UNITED STATES OF AMERICA

NATIONAL TRANSPORTATION SAFETY BOARD

In the matter of:	*	
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EMPIRE AIRLINES FLIGHT 8284	*	
OPERATING A FEDEX-OWNED ATR 42	*	
(N902FX) WHICH CRASHED 300 FEET	*	
SHORT OF THRESHOLD ON INSTRUMENT	*	Docket No. SA-533
APPROACH TO RUNWAY 17	*	
LUBBOCK INTERNATIONAL AIRPORT,	*	
LUBBOCK, TEXAS - JANUARY 27, 2009	*	
	*	

National Transportation Safety Board
490 L'Enfant Plaza East, S.W.
Washington, D.C. 20694

Tuesday,
September 22, 2009

The above-entitled matter came on for hearing, pursuant to Notice, at 9:30 a.m.

BEFORE: CHAIRMAN DEBORAH A.P. HERSMAN, Chairman
DR. JOSEPH KOLLY
MR. TOM HAUETER
MR. DARRIN BROADWATER, Hearing Officer

APPEARANCES:

Technical Panel:

MS. LEAH YEAGER, NTSB Sr. ASI, Office of Aviation Safety
MR. JOHN DeLISI, NTSB Office of Aviation Safety
DR. DAN BOWER, NTSB Office of Research and Engineering
CAPT. TODD GUNTHER, NTSB Office of Aviation Safety
MR. TIMOTHY BURTCH, NTSB Office of Research and Engineering
MR. JEFFREY MARCUS, NTSB Office of Safety Recommendations
MR. DON EICK, NTSB Office of Aviation Safety
MS. KRISTI DUNKS, NTSB Office of Aviation Safety
DR. KATHERINE WILSON, NTSB Office of Aviation Safety
MS. JENNIFER RODI, NTSB Office of Aviation Safety
MR. GUILHEM NICOLAS, BEA Accredited Representative
(Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile)

Parties to the Hearing:

MR. RICHARD MILLS, Empire Airlines
MR. DONALD FLANIGIN, ATR
MR. B. HOOPER HARRIS, FAA

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P R O C E E D I N G S

(9:30 a.m.)

CHAIRMAN HERSMAN: Welcome. I'm Debbie Hersman, Chairman of the National Transportation Safety Board and of this Board of Inquiry this morning.

At this hearing, we're considering the crash of FedEx-owned ATR 42 which crashed 300 feet short of the runway while on approach to Lubbock International Airport.

The purpose of this hearing is to ascertain additional facts, conditions and circumstances regarding this accident in order to supplement the information the Safety Board discovered during our on-scene investigation.

This process will assist the Board in determining the probable cause of this accident and issuing safety recommendations that may prevent similar accidents.

We believe that a public discussion of certain safety issues identified by the accident investigation to date would benefit the investigation. Related to identified safety issues are aircraft operations in certain icing conditions. Currently there are 15 safety recommendations related to aircraft icing that are open, and the issue is on the NTSB's List of Most Wanted Transportation Safety Improvements.

This hearing will provide an appropriate and important venue to reexamine the identified safety issues and to assist the Board in determining whether additional

recommendations are needed.

Specifically, for this hearing we will concentrate on the following issues:

(1) crew resource management, decision making and actions leading up to and during the accident sequence;

(2) Empire Airlines' training program, policies and procedures for flight and icing conditions and training to handle flap anomalies;

(3) FAA guidance for flight and icing conditions and identification and recognition of icing conditions;

(4) design and performance characteristics of the ATR 42 in icing conditions and with a flap anomaly; and

(5) avionics systems and aircraft design modifications to monitor and mitigate effects of icing on aircraft performance.

I would like to introduce the members of the Safety Board. First, I'd like to introduce Vice Chairman Chris Hart, who will stand in the audience. Vice Chairman Hart is going to be observing the public hearing proceedings for the next two days with us. Welcome, Chris.

Assisting me on the Board of Inquiry will be Mr. Tom Haueter, who is the Director of our Office of Aviation Safety. To my right is Dr. Joseph Kolly, who is the Acting Director of the Office of Research and Engineering, and also on the Board of Inquiry is Mr. Darrin Broadwater, who is the Hearing Officer

today.

