in mind, we will go to the Board of Inquiry, and Dr. McKay.

DR. McKAY: Thank you, Mr. Chairman.

I have some questions about the relationship between the BFA, it sounds like the BFA has put together a number of educational programs and really is, you know, working with the FAA and committed to safety. How many of the 2100 or so members of the BFA are pilots? What percentage roughly?

MR. CARLTON: I can answer that. That we do know because we keep track of our members. There's about 75 percent are pilots of some kind, either commercial or private pilots. That also includes student pilots along the way.

DR. McKAY: So can you tell us how -- what percentage are commercial pilots?

MR. CARLTON: Of the total pilot base, ones with commercial ratings are about 65 percent of our pilot membership base.

DR. McKAY: Okay. So rapidly doing math in my head, which is always scary, but would you say 1,000 or so are commercial pilots?

MR. CARLTON: Probably in the range between 1,000 and 1200 commercial rated balloon pilots.

DR. McKAY: Okay. So according to Exhibit 2Q, the FAA says that there are 4,670 commercial rated balloon pilots in the United States. About a quarter or so, a little bit less, are members of the BFA. What proportion of the rest of commercial pilots have access to the kind of training and safety information that the BFA has put together?

MR. CARLTON: The BFA does training sessions for all, and how it's structured is each local area, usually a balloon club or a small balloon organization will be the host. They put the training session together. What the BFA provides is we have a very stringent set of guidelines in order to qualify for our support of that. We get the endorsement of the insurance companies. You don't want a safety seminar that's 10 minutes long.

We have a 7-hour requirement. Those are passed down. You have to have an hour of weather instruction, and these are every 12 months. An hour of weather instruction, an hour of pilot

decision making, and an hour discussing accidents. Those are core products. Then we have a second tier and a third tier and they have to have a certain amount of all of those. It has to be a minimum of 7 hours of training in order to meet the qualifications.

And those are extended to every pilot and crew. We find in our organization, it's just as important to bring the crew into training because of the things we've talked about. Ballooning is a team sport. It's not an individual for the most part, and those are extended. You do not have to be a BFA member. We sanction a lot of safety seminars that not all the attendees are members of our organization. We would love to have them all, but it's not a requirement.

MR. PARKS: Also, Dr. McKay, just to let you know, we host an online continuing education seminar every year. So you don't even have to attend one of the local seminars. You can sit at home and dial up on your computer and have access to that.

In addition to that, we provide resource materials through our BFA website as well as materials that they can purchase or they can download directly. So they have access to this information whether they are members or not.

DR. McKAY: Thank you. Would you agree with the idea that those commercial balloon pilots who are most interested in safety and improvement in the industry are more likely to be members of BFA, and those who are perhaps less aggressively attentive to

detailed safety and regulations would be less likely to be members of the organization?

MR. PARKS: That's a hard question to answer because you can't really address the mindset of someone who chooses to become a member of an organization and whatever those reasons may be, but I would hope to think that those that wanted to become a part of an organization had a greater desire to raise the awareness level of safety. I would hope that they would.

DR. McKAY: Thank you. Really this is a question for Mr. Duncan I believe. Mr. Duncan, if the FAA had taken enforcement action in 2013 for the more than a decade of recurrent drug and drunk driving convictions this pilot had, is it likely that at the time of the accident he would have had a valid pilot's license?

MR. DUNCAN: I think that would be somewhat speculative because our system allows that even if your certificate has been revoked at sometime in the past, you can retain that certificate after a period of time. And, I don't know the timing specifically. If we had taken the action and we had been successful in taking that action, then the pilot may have lost his certificate for a period of time, either through suspension or through revocation. However, the law provides that there is recovery options for that.

DR. McKAY: Can you describe what those recovery options are for someone with that number of unreported convictions?

MR. DUNCAN: I would imagine -- well, I don't know that I can

tell you that I have all the information about how we would evaluate particularly in the case of someone who has an issue like alcoholism or drug convictions.

However, under other circumstances, and possibly under this circumstance, we find that there's no medical issue, then the pilot has to re-demonstrate that they have the skill. They can use the experience they have. They have to re-demonstrate that they have the knowledge and skill necessary to hold their certificate and they could retain the certificate.

DR. McKAY: Thank you very much. I have no further questions.

MEMBER SUMWALT: Thank you, Dr. McKay. And Dr. Bowling.

DR. BOWLING: Thank you, Mr. Chairman.

This question is for Mr. Duncan or Mr. Malecha. An airplane pilot must hold a certified flight instructor's certificate to conduct flight instruction. Yet, a commercial balloon pilot with as little as 35 hours of flight time can provide flight instruction without an instructor's certificate. This is correct. Can you explain why this is the case?

MR. DUNCAN: Again, the qualification's requirements, the requirements for any qualification is based on an evaluation of the time necessary to acquire the appropriate skills to be able to do the work that has to be done.

In this case, the decision was made a long time ago that that skill level was appropriate for the complexity of the environment

that the balloon pilots are operating in and the skills necessary for them to do that.

DR. BOWLING: Thank you. And what requirements does the commercial balloon pilot have to meet to maintain their flight proficiency?

MR. MALECHA: A balloon pilot must have a flight review every 24 calendar months, and additionally, just to pile on a little bit to this last answer, during a commercial pilot's practical test, they must demonstrate knowledge of fundamentals of instruction and they must actually instruct on a topic, put together a lesson plan and instruct on a topic during the check ride.

DR. BOWLING: Okay. Thank you very much.

And the flight review, 24 months, this is performed by a commercial pilot -- commercial balloon pilot?

MR. MALECHA: That is one option for somebody to have a flight review.

DR. BOWLING: Okay. Can any flight instructor, fixed wing or commercial balloon pilot, conduct a flight review for a balloonist if they're not acting as pilot-in-command?

MR. MALECHA: A flight instructor has to be rated in the aircraft to be able to -- has to have a certificate to be able to act as the instructor.

DR. BOWLING: Okay. Thank you very much.

How would the FAA know that a commercial balloon pilot has met the 61.56 requirement for a flight review in 24 months?

MR. MALECHA: Well, prior to a flight, the only way is a review of the airman's records, and the FAA has to have a reasonable reason to ask to see an airman's records.

DR. BOWLING: Thank you very much.

And as an inspector, have you ever reviewed the logbooks of a commercial pilot to verify his 61.56 proficiency?

MR. MALECHA: Yes.

DR. BOWLING: And when did you do that?

MR. MALECHA: That would be done in the course of an accident investigation.

DR. BOWLING: Okay. And do you do that also at rallies and other balloon gatherings?

MR. MALECHA: Yes, absolutely. During the Balloon Fiesta in Albuquerque, the Balloon Fiesta staff ensures that all airmen and aircraft have, you know, met current flight reviews, current annual on the aircraft, but if, for example, somebody submitted their information by, I think it's like an August 1st deadline, and they don't get their flight review until September, they would have to come to the pilot registration tent at Fiesta and actually demonstrate to the FAA, they would show that they have a current flight review.

DR. BOWLING: Thank you very much. And I defer the rest of my time.

MEMBER SUMWALT: Thank you very much. Mr. Duncan, I believe this year you are celebrating your 30th year with the FAA.

MR. DUNCAN: Yes, sir.

MEMBER SUMWALT: Congratulations.

MR. DUNCAN: Thank you.

MEMBER SUMWALT: I wish I had your retirement.

MR. DUNCAN: Yeah.

MEMBER SUMWALT: Do you believe -- in your experience working for the regulator, do you believe that generally speaking increased surveillance leads to increased safety?

MR. DUNCAN: It depends on the circumstances, Mr. Chairman, and I think that from my perspective, the answer to your question is, we apply extra surveillance where we think the risk is greater.

MEMBER SUMWALT: Okay. So do you believe that increased surveillance leads to decreased risk?

MR. DUNCAN: It certainly makes us aware of the risk and gives us the opportunity then to take actions to reduce, to mitigate those risks if they exist.

MEMBER SUMWALT: Thank you. I'll ask this question to you, Mr. Duncan, and then to Mr. Parks. Do you believe, Mr. Duncan, that there should be a higher standard of care once someone exchanges or holds themself (sic) out from commercial operations, once money is exchanged? Do you believe there should be a higher standard of care?

MR. DUNCAN: Yes, sir. We hold I think all, in all situations, a higher of care where there is commercial -- where

there is compensation for hire.

MEMBER SUMWALT: So why do you not require a higher standard of care between a Part 91 operator in a balloon and one that is holding out for compensation for hire?

MR. DUNCAN: We require the commercial pilot's certificate. That's one element is the requirement and as I've discussed previously, we look at the level of risk that's involved in a situation and apply standards based on that level of risk.

So in the case of commercial balloon operators, the primary mitigator is the commercial pilot's certificate.

MEMBER SUMWALT: Okay. Thank you. And, Mr. Parks, same question to you. Do you believe that there should be a higher standard of care once someone is holding themselves out for hire?

MR. PARKS: Actually I don't. I think regardless if one's being paid for the flight, the flight safety, passenger safety is paramount. It could be a private pilot that is just taking one or two passengers regardless of compensation. I think the level of safety is required regardless of what certificate that you hold.

MEMBER SUMWALT: Thank you. I think, while I appreciate your response, yes, it should always be a high standard. I think from a legal perspective once you exchange money there is, in fact, a higher standard of care, but I won't debate that point.

Back to you, Mr. Duncan. Do you have any idea through your PTRS records or whatever it is, how many surveillance activities of commercial balloon operations the FAA has conducted over say

the past 3 years?

MR. DUNCAN: I don't have that information. We can get that information for you.

MEMBER SUMWALT: Yes.

MR. DUNCAN: However, as Mr. Malecha has described, the bulk of the surveillance that we do has to do with those activities that go on. There's Balloon Fiesta as he described earlier. There are other balloon contests and balloon events around the country we were involved. And in areas where there is significant balloon activity, the FSDOs are aware of and involved in those.

MEMBER SUMWALT: I'm not so concerned about the Fiesta or something. That's a known event. So it's like going to Oshkosh in July. The FAA knows about it. They're going to be there. I'm really more interested in -- although I'd like to know how much surveillance is there. That's an easy one. We can go to, you know, we can go to Balloon Fiesta, but I'm interested in how many surveillance activities have been conducted in the past few years and, Mr. Guzzetti, do you think that that's something that the FAA could supply without a huge burden?

MR. GUZZETTI: I think so.

MEMBER SUMWALT: Okay.

MR. GUZZETTI: It may be some level of burden, but if I get your request, you would like to separate that out from the Balloon Fiesta.

MEMBER SUMWALT: I think we can just by looking at the dates,

but I would be interested to know is it 10 times that FAA inspectors have been out to look at commercial balloon air tour operators in the past year or is it 100 or is it 1,000 or is it 10,000? I think I'd like to get some order of magnitude as to how often the surveillance activities go on.

MR. GUZZETTI: We will definitely take that request for action and try to get back to you.

MEMBER SUMWALT: That would be great. Thank you. And if you have difficulty with that, just coordinate with Mr. English and it looks like I'm about out of time. So we will now go to Dr. McKay for a second round.

DR. McKAY: I really have one question for Mr. Duncan. You mentioned that you increase surveillance when you perceive an increase of risk. One of the things that we've been talking about this morning is increase in size of the balloon, and I certainly can't speak to whether or not the change in the complexity of the operation is significant enough to meet anything, but what I can say is it's a pretty big difference between carrying 2 passengers than carrying 16. And so when we talk about an increase in risk, how do you rate the number of passengers involved in terms of your attention to surveillance?

MR. DUNCAN: Thank you, Dr. McKay. First of all, a component of risk is exposure. The more passengers that are on board represents more exposure. So certainly we will take that into account. Exposure also depends on how many baskets of that size

exist around the country and those kinds of things. So we will, in fact, take those kinds of things into account as we determine what kind of surveillance needs to occur.

DR. McKAY: Do you have that information, how many baskets that carry more than five people?

MR. DUNCAN: I don't have that information now. That information is discernible, and we will take a look at that.

DR. McKAY: Again, if that's not too big an ask, we'd like that information please.

MR. DUNCAN: Sure.

MR. GUZZETTI: We'll also take that request down. I would like to mention though that, and I was going to ask this of Mr. Malecha, that the balloon -- the registered aircraft is actually the envelope itself. It's not the gondola. So it's a little bit more challenging to track the number of -- well, there is no registry of gondolas. There's just registries of balloons that could carry a 34, you know, a large gondola, but we'll certainly give it our best shot to get that information.

DR. McKAY: Thank you. No further questions.

MEMBER SUMWALT: Thank you. And, Mr. Guzzetti, on my question, my request, I would say I'd be interested in looking at the data over the last 3 years just to give us some idea. So thank you.

MR. GUZZETTI: Three years.

MEMBER SUMWALT: Yes, sir. Doctor.

DR. BOWLING: Thank you. Mr. Carlton, and I'm going to -- these are follow-up questions that Dr. McKay put out but does the BFA put safety seminars for balloon pilots and ground crews as an organization itself or does it rely on the clubs or other organizations in the balloon community to do that?

MR. CARLTON: The answer to that is we do both. As Mr. Parks indicated, we are actively involved in developing the BFA's online seminar webinar. We hold it concurrently with an existing location, but we're actually onsite with our staff. We help the site select the speakers for that particular place, and perhaps it's more a matter of logistics. We're not a large organization. We can't always do this by ourselves, and it's all volunteers.

Now we had a case in point where we had our convention which we do every 3 years. We did our safety seminar and our online seminar completely independent of any other organization in Reno, Nevada, a couple of years ago. The remaining of the -- I think there's 27 sanctioned BFA seminars coast-to-coast, we sanction those and they have to get approval for their speakers and those are vetted and then that information is fed back to us. So we actually keep those records.

DR. BOWLING: Thank you very much. And you had mentioned that these seminars have to go 7 hours. Who sets that particular time?

MR. CARLTON: Those are detailed in our seminar guidelines which we have posted on our website. The hosts have to submit an

application, they have to document the time slots, the speakers and basically we know what their schedule is, and then we also help because we list those seminars on our websites, we try to reciprocate by helping them to recruit people to come.

DR. BOWLING: Thank you. And you mentioned some of the topics that the seminars cover. Could you just go over those again just to list out what exactly you expect as BFA that those seminars should cover?

MR. CARLTON: Okay. Well, there's three core subjects that are required at every seminar. They don't have to be in the same order, but they have to be in there. You have to have an hour training on weather. Weather is so critical to what we do, it requires its own category. Pilot decision making, also required, one hour. And a review or a discussion regarding accidents. Again, we use that as training information so that we can obviously try to avoid those.

When we get to the second tier, and I apologize, I don't have them all memorized, there's about 20 different categories from landowner relationships to -- we actually have a category for ride operations specifics. We have categories for power line avoidance. That information is actually available at our website. It's viewable to the public.

DR. BOWLING: Okay. Thank you very much. And can the BFA get their safety messages out to small operators or individual pilots and crews who might not BFA members and might not normally

attend or participate in the seminars? Would that be through the website?

MR. CARLTON: Our goal is to take every approach we can. Ballooning is a very community based activity. Even in areas where there are not necessarily BFA members, there are still groups and organizations that get together and share information. It's really hard to hide a balloon operation. We're very visible. We're incredibly slow and we don't go very far. So we're easy to find once we get in the air, and that allows us to kind of gather together. And, as we indicated before, ballooning is not an activity you can do by yourself. You have to have some crew.

So our goal is to use our ballooning community, and we would love to say we would love to have all the balloonists in the United States be members of our organization. That would be great, but we would be happy if we could reach out and include more. Ride operators are doing some development. We're looking into doing some FaceBook promotions. We're looking to push the information down to the end user.

DR. BOWLING: Thank you, Mr. Carlton.

MR. PARKS: Dr. Bowling, if I may, just to also share that we mentioned before the balloon rallies that happen around the country. The BFA has a strong presence at those respective rallies. So that's another way that we can interconnect with those people who may not already be members.

DR. BOWLING: Thank you, Mr. Parks. Mr. Chairman, I have no

more questions.

MEMBER SUMWALT: Right. Thank you. I'd like to call up, Ms. Hurley, Exhibit 1L, page 2, please, and we don't need to keep it up for awfully long, but I just wanted to show the witnesses what I will be asking about.

So, Mr. Duncan, are you familiar with this document?

MR. DUNCAN: I don't recognize the page. I'm familiar with the subject matter.

MEMBER SUMWALT: Okay. Mr. Malecha, are you familiar with this document?

MR. MALECHA: Yes, sir, I am.

MEMBER SUMWALT: Okay. Would you describe it please? And we don't need to pull it up any longer, but can you describe what this document is?

MR. MALECHA: Yes, I can. That is a White Paper for lack of a better phrase that was put together by an FAA inspector with several recommendations including 91.147, letter of authorization, a requirement -- right now helicopters and aircraft are required to hold a letter of authorization from a local FSDO and this particular paper suggested including balloons in there.

MEMBER SUMWALT: Okay. And do you know what the inspector's motivation for writing the paper was?

MR. MALECHA: Well, the state of motivation, as I started to say earlier, he had looked at roughly 2½ years of accident data, that had a couple of fatal accidents, one at the beginning and one

at the end I believe. It also suggested that we require liability insurance which is something that, you know, by law we cannot. And so I had the opportunity to conduct an analysis of the ascertains in that, the assertions.

MEMBER SUMWALT: So you were the primary point of contact for that within the FAA to decide what to do with that suggest from one of your inspectors. Am I being correct?

MR. MALECHA: Not exactly, sir. My duty was to analyze it and make a recommendation to my boss, AFS-800 Division Manager, who then responded.

MEMBER SUMWALT: And your boss' response to that, to your -- well, what was your recommendation?

MR. MALECHA: My recommendation, again based on looking at 10 years of accident data, was that we not adopt the recommendation.

MEMBER SUMWALT: And your boss, what did he do with your recommendation?

MR. MALECHA: He concurred.

MEMBER SUMWALT: Thank you. In that document, it pointed out that the FAA oversight of banner towing operations is a higher FAA priority than a balloon ops and the thing he cited was a banner towing ops requires a letter of authorization. For example, at sporting events, FAA inspectors might be in the stadium to make sure these banner towing ops are not violating the regulations. Do you agree -- well, I mean it's a fact that for banner towing ops you have to have an LOA. Is that correct?

MR. MALECHA: No, sir, it is not --

MEMBER SUMWALT: Okay.

MR. MALECHA: -- technically. A banner tow operation requires a certificate of waiver. 91.311 states that you cannot pull stuff behind an airplane, you know, I'm paraphrasing. But 91.905 gives a list of waivable sections of 91. 91.311 is on that list. Therefore, in order to tow banners, you must have a certificate of waiver for that particular section.

MEMBER SUMWALT: Thank you very much. So let's compare air tour airplane and helicopter to air tours in balloons. So a letter of authorization is needed for air tour operations in helicopters and airplanes. Is that right?

MR. MALECHA: Yes, sir.

MEMBER SUMWALT: But as we just said, it’s not required for balloons.

MR. MALECHA: Correct.

MEMBER SUMWALT: And how about drug and alcohol testing? Same question, airplane and helicopter ops?

MR. MALECHA: Yes, sir.

MEMBER SUMWALT: It's required for airplanes and helicopters.

MR. MALECHA: Yes, it is required to airplanes and helicopters.

MEMBER SUMWALT: And for balloon operations, air tour operations?

MR. MALECHA: It is not.

MEMBER SUMWALT: Wonder why the difference?

MR. MALECHA: I'm not the subject matter expert on air tours. However, Part 136 calls out the requirements of, you know, air tour operations, and that extended to, you know, 91.147 for all sightseeing airplanes and helicopters.

MEMBER SUMWALT: Thank you. When drug and alcohol testing was implemented around 1989 for the drug testing, I remember being at an accident investigation class. I was an airline pilot at the time and people were saying is this going to catch drug users? And the answer was, from the person teaching the class, it's not there to catch people. It's there to be a deterrent. Do you agree with that? I mean is that -- what do you think?

MR. MALECHA: I believe it certainly does deter but if does catch somebody, it may be a two-pronged approach but, you know, again, you know, it very well may deter.

MEMBER SUMWALT: So I'd like the staff, when we go back and look at this issue, I'd like for us to make sure that we go and look at the *Federal Register* when drug testing was implemented to just see what it said, to see if it might have been part of a deterrent, is part of why that rule was in there. Of course, Dr. McKay knows that answer off the top of her head, but I would be interested.

Okay. So I'm going to switch to Mr. Duncan. So we established that the stale complaint rule would not allow the FAA to proceed with the enforcement action for this accident pilot

because you didn't learn about it until approximately the first of the year in 2013 and meanwhile, his driving while intoxicated events, the last one was probably 2010. So that was certainly more than 6 months. Are there any other avenues that the FAA could have used to pursue enforcement action against this pilot?

MR. DUNCAN: Not that I'm aware of based on the information that was available. Just for clarification, that information was available to the Aviation Security folks and they came to the conclusion that they could not pursue because of the stale complaint rule.