The Board of Inquiry will be assisted by a Technical Panel. Members of the Technical Panel are Ms. Leah Yeager, who is our Investigator-in-Charge, and she's seated on the witness stand; Mr. John DeLisi, who is the Deputy Director of the Office of Aviation Safety; Dr. Dan Bower, the Chief of the Vehicle Performance Division; Mr. Tim Burtch, the Aircraft Performance Group Chairman; Mr. Jeffrey Marcus from the Office of Safety Recommendations and Advocacy; Captain Todd Gunther, the Operations Group Chairman; Mr. Don Eick, the Meteorology Group Chairman; Ms. Kristi Dunks, the Airworthiness Group Chairman; Dr. Katherine Wilson, the Human Performance Group Chairman; and Ms. Jennifer Rodi, who is the Survival Factors Group Chairman.

We are also accompanied today by Mr. Guilhem Nicolas, the Accredited Rep from the BEA of France. This is our counterpart organization. Welcome, Guilhem.

Other Safety Board staff members assisting with this hearing are Mr. Peter Knudson and Keith Holloway from the Office of Public Affairs. They're going to be in the back assisting with media. Also over on the left is Ms. Eunice Bellinger, and she'll be handling administrative matters for the hearing, Ms. Allison Violette, who is going to be running the presentations, and behind me, Mr. Gary Halbert, the Safety Board's General Counsel, and Mr. Bob Combs, my Special

Assistant.

In accordance with the Safety Board's procedural rules governing public hearings, the designated parties to the public hearing are those persons, governmental agencies, companies and associations, whose participation in the hearing is deemed necessary in the public interest and whose special knowledge will contribute to the development of pertinent evidence.

There are three such designated parties in attendance today. As I call the name of each party, I'll ask that the designated spokesperson state for the record his or her name, title and affiliation. For the FAA?

MR. HARRIS: Good morning, Madam Chairman. My name is Hooper Harris. I'm the spokesperson for the Federal Aviation Administration, and I am the Manager of the Accident Investigation Division.

CHAIRMAN HERSMAN: Good morning, Mr. Harris. Thank you for being here.

For Empire Airlines?

MR. MILLS: Good morning, Madam Chairman. My name is Richard Mills. I am the Director of Quality Assurance for Empire Airlines. At the time of the accident, I was the Director of Safety and Compliance.

CHAIRMAN HERSMAN: Thank you, Mr. Mills.

And for ATR?

MR. FLANIGIN: Good morning, Madam Chairman. My name is Don Flanigin. I'm Vice President of Customer Support for ATR North America.

CHAIRMAN HERSMAN: Thank you, Mr. Flanigin. We're pleased to have all the parties in attendance here.

While not an official party to this investigation, I'd also like to note that the European Aviation Safety Agency, EASA, is present and has offered substantial technical assistance during this investigation.

I would like to thank all of the parties for their cooperation and their willingness to work with us during this accident investigation.

The witnesses testifying at this hearing will be introduced when they begin their testimony. They've been designated as witnesses because of their ability to provide the best information available on the issues. Hard copies of the witness and exhibit lists and electronic copies of items that are already in the docket are available from Keith Holloway in our pressroom.

The witnesses will testify under oath. Each will be introduced by name, with any special qualifications he or she may possess for purposes of this hearing.

The first witness will be the Investigator-in-Charge of the accident investigation, Ms. Leah Yeager. She will summarize certain facts about the accident and the

investigative activities that have taken place. The subsequent witnesses will be questioned first by our Technical Panel, then by the disciplined spokesperson for each party to the hearing, and finally by the Board of Inquiry.

I will permit a second round of questions if the record needs to be clarified or if new matters have been raised that require further exploration. If one of the parties would like a second round of questions, the designated spokesperson should make the request and state the reason for the request. I would expect the second round of questions to be very brief with no repetition of previous questions.

A witness who has finished testifying may be subject to recall should the need arise. Therefore, witnesses should not leave the hearing without first checking with the Investigator-in-Charge or the Hearing Officer about the likelihood of being recalled for additional questioning.

During this hearing, we will not attempt to determine the probable cause of the accident. Such analysis and cause determinations will be adopted later by the full Safety Board after all of the evidence has been gathered from our investigation and this public hearing.

We will then discuss that information in a public or sunshine meeting when the report is brought to the Board. At that time, the Safety Board will consider all the evidence, review the analysis, and determine the probable cause in a

final report.