MEMBER SUMWALT: Okay. Thank you. And in response to a question that Dr. McKay asked, to follow up to her question, if someone did have their certificate revoked, they can reapply within a year of the revocation. Is that correct? Or is that a sliding scale depending on the severity of what led to the revocation?

MR. DUNCAN: Well, it's a year. Depending on what caused the revocation, there could be -- I don't recall or I don't know the specifics of how the drug dependence or alcohol dependence would play into this, there may be a band that would have prevented the issuance of a medical certificate in some cases. In this case, this may not have mattered. So I don't have enough information at this point to answer that question fully.

MEMBER SUMWALT: Thank you. Thank you very much. I'm going to switch now to the Balloon Federation of America and, Mr. Parks,

I'll ask this, and Ms. Hurley, if we could pull up Exhibit 1P, 1 poppa, page 3.

So it's hard to read. It's certainly hard to read on my tiny screen up here, but under paragraph 9, second paragraph, it says to achieve specific rating requirements -- so what is this document, Mr. Parks? It says BFA 2016 BFA/FAA Action Plan. So can you describe what this document is in a general sense?

MR. PARKS: Certainly. We met with Mr. Duncan and Mr. Malecha by telephone, but others within the FAA in his officer here in Washington, D.C., on August 12th --

MEMBER SUMWALT: Um-hum.

MR. PARKS: -- after the accident down in Texas. And we talked about how to improve safety within the community, and we talked about some different ideas. Mr. Duncan gave us a reference to what's being done in Alaska, with the Medallion Program, and so the BFA Action Committee went back and worked on this document for roughly 2 weeks and then submitted it to Mr. Duncan's office for further review.

MEMBER SUMWALT: Thank you. And so what is the response -- and this was prepared by PRO part of BFA?

MR. PARKS: Actually the action committee is made up of the BFA Board of Directors as well as PRO Board of Directors with the help of Government relations within the BFA and some other advisors.

MEMBER SUMWALT: Right, and so there's some things -- I'll

just read a few of them. Second class medicals -- these are requirements that I think you are suggesting. Second class medicals, random drug screening, commercial auto insurance ratings, background checks.

MR. PARKS: Actually, that's not the same document. What you may be referring to is the PRO guidelines document instead of the action plan.

MEMBER SUMWALT: Ms. Hurley, let's please go to the first page of this document and see exactly what it is that we're talking about so we can make sure we're on the same page literally. So this says -- this is the document that I'm reading from.

MR. PARKS: And which section are you reading from specifically?

MEMBER SUMWALT: Well, this is the document and then what I'm actually reading from is under intermediate goals, 30 to 120 days, item number 9, second paragraph. So that would be on the third page of the document itself.

MR. PARKS: Yes, um-hum. And this is referring to participation into the PRO Division which is a division of the BFA, and so these are items that we're suggesting that would increase safety within our sport.

MEMBER SUMWALT: Okay. And I'm told that there's not necessarily alignment within BFA management or leadership because these could be onerous to the sport of ballooning. So can you

enlighten me into how these are being received and the likelihood of these guidelines being adopted?

MR. PARKS: Well, we're continually working on this document. Mr. Duncan and his staff as well as the action committee have continued to have conversations by telephone as well as projected goals in how we're going to implement some of these items. It's a working document. There may be some within our own community that may not agree verbatim with every one of these, but this is the stance that the CAP action committee is taking at this moment.

MEMBER SUMWALT: When do you think that this document would ultimately go into effect, would either be approved or not?

MR. PARKS: Some of the items we're already working on such as establishing the ambassador program for the respective FSDOs around the country, to provide subject matter experts as a resource material for FSDOs to call upon in the event that they have ballooning questions.

We are currently working on what we're going to call most likely the shield program, instead of, to borrow a similar name such as the Medallion Program. We hope to role that out the beginning of flight season 2017 which would be probably first quarter of 2017.

We have already gained some insurance industry experts' support and endorsement in what it is that we're doing, but to give you an exact timeframe on every one of these bullet points would be hard to do as this is still a working document.

MEMBER SUMWALT: Thank you, and I know the NTSB would be very interested to know how the process of this document is going, but I applaud your efforts for trying to get those going because I do believe in voluntary compliance to raise the bar but given that, I also feel that the regulations have to provide the backbone and I know, Mr. Duncan, you would feel that that backbone is strong enough. We haven't completed our investigation yet. We'll determine that later. But thank you, Mr. Parks, for that.

Let's pull up Exhibit 1U, 1 uniform, and so we can go to the second page of that. So this was something that was signed by you, Mr. Parks, sent to then NTSB Chairman, Deborah A. P. Hersman, on April 19 of 2014. Can you explain -- describe what this document is?

MR. PARKS: Yes, sir. You'll see the date was approximately April of 2014. This was about the time that we were having a BFA Board of Directors meeting, when the LOA recommendation came down from the NTSB. We offered our assistance as an industry expert in the field of increasing safety within our sport, but we also has to disagree with the NTSB's recommendation regarding the implementation of a LOA.

Having researched the accidents that were referenced in the original document for Mr. Phillips, we felt like that the cause of the accident, those three accidents that were referenced, were a lack of aeronautical decision making and thus a LOA program, as it was described in the recommendation, would not have prevented

those accidents.

MEMBER SUMWALT: Thank you. And the question that I have is on the next page of this document. You point out that these recommendations, if implemented, could be -- let's see the word if I can find it -- can be burdensome to tour flight business owners. How would requiring a LOA be burdensome to air tour operators?

MR. PARKS: And I think it was also in reference to all commercial pilots. I don't think the recommendation for the LOA specified a level of tour operators. So if you encircled all commercial certificate holders within that LOA program, we felt that there were some within the scope of certificate holders that were not even conducting ride operations. So therefore we felt that it would be burdensome to them to comply with this recommendation because of the fact that they were not even conducting those tour operations.

MEMBER SUMWALT: Thank you. You also pointed out it might be burdensome to the FAA, and let's see if I can find it. You point out that these NTSB recommendations if implemented will not enhance safety but will add yet another layer of unnecessary federal oversight to an already challenged FAA, such regulation would prove burdensome to the tour flight businesses and their pilots in time and money to comply with the regulations.

So I'm curious. Why would the BFA be concerned about how that might over task the FAA? I mean that would seem to be their concern and not yours.

MR. PARKS: That's a good point. We had had some discussions within our community who had had some discussions perhaps with some FSDO operators at the time who felt that they would not have been able to provide the resources to provide oversight within that LOA program.

MEMBER SUMWALT: Thank you very much. I want to thank you all. I know Bill English warned me that if we're late for lunch, he'd be very mad. Technical Panel, do you all have one or two follow-ups that you really are pressing to ask?

MR. ENGLISH: Thanks. You couldn't make me that mad. We just have one very quick question and then we'll break.

Mr. Suffern.

MR. SUFFERN: Thank you, Mr. English. For Mr. Malecha. In Class G airspace with the weather mins being one mile visibility and clear of clouds, could a balloon go up through a hole in the clouds and then back down through that same hole and not violate the weather minimums?

MR. MALECHA: Assuming they had one mile of visibility during the flight and they were clear of clouds, yes.

MR. SUFFERN: Thank you.

MEMBER SUMWALT: Thanks. My apologies to my colleagues on the Technical Panel, did you all have any follow ups? Thanks.

And please, Mr. Guzzetti, you were good about minding the time, do any of the Parties, would they like to offer one follow-up question? If so, please raise your hand. Let's see here.

Great. I'll tell you what. We'll start with BFA and then head over to the FAA. Thank you.

MR. GUZZETTI: Thank you, Mr. Chairman. Appreciate it. It'll be very quick. Oh, I'm sorry. BFA.

I just wanted to piggyback on Mr. Duncan's comment about the safety continuum and if I could just pull up Exhibit 1R, page 3, with regard to the world of aviation that you have to conduct surveillance on. How many inspectors do you have and I think it's the page just before that one, excuse me, it's page 2, yeah, right there. Given the number of inspectors you have which I think is 4200, can you further elaborate on the continuum of safety that FAA is challenged with, with regard to using its inspector workforce in a risk-based manner to get the best bang for the buck?

MR. DUNCAN: Sure. Generally speaking, we have a finite workforce, the 4,000 or so as Mr. Guzzetti mentioned, and we've got to use those in the most efficient way possible. So we use a risk-based approach to deal with that and part of that is exposure as we talked about a minute ago. There are a lot of elements so that exposure -- one of the elements of that exposure is the relative amount of activity that's going on in the NAS on those and you saw the picture, the chart a minute ago, I don't remember what the numbers said without having the chart in front of me, but it's about 3 percent as I recall.

MR. GUZZETTI: There it is. It's up there. It's actually

for commercial balloon operations as per the FAA's survey. It's .05 -- it's that very small yellow --

MR. DUNCAN: Yeah, .057 percent. So it's a very small part of the community. It therefore represents in context with the rest of the community a smaller risk.

MR. GUZZETTI: Thank you.

MEMBER SUMWALT: Thank you, Mr. Guzzetti. Mr. Appelman.

MR. APPELMAN: One question relative to the 35 hour commercial rating. Are you familiar with or is there a lot of 35 hour commercial ride pilots or 35 hour instructors, Mr. Parks?

MR. PARKS: No, sir. I'm not aware of any that have that small number of hours for either commercial flight operations or instruction.

MR. APPELMAN: One last follow up. You say that this is a close community. Would you say that the community offers support and scrutiny should that type of thing happen?

MR. PARKS: Absolutely.

MR. APPELMAN: Thank you.

MEMBER SUMWALT: Yes, thanks and, you know, the idea of your voluntary standards really I applaud that. The issue is, what others have pointed out, is that your math, she's a Yale graduate and all that, and she says, you know, what, 1200 or so pilots, 1,000 to 1200 pilots are members of the BFA, where as there's what? 4,000 or so commercial pilots. So that's an issue there. That's why I think -- well, you didn't come here to hear my

opinion, but maybe that would show why the regulator has a role of increasing the bar as well. But again, you don't have to listen to that at this point.

So I want to thank the witnesses. You're excused. We will take a lunch break, and let's come back at 1:55. So we'll take an hour and 3 minute lunch break. That will put us about 10 minutes behind, but we'll be okay. So we're in recess for lunch. Thank you.

(Whereupon, at 12:30 p.m., a lunch recess was taken.)

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

(1:55 p.m.)

MEMBER SUMWALT: We are back, and we will have -- this last Panel will be on medical factors. Mr. English, if you will please proceed.

MR. ENGLISH: All right. Thank you. Panel 3, witnesses are Dr. James Fraser, Federal Air Surgeon, FAA, Dr. Philip Kemp, Senior Research Toxicologist, FAA, and Dr. Charles Chesanow, Chief Psychiatrist, FAA.

Doctors, will you please rise and raise your right hand?

(Witnesses sworn.)

MR. ENGLISH: Thank you. Please be seated. Technical Panel 3, Dr. Webster.

DR. WEBSTER: Good afternoon, Chairman, Board of Inquiry.

Gentlemen, I'd like to begin with Dr. Fraser, and please introduce yourself. Tell us about your title and what organization you're with please.

DR. FRASER: Dr. James Fraser, Federal Air Surgeon, FAA.

DR. CHESANOW: Charles Chesanow, Chief Psychiatrist, Office of Aerospace Medicine, FAA.

DR. KEMP: Dr. Phil Kemp, Supervisor of the Forensic Sciences Section and Senior Research Toxicologist at CAMI with the FAA.

DR. WEBSTER: Thank you very much. Would you please bring up Exhibit 18A, Table 1, that's page 6 of 19 of the medical factual report please?

I believe this question will be for either Dr. Chesanow or Dr. Fraser. On the first line there we see that the pilot or on the table there, we see that the pilot had a number of medical conditions and psychiatric conditions. At the top of the table, the pilot had alcohol dependence in remission. Could you please describe the air medical and safety of flight issues associated with alcohol and drug dependence?

DR. CHESANOW: Yes. Alcohol and drug dependence is a specifically disqualifying condition. We consider it in remission when the airman achieves what we call recovery satisfactory to the Federal Air Surgeon. Recovery means more than simply abstinence. Recovery is a series of activities where one takes to not only remain abstinent but to avoid relapse and in the pilot that has returned to duty after this diagnosis which would also usually include a period of treatment, a period of aftercare, a period of supportive measures such as AA or equivalent measures, they're also very carefully monitored to make sure there is no relapse and there are additional screenings put in place. There is significantly more than that but I don't know how much in the weeds you'd like me to get into the specifics.

When we see alcohol dependence in remission, we know what remission is according to our standards. I'm not sure what this designation of remission means.

DR. WEBSTER: Thank you very much. But in general, alcohol dependence, what are the aeromedical concerns with alcohol

dependence?

DR. CHESANOW: Well, alcohol is an addicting substance like other addicting substances. There are basically two phases. There's an intoxication phase where in the case of alcohol, one is drunk and then there is a withdrawal phase which is characterized by both physiologic and psychiatric symptomatology during that period of time. During both phases, there are aeromedically disqualifying symptomatology, the most concerning of which is an impairment of decision making which in the psychiatric world is referred to as executive functioning.

There are also issues of psychomotor retardation. There are issues of sedation, issues of vigilance, issues of attention, all of which we consider of significant aeromedical impairments to be disqualifying.

DR. WEBSTER: Thank you very much. Next question, I believe this will probably go to Dr. Fraser. Please briefly describe the aeromedical and safety issues associated with Type II Diabetes.

DR. FRASER: Well, Type II Diabetes is typically adult onset diabetes. Certainly there are many Americans that have Type II Diabetes that can be well controlled. It can be controlled by diet in many cases. In many cases it can be controlled by medications that you take, but certainly it can proceed to the point that it must be controlled with insulin much like Type I Diabetes, but certainly anyone that is diabetic has significant challenges in terms of their metabolic control. There are issues

whereby if you have too much sugar in the bloodstream and you're hyperglycemic, you're sensorium could be affected and probably of greater risk are those folks that have diabetes, be it Type I or Type II, and because they're not eating well or because of the medication they're taking or use of insulin, they can become hypoglycemic.

And in the case of hypoglycemia, that could certainly lead to significant challenges not only with sudden incapacitation such as loss of consciousness, but more frequently subtle incapacitation with diminution of the executive functions that Dr. Chesanow talked about, problems with attention, memory, decision making, things of that nature.

DR. WEBSTER: Thank you very much. I think that addresses my concerns. Bring the slide up one more time please.

On this slide, we see the pilot had major depressive disorder. Can you discuss -- probably Dr. Chesanow. Could you discuss major depressive disorder and the safety issues associated with major depressive disorder?

DR. CHESANOW: Well, major depressive disorder is a condition where a person would have vegetative symptoms which usually includes sleep problems, sleep problems inherently become problematic, as well in aeromedical functioning, but the disorder itself is characterized by a diminution of mood. In severe major depressive disorder, a person can, in fact, be suicidal but that isn't always the case with major depressive disorder. Major

depressive disorder is technically gauged in terms of mild, moderate or severe.

The issues of concern for airmen is it is also a judgment impairing condition, where the ability to make decisions that one could make easily when they're not depressed become difficult, if not insurmountable, when someone is depressed.

Furthermore, it is characterized by what's called psychomotor retardation which is a delayed reaction to making decisions and performing functions physically that would be appropriate in an aviation environment.

Additionally, there are issues with attention and vigilance as described before, and many of these conditions have the same sort of aeromedical concerns with chemical dependency, major depressive disorder being of them.

One of the problems with major depressive disorder is everyone gets depressed from time to time, and someone with a major depressive disorder, that depression continues to get worse over a period of time. It's sometimes difficult for a person to recognize that they're entering into a severe depression that's getting worse and, in fact, what you hear from family members and others are that people that are familiar with the person that's depressed, often notice that they're aware that the person is getting depressed and non-functional before the person himself is.

In this particular case, I notice that there were two antidepressants included on the list, and those two

antidepressants include one that is currently disqualifying and one that is currently not disqualifying.

The other issue is because someone may be taking antidepressants does not necessarily guarantee that those antidepressants are effective. And so, that's also a question of concern that we would see in anybody who has a diagnosis of major depression.

It is considered a non-specifically disqualifying condition so that we try to determine its level of severity and its level of severity would impact on the aeromedical concerns associated with it.

DR. WEBSTER: Thank you very much. I'll bring this up one more time. Next on the list is a condition called attention deficit disorder treated with methylphenidate. Would either of you care to address this question?

DR. CHESANOW: Yes. Attention deficit disorder is often called attention deficit hyperactivity disorder if hyperactivity is accompanied with it. In this case, it wasn't.

One of the difficulties with attention deficit disorder is that it's often made fairly cavalierly nowadays and doesn't require a physician to have sufficient neuropsychological screening.

Presuming the neuropsychological screening indicated that an actual attention deficit disorder was present, it is another non-specifically disqualifying condition. So we would look to see

whether it was severe enough to warrant medical disqualification or not severe enough to consider special issuance or certification.

When one has to be treated with Ritalin or Methylphenidate, which is the generic name for what was on the list presented, that is a disqualifying medication. So in this event, you have an attention impairing condition requiring a disqualifying medication.

DR. WEBSTER: Thank you very much. I believe this one's going to go to Dr. Fraser but, Charlie, you may be able to answer it, too, also.

The pilot was diagnosed with both fibromyalgia and also chronic pain. Can you talk briefly about those conditions and how they affect aeromedical safety and pilot performance?

DR. FRASER: So both of those conditions could conceivably affect pilot performance. Fibromyalgia is a multi-system disorder that can include fatigue, difficulty getting around, problems with concentration and mental things that can accompany the systemic physical signs and symptoms of fibromyalgia. Certainly just in terms of the pilot's ability to be fit to fly, anyone with fibromyalgia would certainly be questioned as to their ability to be able to do all of the mental and physical things that are required of being a pilot.

Similarly, with chronic back pain, there could be difficulty with physical access, getting in and out of whatever situation

that pilot might be required to get into and, of course, of concern would be any medications that would be used to control the pain associated with the chronic back issues and certainly with the evidence that we've been shown, the Oxycodone would be a medication that we would not allow in terms of an active pilot because of the mental effects that the medication would have in terms of the decision making skills of that pilot.

So both of these conditions, fibromyalgia and the chronic back pain, although not specifically disqualifying, would potentially be generally disqualifying.

DR. WEBSTER: Thank you very much. You've mentioned the medications. That brings up the issue of the medications this pilot had been prescribed. I'd like to bring up out of Exhibit A, Table 3, which is page 8 of 19. So if you could bring up Table 3 please.

This is the pilot's prescribed medication according to his personal medical records and pharmacy records, he was regularly prescribed and filled 13 different prescription medicines, many of which are considered sedating. Please remove that exhibit.

Please bring up Exhibit 18A, that will be Table 4, that's page 4 of 19.

According to Exhibit 18A, these are medicines that were actually found on toxicology. We recognize that acetaminophen and caffeine are unlikely to cause significant impairment.

But, Dr. Kemp, would you take a look at the list. We might

as well just start at the top, starting with Cyclobenzaprine, and let's work our way down the list and could you briefly discuss for each of those drugs, whether or not the drug could impair performance or pose a hazard to safety of flight?

DR. KEMP: Sure. Beginning with Cyclobenzaprine, Cyclobenzaprine is a skeletal muscle relaxant given for muscle spasms and pain, and associated with muscle spasms. And so it has what we call central nervous system depression act, and this slows the communication as you'll see, as I'll explain with these medications, it slows the communication between brain cells is the chief way to put it. And so it causes the drowsiness, the sedation, that would come into play with decision making and things that are associated with operating an aircraft. And so Cyclobenzaprine is one of those central nervous system depressants.

The second medication down the list is Dextromethorphan. Dextromethorphan is a common, over-the-counter medication you find in Robitussin. It's cough syrup, and while it is not very sedating, central nervous system depression activity is not terribly significant. Its therapeutic margin or index, meaning its safety margin, is pretty high, meaning that you have to take a lot of it to overdose to be fatal. But it can add to some of these central nervous system depressants that are listed here in this list.

DR. WEBSTER: All right. Well, thank you very much. Let's

roll onto the next drug there, I believe that's Diazepam.

DR. KEMP: The next one is Diazepam, and along with Cyclobenzaprine, that's one of the more significant findings, in that Diazepam is what you probably recognize as Valium, and it, too, is a very significant central nervous system depressant, also would inhibit decision making, cause drowsiness, sedation and interfere, if you will, with the ability to operate a motor vehicle or an aircraft in this case.

And so it along with its metabolite, Nordazepam, are both active, and so they're both present in the body in this case.

Diphenhydramine is the next one down. It's a simple over-the-counter medication. You might know it as Benadryl, and it's used as an antihistamine. And if you're like me, it makes me drowsy when I take an antihistamine like Benadryl. It too has central nervous system depressant activity.

Fluoxetine is the next one down, and it's called Prozac. It's interesting that while the drug itself does not have central nervous system depression activity in and of itself, it's used for depression. It does interfere with the metabolism of other drugs. It's quite well known to be an interfering compound that interferes with the metabolism of other medications, some of which are in this list. And so the concentration, the blood concentrations of those medications would rise because they're not leaving the body as quickly as they normally do.

DR. WEBSTER: Well, thank you. Let's roll onto the next

medication which is Methylphenidate.

DR. KEMP: Methylphenidate, as you heard described, is given for ADHD. It actually is chemically related to the stimulant class of amphetamines, and sometimes if you run an amphetamine test even, you'll be able to detect Methylphenidate, and it's a stimulant given to these people who have ADHD.

DR. WEBSTER: Thank you. And finally let's roll into the very last one, Oxycodone.

DR. KEMP: Oxycodone as you just heard described is an opioid painkiller, but it too has significant central nervous system depression activity which again would slow reaction time and decision making processes and the ability to operate machinery.

DR. WEBSTER: Well, thank you. Based on the drug levels seen from the NMS Labs, are these levels consistent with regular use of these medications?

DR. KEMP: Yes, sir. Yes, sir. With the concentrations that you see from the NMS Laboratory which are in blood, those concentrations are consistent with regular use. One of the interesting ones was the Dextromethorphan which is slightly high. It may be an indication that we're having that metabolism interference because it's metabolized through those same enzyme pathways that Fluoxetine blocks. So perhaps that's what we're seeing here. But as far as toxicity goes, this is not a particularly high concentration.

DR. WEBSTER: Well, thank you very much. Finally, the

evidence suggests that the pilot was using at least 10 individual medications, maybe more, which we haven't detected on toxicology. Could you briefly describe the potential effects of combining multiple medications and their affects on performance?

DR. KEMP: Sure. Well, we've discussed individually these drugs, depressed central nervous system act, each one could depress the central nervous system. When combined, it's clear that these affects can be additive. So the person would be even more impaired due to the combination of these medications.

DR. WEBSTER: Excellent. I appreciate that, and I would like to roll now back into another form of questioning on just some general medical certification issues.

Dr. Fraser, would any of these -- I think you had briefly covered it, but which of these conditions is disqualifying, the ones that we talked about earlier? We can bring up the list if you'd like.

DR. FRASER: Well, certainly a number of conditions are disqualifying. Substance dependence, in this case, alcohol dependence, if not appropriately treated and in remission as in the way that Dr. Chesanow described, is specifically disqualifying. Certainly ADHD is a disqualifying condition. Diabetes treated with medication is specifically disqualifying and, of course, use of medications like the Oxycodone is disqualifying. The medication itself would not be allowed by the FAA as well as the other muscle relaxants, the Diazepam and the

Flexeril. So this gentleman had multiple disqualifying conditions and medications.

DR. WEBSTER: Thank you very much. You can pull that exhibit down.

I'm going to change gears a little bit here. We recognize that balloon pilots are not required to get a physical exam, but as a part of any physical exam, the pilot fills out or checks a questionnaire or checks a box that says that the FAA can examine the NDR, National Driver's Registry. Could you explain what that check is and what it can find?

DR. FRASER: Well, as a part of our 8500-8, the airman is required to give us, the FAA, consent to do a 3-year look back at the National Driver Registry, and we frequently use this as a check to make sure that the airman has been honest and forthright in terms of answering the rest of the questions present in the history form, the 8500-8. So we regularly use that in order to be able to make sure that the pilot or the airman has not forgotten that he had a DUI.

DR. WEBSTER: If you find that a pilot has not reported a DUI or action against his license, what action can Medicine take in this case -- in a case?

DR. FRASER: If we find that a pilot has not reported according to CFR, we have the authority to take away all of his certificates, not only his airman medical certificate, but his pilot certificate as well. And, of course, when you talk about

taking away certificates, we work with AGC in terms of how those certificates would be returned to the FAA. But certainly we work with counsel in terms of how we would revoke those certificates.

DR. WEBSTER: Thank you. One more question. This is more in the realm of the special issuances. We recognize that pilots who have disqualifying conditions, can obtain a special issuance.

Based on all of this pilot's medical conditions, from what you've seen in the medical report, would he have been able to obtain a special issuance for all of these conditions to carry paying passengers?

DR. FRASER: Well, let me address that in general, and perhaps Dr. Chesanow can get more in the weeds if you would like. But certainly as Dr. Chesanow discussed, for pilots that have been identified as having substance dependence, if they get treated and go through rehab and into successful aftercare, once they have recovery, that is satisfactory to us at the FAA, then can be special issued.

Likewise, for pilots that have a major depressive disorder that has been appropriately treated with one of the medications that we allow, once they've seen the psychiatrist and once they've had thorough psychological testing to make sure they don't have any mental decrement due to the medications or to the depression, they, too, have a route back to piloting operations.

So there are some of these conditions that could have been special issued. However, the ADHD, if that indeed was shown to be

a very real thing and, of course, the neuropsychological testing may or may not have confirmed the presence of ADHD, but then again there were multiple medications that the airman could no fly with. So certainly this airman, though he could have theoretically been special issued for substance dependence that had been treated successfully and for the depression that had been treated and was stable, with the other medications that this pilot was taking, there is no way that he could have been special issued to do any kind of flight operations much less commercial.

DR. WEBSTER: Thank you very much. I'm going to roll my questions over to Mr. Lawrence here.

CAPT. LAWRENCE: I just have a couple of questions. I'm going to look from a more global perspective of the certification and the medical certification. 61.23 requires commercial airplane pilots to hold at least a second class medical certificate, and my question is why?

DR. FRASER: Well, certainly there are a number of medical conditions that could affect safety of flight. We are particularly concerned with those medical conditions or medications that would lead to either sudden incapacitation or subtle incapacitation. So from our medical perspective, there's very good reason to require these kind of periodic medical exams.

CAPT. LAWRENCE: Would those same concerns be consistent with a commercial balloon pilot?

DR. FRASER: Certainly. The concerns with sudden and subtle

incapacitation would extend to balloon pilots and other modes of transportation, whether it be railroad, maritime, commercial truck drivers or whatever the case, where sudden or subtle incapacitation could be a significant safety issue.

CAPT. LAWRENCE: Thank you. Ms. Hurley, if you can bring up Exhibit 2A, page 12, please.

This will be an excerpt from the Operations Group Factual Report, and it shows a FAA response to the NTSB inquiry, that states that commercial balloon pilot exemption that exempts commercial balloon pilots from holding a medical certificate has been in effect since the 1930s.

My question is has the FAA reviewed the need for this exemption at any time since it was first included in the regulations back in the 1930s?

DR. FRASER: That's a good question, Captain Lawrence. I can tell you in my 13 years at the FAA, we have certainly not looked at that. What happened prior to 13 years ago from the 1930s, I couldn't speak to.

CAPT. LAWRENCE: Would anybody else like to add to that discussion? I take it from your silence, no.

Let me ask another question. Given the accident pilot's physical ailments, and the physical nature of ballooning, the setup process, it's a much more physical process than actually flying an airplane, shouldn't balloon pilots in general be required to have at least some sort of medical evaluation prior to

flight?

DR. FRASER: Well, certainly as we've discussed in the earlier Panels, 61.53 certainly applies. We would expect this pilot to self-report if he were fit to fly. That is pertaining to both his medical conditions and to his medications. Clearly that did not work in the case of this pilot.

CAPT. LAWRENCE: Thank you. Mr. English, that's all the questions I had.

MR. ENGLISH: Thank you, Captain Lawrence. Mr. Chairman, the Technical Panel has no more questions for now.

MEMBER SUMWALT: Thank you very much. We'll plan to come back to you time allowing but we started okay. So Kubicek Balloons, it would be your turn to start first if you'd like.

MR. KUBICEK: We don't have any questions.

MEMBER SUMWALT: Thank you, Mr. Kubicek. Balloon Federation of America. That's okay. Your turn to question the witnesses.

MR. PARKS: Could we defer to the FAA and then come back to BFA?

MEMBER SUMWALT: Yes, we'll go to the FAA first and then come back over to the BFA.

MR. GUZZETTI: Thank you, Mr. Chairman.

Dr. Fraser, are you aware of any, prior to this Lockhart, Texas accident, any fatal balloon accidents as far as you know in the history of aviation that was determined to be due to a medical issue?

DR. FRASER: I am not.

MR. GUZZETTI: Okay. Are there other types of pilot certificates or pilots that do not require a FAA medical certificate? And if so, what are those?

DR. FRASER: Glider pilots do not.

MR. GUZZETTI: Okay. And I'm not too familiar with this, but I'm aware of some recent Congressional legislation or reauthorization language that is directing the FAA at some point in the future to alleviate the need for pilots of any type of airplane up to I think 6,000 pounds or something along those lines, where they won't need a medical certificate? Are you familiar with that?

DR. FRASER: I am, and that would be the recent reauthorization where there is an alternative pilot physical exam alternative, and this is an issue that has been in the works for several years that started with a AOPAEAA petition for exemption and basically we've looked at the subset of general aviation and we've looked at those folks that fly airplanes that weigh less than 6,000 pounds and fly less than 18,000 feet high, that could potentially self-certificate.

There are, however, within the reauthorization bill multiple mitigating strategies that I could go into, if you'd like --

MR. GUZZETTI: No.

DR. FRASER: -- but certainly in terms of working with our colleagues and Congress and in the advocacy organizations and in

the union, there were several years discussions about what these mitigating strategies might be that would allow this legislation to proceed.

MR. GUZZETTI: Okay. Mitigating strategies. Thank you. Currently though, aside from what may line the future, if a pilot, a certified pilot isn't required to hold a medical certificate, are they still under some obligation to ground themselves if they're not feeling well?

DR. FRASER: Oh, absolutely. And once again, 61.53 applies. They should be aware of any medical conditions that might affect safety of flight or any medications that they're taking that might affect safety of flight. And in terms of the legislation that passed July 15 this year, one of the most effective mitigating strategies will be a requirement for medical education that every pilot must complete that would talk about what they need to do to be able to make that decision that they're fit to fly.

MR. GUZZETTI: Okay. And one final question. In your experience, past, you know, several years with the FAA, have you ever addressed a situation or been aware of a situation where a pilot that did have a medical certificate and then had it revoked, was still continuing to fly, that was, you know, flying without an expired medical certificate?

DR. FRASER: Yes, I am aware of several instances of that happening.

MR. GUZZETTI: Okay. Does FAA have hard and fast controls to

ensure with 100 percent confidence that that won't happen, it's impossible, you know, to stop the pilot who has an expired medical from flying in that airplane or that aircraft?

DR. FRASER: Well, certainly there would be significant civil penalties imposed if an airman were caught flying without a medical, and that indeed has been the case, and there are significant civil penalties if that airman would not immediately return his certificate to the tune of $1,100 a day. So certainly we are able to work with our colleagues in Flight Standards and AGC to make this an infrequent occurrence.

MR. GUZZETTI: Okay. Thank you very much, Mr. Chairman. That's all the questions I have.

MEMBER SUMWALT: Thank you, Mr. Guzzetti. Now to the BFA.

MR. PARKS: Thank you, sir. Dr. Fraser, just one question. In the event that an airman is applying for a new medical or renewing their second class medical, and they fail to list, we'll just use the pilot in question, these medical conditions that you've outlined or the medications that he was taking, would they thus be found upon medical examination without his disclosure?

DR. FRASER: There are many medical conditions and many medications that you could use that would not be found without the airman being honest and forthright during his medical examination, but on the other hand, there are certainly some medical conditions that could come to our attention when the pilot is noticed by colleagues to be flying erratically or not thinking correctly or

has an accident where it's determined. So there is a significant downside to not being honest and forthright on these medical examinations.

MR. PARKS: Thank you, Doctor. That's all the questions I have.

MEMBER SUMWALT: Great. Any other follow ups from the Parties?

MR. GUZZETTI: Yes, Mr. Chairman. Dr. Fraser, regarding airman education, does the *Aeronautical Information Manual* contain any information for pilots related to medical factors?

DR. FRASER: Yes, it does, Mr. Guzzetti, and I am not off the top of my head able to reiterate what those discussions are, but the *Manual* does indeed discuss medical factors.

MR. GUZZETTI: Okay. And in your career with the FAA, on those cases in which you said earlier that you're aware of in which certificated airmen were caught flying without a medical or even without a pilot's license, do you recall if those individuals had kind of a history of flouting the rules and had been doing this over and over again?

DR. FRASER: Yes, sir. Not surprising many folks that were in this situation were found to have a pattern of disregarding rules and regulations.

MR. GUZZETTI: Okay. And would you think that the circumstances, the facts in this particular case, could give an indication of a pilot that was doing that, that didn't have a

track record of compliance with federal regulations?

DR. FRASER: I think this pilot indeed had a pattern that shows a disregard for following the rules and regulations.

MR. GUZZETTI: So if there was a requirement for a second class medical -- I'll withdraw the question. That's all the questions I have.

MEMBER SUMWALT: Thanks, and to be clear, Dr. Fraser, you're referring to his pattern of disregard for federal regulations as it related to the medical standards?

DR. FRASER: Yes, sir, Mr. Chairman.

MEMBER SUMWALT: Are you referring to --

DR. FRASER: And certainly 61.15 was disregarded. He should have reported the alcohol incidents and my understanding is he never did that.

MEMBER SUMWALT: Right. And to be clear, 61.15 says that if you have an alcohol-related driving infraction, it has to be reported to the FAA within 60 days. Is that correct?

DR. FRASER: Yes, sir, I believe that's correct.

MEMBER SUMWALT: Okay. Thanks. No other questions from the Parties?

Great. We'll now go to the Board of Inquiry, and Dr. McKay.

DR. McKAY: Thank you, Mr. Chairman. I have several questions. Can we first talk about 61.53 which is that section of the federal regulations that requires the pilot to self-restrict when he is unfit to fly?

And my question really is for you, Dr. Fraser. How is a pilot supposed to know if his medical condition or medications which he's been prescribed by his physician, are not okay to take while flying?

DR. FRASER: That's a great question, Dr. McKay. And we continually educate pilots and try to get them to understand that the aviation environment is significantly different than the environment in which they go about their standards of daily living or even driving a car. So we work with airmen and with the medical providers to get them to realize that in the aviation environment, there are additional considerations that need to be taken into account.

DR. McKAY: So does the FAA have any guidance for pilots to look something up? I mean what you said is relatively vague. This particular pilot, like other pilots for whom a medical certificate is not required, don't have a relationship with an aviation medical examiner. They don't have an easy obvious way to ask. What information does the FAA provide to the pilot him or herself?

DR. FRASER: And here we work with the advocacy organizations and with the unions. We have regular publications where we can talk about these subjects. We have a Federal Air Surgeon Medical Bulletin that goes out to our AMEs so we can keep them refreshed and updated.

I'm particularly proud of some of the accomplishments that

we've been able to have with the general aviation, JSC, Joint Steering Committee, where we work with a number of representatives from industry and we have been able to work on education courses and lists of medications that could adversely affect safety of flight, and we do so in pilot language. Those lists of medical conditions and medications have always been available to anyone that wants to Google our *Guide for Aviation Medical Examiners*, but that's written for physicians. So we've worked with the GHASC to put that in pilot speak and not expect them to read medical EES.

DR. McKAY: And are balloon pilots part of the GHASC?

DR. FRASER: Not to my knowledge.

DR. McKAY: And in addition, I know that the recent addition to the Funding Bill that addresses the third class medical, my understanding is that the education requirement does not apply to glider pilots, balloon pilots or light support pilots, those limited certificates. It will only apply to those who are flying non-commercial aircraft with six or fewer seats. Is that correct?

DR. FRASER: That's correct.

DR. McKAY: So that wouldn't have applied to this particular pilot, and it won't apply to his colleagues in the future.

DR. FRASER: That's correct.

DR. KEMP: If I may, as an example to what Dr. Fraser's talking about, we have, at CAMI, just begun gathering information on trade magazines and trade journals that might be reading to insert an article once in a while on drugs, over-the-counter drugs

as well as prescription drugs, just to give them another avenue to find out about this, how drugs affect the body.

DR. McKAY: Thank you. Ms. Hurley, would you pull up Exhibit 18A, page 10? This is a question for Dr. Chesanow. You didn't think I was going to let you off the hook, did you?

At the top of page 10, and I know this isn't very visible to people, this is a report from a 2013 evaluation, the pilot had by a psychologist that included significant neuropsychological testing. He performed this testing while he was taking his Ritalin, and he didn't do very well. In fact, the bottom of this says the diagnostic impression was ADHD combined type, depressive disorder and alcohol and substance abuse in remission. The provided concluded the tests were valid, indicated a number of difficulties with attention, concentration and recall of verbal information. Finally, because the pilot had taken his Ritalin on that morning, he concluded that his current prescription regime did not appear to effectively control his ADHD symptoms.

Dr. Chesanow, is this man medically certifiable with this one condition alone?

DR. CHESANOW: Well, it's hard to say based on that report, and I will say for the record, I am not a board certified neuropsychologist or a neuropsychologist in any fashion, and I've been tasked to review a lot of these evaluations that come into us with people with ADHD, and there are multiple problems with these reports.

One is that you don't have to be a trained neuropsychologist to do these tests. So the tests may be incorrectly administered, incorrectly scored and incorrectly interpreted.

Even if they are correctly administered, correctly scored and correctly interpreted, the average psychologist, let alone neuropsychologist, is not familiar with the aviation standards.

So we have a select group of aerospace aviation neuropsychologists, some with international reputations, that review these kinds of results if they're questionable.

But, with my limited knowledge of aviation neuropsychology, I would say the testing is questionable and the conclusions were even more questionable. And, the fact that the airman took them on a disqualifying medication, i.e. Ritalin, invalidates them from the start.

So based on what I see, this evaluation to me would have no bearing on whether the airman actually has ADHD and actually has medically significant ADHD.

DR. McKAY: Thank you. That's very helpful. So what would it take for an airman like this one, and let's look at the issue in isolation, the attention deficit in isolation, what would it take for this gentleman to obtain a special issuance certificate?

DR. CHESANOW: Well, just for the ADHD in isolation, we would expect him to be off his disqualifying psychostimulants for at least one month, and we would have, if not a board certified neuropsychologist evaluate him, we would have one of our board

certified neuropsychologists review the data to see if it was properly performed and properly interpreted, and we would go with their expertise.

I would say if I could digress a little in regard to the self-declining, because one perceives they have a medical problem, in my world of psychiatry and addiction psychiatry, you're often dealing with people with judgment impairing conditions who may be on judgment impairing medications and to expect someone with a judgment impairing condition taking a judgment impairing medication to make a good judgment as to their fitness to fly, to me at least is a bit of a stretch.

DR. McKAY: Thank you very much. Mr. Chairman.

MEMBER SUMWALT: Thank you, Dr. McKay. Dr. Bowling.

DR. BOWLING: Thank you, Mr. Chairman.

Dr. Chesanow, would this pilot have shown any outward behaviors or mannerisms that would have given his crew and the passengers and idea that he was being affected by so many chemicals and medical conditions?

DR. CHESANOW: The short answer is he may or may not. The drug levels about which Dr. Kemp testified to are an important piece of the puzzle, but they're not the entire piece of the puzzle. You'd have to know a lot more about what the airman has taken regularly, if those blood levels represent a dramatic drop is when you get withdrawal symptoms. If those drug levels represent a rise in which he would get intoxication, and even

something as commonly used as caffeine, and I know plenty of people that drink 10 plus or more cups of caffeine a day, even that little simple generally accepted medication or, you know, substance can create withdrawal that can create difficulties in impairment and vigilance. So that's just one small accepted part of the total puzzle here.

It's very complex when you're dealing with one medication alone. To give you an example, people metabolize these things at different rates. For antidepressants alone, the rate of metabolism between two different people can be tenfold. So that means that one can take a standard dose of the medication, Fluoxetine or Prozac, and if you're a fast metabolizer, you only get the response of 2 milligrams. If you're a slow metabolizer, it's the equivalent of taking 200 milligrams a day.

That combined with all the other drugs, and when Dr. Kemp mentioned that they could be additive, I would like to add to that that when you think of drugs that are additive, if you take one drug that you say has adverse effects of a degree of Class 1, and this is metaphorical, and another drug with adverse effects of a degree of Class 2, if you take them together, additive would be a 3 level of adverse effects.

Many of these drugs act synergistically. So they're more than additive. So instead of taking two drugs with one and two and adding up to three, it may add up to six or nine, depending on which drugs you have and because of the cocktail or what I would

refer to as a witch's brew of medications this guy was taking, it's almost impossible to figure out which drugs create more impairment and which drugs create less impairment.

DR. BOWLING: Okay. Thank you very much. You may have helped answer my second question which is would this pilot have been of a personality to stop and reconsider flying on that day had he been confronted by a passenger or crew member?

DR. CHESANOW: Well, if we had a little bit of the data about this pilot, for example, just the fact that he was alcohol dependent, allegedly in remission, we would have evaluations to determine whether he was, in fact, in recovery satisfactory to the Federal Air Surgeon. That may bring up a whole new door to the other medical conditions. He may admit to some of them. He may not. It's hard to tell, but if someone doesn't have documented proof of recovery, we tend to at the very least engage them in a program where we can monitor very closely including alcohol and drug screens.

Now if you're in alcohol dependence in recovery, it is contraindicated to use opioids. It is contraindicated to use Diazepam, Valium. It is, depending on your view, and some people would say perhaps the Methylphenidate would be contraindicated in a clinical situation, it certainly contraindicated as a disqualifying medication for aeromedical purposes by my department.

So the answer is probably we would have found out a lot more

and if this airman truly didn't require these medications for his condition, there is a possibility he would be eligible for a special issuance but there are a lot of questions that would have to be answered before we could say definitively one way or the other.

DR. BOWLING: Thank you very much. And for you, Dr. Fraser, in your experience, have you ever come across a commercial pilot flying without a medical involved in an accident that resulted in 15 passenger fatalities?

DR. BOWLING: Thank you very much. I have no more questions.

MEMBER SUMWALT: Yes, the microphone was off. So for the record, if you'd just repeat your answer please.

DR. FRASER: I have not.

MEMBER SUMWALT: Thank you very much.

So, Dr. Fraser, in 3 weeks, you will walk out the door of the FAA. You will retire. So you don't have to worry if you answer this question honestly whether or not you'll be fired, or maybe.

But I did not feel like you absolutely answered Captain Lawrence's question and Captain Lawrence's question was something to the effect of, do you feel, in your professional opinion, as a physician, aeromedical physician, do you feel that the physical nature of the ballooning, i.e., the setup and things like that, if that should have -- should require some sort of medical evaluation?

DR. FRASER: Yes, sir, Mr. Chairman. I feel that a medical

evaluation is a part of a wholistic plan to keep the National Airspace safe.

MEMBER SUMWALT: Thank you for your candor there.

Dr. Chesanow, it was interesting to hear, I was wondering about that, the cumulative effect of these multiple medications, one plus one does not equal two. It could be three or six or nine or whatever.

We know that there were multiple conditions that would have disqualified this pilot from being able to fly. We know that there were multiple medications that would have disqualified him to fly. Is there any way of knowing, given the cocktail of medications that he was taking, any type of performance increase or decrement associated with this cocktail? Is there any way of predicting that?

DR. CHESANOW: To know retrospectively with certainty, I would say no, but given the fact that there were a multitude of disqualifying medications, I mean it's possible, for example, Diphenhydramine, Benadryl as Dr. Kemp said, is sedating. If you continue to take it for four to six doses, usually the sedation wears off and if tested then, the sedation may not be a problem in most individuals.

Likewise, several of the drugs that would be impairing in the intoxication phase, or in the withdrawal phase, would create serious problems. Whether they maintained in a steady state phase, whether there would be problems after a sufficient time,

would be less clear, we would still look at them as disqualifying.

But in answer to the question about definite performance, my guess is given the numbers of them, given the synergistic effects of many of them, and given the fact that there is this quality of tolerance for the opioids for Diazepam and these other drugs, tolerance is the effect that when you take a certain dose for a period of time, the either therapeutic effects or the high, if you're taking it for recreational use, wears off. So to get that same effect, you have to increase the dosage. When you increase the dosage, you're in an intoxication phase again. And so these drugs that he's taking tend not to work for a long period of time at the same dosage.

So I would say statistically, it would be my belief that those drugs were changing, those drug levels were changing. He may or may not have been using them while he was piloting his craft. If he weren't using them, the odds were that some of his blood levels were decreasing. He could have been going into withdrawal. Again, it is so problematic to calculate out with one single drug with certainty. Given this, as I say witch's brew of drugs, I think it would be impossible to say with certainty.

MEMBER SUMWALT: Thank you. Dr. Fraser, Mr. Guzzetti had asked you a question about the legislation that was passed in July, the FAA reauthorization that it relaxes the pilot medical certificate requirements, but if you're flying for hire, do you still have to have a medical? And I think that's follow on to

what Dr. McKay asked.

DR. FRASER: Yes, sir, Mr. Chairman. The legislation specifically excludes a commercial pilot.

MEMBER SUMWALT: Right. Thank you. I've heard some concerns within the ballooning community that if someone were to be on an antidepressant, that it would disqualify them from flying, and if they were in the commercial business, it would put them out of business if they reported it.

So as I understand it, there's four antidepressants that can be approved and can one of you please comment on that?

DR. CHESANOW: Could you be more specific, Mr. Chairman, what you would like us to comment on? It's true that we have four antidepressants that we accept in what we call our SSRI program. The program involves evaluations and monitoring, but taking those antidepressants, if they're effective and part of the program. I mean we allow the antidepressants. We allow them with the idea that the depressive symptoms will be resolved.

If someone is taking antidepressants and they still have significant features of depression, obviously that won't be effective. Also, there are disqualifying history, for example, if someone has significant suicidal ideation or very severe depression or required exotic treatments beyond those antidepressants, we would view those conditions as too serious to chance a recurrence of.

But for the majority of people who respond to those

antidepressants, they're eligible for special issuance and can fly.

MEMBER SUMWALT: And those four, one of which this pilot was taking, and I don't know, I can't pronounce the actual name, but basically Prozac, Lexapro, what are the other two?

DR. CHESANOW: Prozac, Lexapro, Zoloft and Celexa.

MEMBER SUMWALT: Thank you.

DR. CHESANOW: However, this pilot was taking two antidepressants. One was Wellbutrin, Bupropion, which is not currently an allowable medication due to the fact that the short acting version has a higher risk of seizures.

MEMBER SUMWALT: Thank you. And the reason I asked that is again I've heard in the ballooning community that people would worry about if they were to use an antidepressant, it might take away their livelihood and they have to be stabilized for I think 6 months. Is that right?

DR. CHESANOW: That's correct.

MEMBER SUMWALT: And then they would receive, is it a waiver or special issuance?

DR. CHESANOW: A special issuance.

MEMBER SUMWALT: Thank you very much. And finally, the drugs that this pilot was taking, and this is sort of a surprise to me, would any of those drugs have shown on a DOT required or FAA required drug testing program?

DR. KEMP: Well, the Diazepam, the Valium, definitely would.

The Methylphenidate, the amphetamine, would show up as a amphetamine positive, given the technology of the particular laboratory.

MEMBER SUMWALT: Okay.

DR. KEMP: So if it's in the high end of concentration, it would detected as a amphetamine, then they'll go on and confirm the presence of that drug.

MEMBER SUMWALT: I see. So a drug testing program could be effective in commercial operations for being a deterrent?

DR. KEMP: It could be effective if the drug is in a high enough concentration to be detected.

MEMBER SUMWALT: In your professional opinion, were the drugs that were found in one of these exhibits, would those have been in the high enough concentration that would have been detected in a DOT required drug test?

DR. KEMP: I think the Valium, the Diazepam, would be.

MEMBER SUMWALT: Thank you very much. Dr. McKay.

DR. McKAY: Thank you. Just a follow on, Dr. Kemp, I'm not aware that the DOT required urine testing includes any Benzodiazepines. Am I mistaken?

DR. KEMP: If that's true, then I'm not aware of it.

DR. McKAY: So my understanding is that it includes amphetamines and four of the synthetic illicit amphetamines but not Ritalin, not Methylphenidate, no Benzodiazepines, and while it does include opioids, it includes only Codeine, Morphine and the

metabolite of Heroin. So my understanding is that none of the drugs that were prescribed to this particular individual would have been reportable on a DOT urine drug screen. Am I correct?

DR. KEMP: Well, I will defer to these gentlemen who know more about it.

DR. CHESANOW: My understanding is that the drug screens register true opioids, and the newer opioids like Oxycodone which is very popular, synthetic opioids, and they don't test positive for them.

DR. McKAY: That is my understanding as well. Thank you.

Dr. Fraser, one of the comments made was about the pilot's chronic back pain and fibromyalgia and the issue to flight safety of being physically capable of carrying out the physical tasks of flying an aircraft. Do you give any consideration to the fact that balloon pilots may have very different physical tasks to perform compared with an airline pilot or a GA Cessna 170 pilot?

DR. FRASER: Yes, Dr. McKay, and I agree that certainly some of the physical requirements for a balloon pilot might be somewhat less than a pilot climbing into a small cockpit. However, as you are well aware, there are patients that have fibromyalgia and/or chronic back pain that are unable to get out of bed. So it would depend upon the severity of either one of those conditions as to whether it would affect his physical piloting capabilities.

DR. McKAY: Thank you. And question for you, sorry about that. ICAO and a number of other countries require medical

certificates for balloon pilots carrying paying passengers as in this case. Has there been a thought or a reason why that hasn't been the case? Are you aware of what the reasoning was? I mean I'm suspicious that back in the '30s, balloons were smaller and I don't know how many of them carried passengers. Can you just speak to the issue of the difference between the United States and ICAO standards as well as some other countries?

DR. FRASER: And, Dr. McKay, I rely on the comments made by my Flight Standards counterparts and others. Certainly in looking at all of the National Airspace and the percent of balloon pilots as compared with 121 and 135 and then using the risk based decision making, I only understand what Mr. Duncan and others have been able to describe for me as to that rationale.

DR. McKAY: Okay. Thank you. I have one last question. It's a follow on to the questioning from the BFA. If this pilot had been required to hold a medical and had omitted from his medical application all of the information regarding his medical conditions and medication use, would the review by the NDR, would the FAA's review of the National Driver Registry, still have led to a more in depth evaluation of this particular pilot?

DR. FRASER: Absolutely. Certainly had we received notification from the security folks after the NDR check was done, of his multiple alcohol related offenses, in this case, refusals, certainly we would have required that he go through treatment, rehab and successful aftercare before consideration for a special

issuance, and it wouldn't have taken that many, certainly with a refusal, one would have probably done the trick in terms of that requirement. So certainly the NDR check would have been a clue that this pilot had significant issues.

DR. McKAY: Thank you very much. No further questions, Mr. Chairman.

MEMBER SUMWALT: Thank you, Dr. McKay. Dr. Bowling.

DR. BOWLING: Thank you, Mr. Chairman. I just have one question for Dr. Chesanow. If somebody has been diagnosed with major depression, can you describe the process of how that person would obtain a special issuance medical certificate?

DR. CHESANOW: Well, yes. If they were diagnosed as having major depression, one of the factors we would consider is -- major depression is broken down by the DSM-V system into mild, moderate and severe. So if they had a mild condition that responded to say psychotherapy or behavior therapy, and we felt it was in remission, we might regular issue them with a warning.

If, however, there were more than one event of major depression, if there was a recurrent depressive condition, because recurrent depressions have a greater than 90 percent chance of recurring again, we would require and we have not been issuing medical certificates for people who are untreated with recurrent depressive conditions.

So if there was one instance of major depression, and they were currently on an approved antidepressant, we would allow them

to have consideration for the antidepressant program that we have in place.

If they had a major depressive condition where there's required treatment but they were no longer on antidepressants and they were no longer symptomatic, we would probably simply special issue them and require monitoring for a recurrence.

If they had a recurrent condition that was stabilized on approved antidepressants, if they met the criteria for the SSRI program, we would let them in that program, and they would be closely monitored.

If they had a recurrent condition and were not currently stabilized on antidepressants, I would not be recommending a medical certificate.

DR. BOWLING: Thank you. And how long does that process take from the time he's diagnosed until that special issuance medical certificate can be issued?

DR. CHESANOW: Well, it depends on the person. If the person has been stabilized on their medication for a minimum of 6 months, they can enter the program. The program requires an evaluation by both a psychiatrist and a psychologist and engagement with one of our AMEs that are specifically trained in this area. I believe it would take a period of a few months but depending on staffing, the airman getting in the available information, et cetera, it might, you know, take a longer or a shorter period of time.

DR. BOWLING: Thank you very much. I have no more questions,

Mr. Chairman.

MEMBER SUMWALT: Great. We'll go back to the Technical Panel. Thank you.

MR. ENGLISH: Thank you, Mr. Chairman. I think Dr. Webster has a few follow ups.

DR. WEBSTER: If you could bring up 18A, page 5 please.

This is for Dr. Fraser. If you look at the section in the Medical Factual Report, criminal history and driving record, this pilot was arrested twice for drug possession. He was actually incarcerated at two separate times for different offenses, including multiple DWIs and then driving without a license.

If he had a medical certificate and you learned of these, would multiple arrests, convictions and incarcerations affect your decision certifying an individual like this?

DR. FRASER: Absolutely. With a history of this nature, this airman would never get certificated unless he went through a very intensive period of treatment, rehab and evidence of successful aftercare.

DR. WEBSTER: Thank you very much. I have no further questions, Mr. English. We have no further questions.

MR. ENGLISH: Thank you, Mr. Chairman. The Tech Panel rests.

MEMBER SUMWALT: Thank you very much. Questions from the Parties. Yes, sir. Mr. Guzzetti, please, sir.

MR. GUZZETTI: Thank you, Mr. Chairman. Just for a point of clarification, you know, I recognize the new reauthorization is

not for commercial pilots to waive, but is it true that it will allow private pilots or pilots, you know, not flying for commercial purposes, to fly aircraft that weigh as much as 6,000 pounds, can carry up to 6 people and travel at 250 knots?

DR. FRASER: And under 18,000 feet.

MR. GUZZETTI: And under 18,000 feet. Okay.

DR. FRASER: Yes, sir.

MR. GUZZETTI: And you said that even though they're waiving the medical, there are mitigations that they're coming up with as a replacement for that.

DR. FRASER: Absolutely. Certainly many of these mitigations are pretty significant. We require that the airman has had a medical within the past 10 years. So that indeed is a significant mitigating strategy because all of those people that had medical or psychiatric issues that we would never accept, will have once been examined and denied if they had a significant problem like a seizure disorder or a bipolar disorder or something of that nature. Similarly, if they were ever denied, revoked, suspended, those airmen won't be allowed to fly. I mentioned the required self-education program. These airmen are also required to see their own private physician at least once every 4 years, and their private physician is required to go through a FAA checklist and attest to the fact that they've discussed all potentially disqualifying medical conditions and/or medications that that airman might be taking, that there's no conditions or medications

that would make that airman unsafe to fly.

MR. GUZZETTI: Okay. Are you familiar with the *Guide for Aviation Medical Examiners*?

DR. FRASER: I am.

MR. GUZZETTI: Does it have a list of do not fly drugs in that? And can you explain what that is?

DR. FRASER: It does. In the *Guide for Aviation Medical Examiners*, there's a pharmaceutical section that talks about the general medications that we would and would not allow but more specifically, and once again, part of this was a part of the GAJSC initiative, we have the don't issue, don't fly section that is addressed not only to AMEs but addressed to airmen where we talk about those medications that we would never allow airmen to use and fly. So we don't list all medications. It would be logistically impossible to keep up with any and every medicine that is within the choice of medicines that we see in our society, but certainly we talk about classes of medicines and what we generally would and would not allow.

MR. GUZZETTI: Well, getting to the question regarding whether the pilot would know whether or not they were fit to fly if they were in an altered state, that list is knowledgeable to a certificated pilot. Is that correct? That a certificated pilot should know what's on that list of drugs.

DR. FRASER: Absolutely. Certainly sedating medications, the antidepressant medication, the medicine used to treat the ADHD,

the Methylphenidate, certainly if he were able to read the English language, he could read that these medications would not be allowed. Then, of course, as Dr. Chesanow said, with an altered condition and medications that would alter his ability to think, I'm not sure that that would register.

MR. GUZZETTI: Okay. And two more quick questions. The *Airman's Information Manual*, Chapter 8, Medical Facts for Pilots, it's got Sections 2B and 2C which provides guidance to pilots about not flying if they suffer from any illness and prohibiting crewmembers from using any medication that affects the faculties in any way. Does that ring true to you as far as what's in the *Airman's Information Manual*?

DR. FRASER: Yes, it does.

MR. GUZZETTI: And then finally, Dr. Bowling asked you a question if you were aware of any accidents involving 15 fatalities that was due to medical impairment, and I think you said you were not aware of that. Is that correct?

DR. FRASER: That is correct.

MR. GUZZETTI: But it is possible that there have been accidents in the past in Part 135, for example, with certificated airmen with valid medical certificates, in which the cause or a factor in the accident was an impairment due to drugs? It's possible that there could be some out there even though you don't recall?

DR. FRASER: Certainly there have been incidents in the 135

arena. I'm not aware of any --

MR. GUZZETTI: I'm talking about multiple fatalities.

DR. FRASER: -- fatal accidents --

MR. GUZZETTI: Okay.

DR. FRASER: -- that have had medical casuals.

MR. GUZZETTI: Just for the record, Mr. Chairman, there was a Part 135 Piper Navajo that crashed in Burlington Township that involved 11 fatalities in which the tox came back positive for some things. So I just wanted to make sure that Dr. Fraser's answer -- there needs to be some further research with regards to whether or not the Lockhart accident is unprecedented with respect to the impairment and that level of fatalities.

DR. BOWLING: If I may, Mr. Chairman, just to clarify, the question was in your experience, have you come across a commercial pilot flying without a medical involved in an accident that involved 15 passenger fatalities.

MR. GUZZETTI: I stand corrected. Thank you.

MEMBER SUMWALT: Thank you. Any more questions from the Parties?

Technical Panel?

MR. ENGLISH: No, sir.

MEMBER SUMWALT: Board of Inquiry?

Well, that brings us to the closing comments.

I want to thank the witnesses, and you'll be excused in just a moment, but all of the witnesses have now testified. So this

portion of the NTSB's investigation into the July 30, 2016 tragedy at Lockhart, Texas, is concluded. Now this is just the investigative portion so far. There is still a lot of work to be done. The record will remain open for additional materials requested during the hearing.

And, Mr. English, I said I'd do it, and I never did, but really what are the IOUs that we've requested? Do you have that catalogued? If not, we can skip that.

MR. ENGLISH: Yes, sir. I just show two here. The first was a search of the *Federal Register* for the preamble on drug test rules from the 1980s, and Mr. Kendall and I have discussed that already. We'll work on that. And from the FAA, surveillance numbers which Mr. Guzzetti has taken as a task to assemble those. So Ed Kendall and I will work on the search for the preamble, and Mr. Guzzetti, by Friday, if those could be assembled or an ETA for when you can get them assembled.

MR. GUZZETTI: There's actually one more IOU that I have, Mr. Chairman, and it's the number of gondolas that can hold, I think it was for Dr. McKay, that can hold I forget what the -- more than 12 I think that are out there in service with balloons.

MEMBER SUMWALT: Thank you for remembering that. That's why I like to go over the list and certainly, yeah, yeah, just to make sure everybody's on the same page.

And as far as the IOU that I mentioned, search the *Federal Register*, that was just somewhere along the line, look at that.

MR. ENGLISH: Sure.

MEMBER SUMWALT: Mr. Guzzetti, thank you, and I realize that the 16th is just a week away. Do you need more time than that?

MR. GUZZETTI: I'm not sure. We may not. Let me give it a go.

MEMBER SUMWALT: Thank you.

MR. GUZZETTI: And 3, 4 days from now, if I do need more time, I'll certainly ask for it.

MEMBER SUMWALT: That would be great. Thank you.

So the transcript of the hearing and all the materials entered into the record will become part of the public docket along with other records of the investigation, and the archive, the audiovisual archive, the webcast if you will, will remain on the NTSB's website for about 90 days.

From the evidence collected in this hearing and from the investigation as a whole, the NTSB will determine the probably cause of the accident and make any recommendations necessary to prevent similar accidents. The final report will take several months to finish up. But safety recommendations, we can issue safety recommendations at any point during the investigation.

From a personal point of view, my term will be expiring soon on the NTSB, and there's a good chance that I will not be here when the final report is issued. So I just want to challenge the staff to keep up your great work and remember what a friend of mine has told me, is that we at the NTSB, we are a voice for those

who don't have a voice, and I think that's real important. I've spoken to the families of the victims, and I think this could be a watershed event for the commercial air tour balloon industry, to up the ante on safety however that gets done, and I think if we don't take it seriously, we're really missing a tragic opportunity to correct it.

I realize the industry doesn't want overburdened. I understand that, but I think also we have to weigh the potential burden on the industry versus the rights and the safety of those who are paying to fly on balloons.

So on behalf of the NTSB, I really want to thank the Parties. BFA, thank you all for coming here. FAA, thank you. Kubicek, you've come all the way from Poland and, Mr. Kubicek, as a Party, thank you very much for coming. Not only thank you for your help today, but throughout the investigation thus far.

So on behalf of the Board of Inquiry and the Technical Panel, I want to express our sincere appreciation to the witnesses who have provided testimony.

And I say we can't turn back the hands of time and prevent what happened that tragic Saturday morning in Lockhart, Texas, but our commitment at the NTSB is to learn from this accident so that we can keep it from happening again. That's why we are here, and we've got a saying, it's out at our training center on a plaque, "From tragedy we draw knowledge to improve the safety of us all." And we have to take this tragedy and improve safety for us all.

This hearing is adjourned. Thank you.

(Whereupon, at 3:25 p.m., the hearing was adjourned.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	THE INVESTIGATIVE HEARING IN CONNECTION WITH THE ACCIDENT INVOLVING HEART OF TEXAS BALLOONS, KUBICEK BB85Z N2469L, LOCKHART, TEXAS ON JULY 30, 2016
PLACE:	Washington, D.C.
DATE:	December 9, 2016

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.

_____
Dominic Quattrociocchi
Official Reporter