The hearing is not adversarial. There will be no adverse parties or interests, no formal pleadings and no cross-examination. The Safety Board will not determine liability, and questions directed to issues of liability will not be permitted.

As the Chairman of the Board of Inquiry, I will make all rulings on admissibility of evidence, and my rulings will be final. I will request that all parties and the Technical Panel refrain from asking questions that are narrative type questions, that is more in the nature of testimony than a question, are beyond the scope of the issues that have been agreed upon, are repetitive or are irrelevant, immaterial, or argumentative.

The record of the investigation, including the transcript of the hearing and all exhibits entered into the record, will become a part of the public docket on this accident. Anyone wanting to purchase the transcript, including the parties to this hearing, should contact the Court Reporter directly.

Following the hearing, the parties are invited to submit comments to the Safety Board regarding the conclusions that they believe should be drawn from the evidence and what preventative measures should be taken. Please submit 15 copies of your comments to the Safety Board within 30 days after you

receive the transcript of the hearing, and submit 1 copy of your comments to each of the other parties to this investigation. All comments received by the Safety Board will be made a part of our public docket.

Ms. Yeager, are you prepared to present your opening statement?

MS. YEAGER: Yes, I am. Thank you. Thank you, Madam Chairman.

CHAIRMAN HERSMAN: Please proceed.

MS. YEAGER: Good morning. On January 27, 2009, about 4:37 a.m. Central Standard Time, Empire Airlines Flight 8284, an Aerospatiale/Alenia ATR 42-320, crashed while executing an instrument approach to Runway 17 Right at Lubbock Preston Smith International Airport, Lubbock, Texas. The airplane impacted terrain approximately 300 feet short of the runway and collided with the approach lighting system before it came to rest on a grassy area west of the runway.

The airplane was registered to Federal Express Corporation and was operated by Empire Airlines as a Part 121 supplemental cargo flight. Night instrument meteorological conditions prevailed at the time of the accident. The Captain was seriously injured and the First Officer sustained minor injuries. The aircraft was substantially damaged by impact forces and post-crash fire.

I'll now discuss the history of flight. The

information that follows was obtained from crew interviews, the flight data recorder, the cockpit voice recorder, and recorded air traffic control communications.

Flight 8284 was originally scheduled to depart for Lubbock from the Midland International Airport, Midland, Texas, at 7:55 p.m. on January 26th. However, intermediate stops in El Paso and Fort Worth, Texas, were added because the company's Cessna 208 Caravans were unable to operate due to the freezing drizzle weather conditions. The FAA requires Cessna Model 208 airplanes and Model 208B airplanes equipped with airframe deicing, and that includes to exit areas of moderate or greater icing conditions when encountered. They are also prohibited from continued flight after encountering moderate or greater icing conditions.

The airplane arrived at Fort Worth Alliance Airport at 12:18 a.m., on January 27th. While at Alliance Airport, the crew prepared for the flight to Lubbock, Texas, and reviewed a weather package prepared by Empire's Dispatch Center in Hayden, Idaho. The weather information included light freezing drizzle conditions at Alliance Airport and Lubbock Airport and also along the intended route of flight.

According to Empire Airlines' General Operations Manual for the ATR 42, an FAA-approved document, the airplane is permitted to take off when light freezing rain, light to moderate freezing drizzle, or light, moderate snow was falling

provided the airplane was prepared in accordance with the approved deicing procedures. The General Operations Manual also stated that when light freezing rain, light or moderate freezing drizzle, or light, moderate, or heavy snow is falling, aircraft were permitted to land.

A preflight inspection of the airplane was conducted by Empire maintenance personnel, and no ice was detected. The airplane did not receive any deicing treatment prior to departure.

Flight 8284 departed Fort Worth Alliance Airport at 3:13 a.m. for Lubbock. The First Officer was the flying pilot. The flight climbed to their intended cruise altitude of 18,000 feet. At this altitude, the flight encountered volume ice which the Captain described as being moderate, bordering on severe. Level 3 icing protection which included the activation of the deice boots and continuous engine ignition was selected. The Captain stated that the airplane has a normal cruise speed of 200 to 210 knots but was indicating 180 knots during the icing encounter.

The Captain requested a descent down to 14,000 feet where the ice accumulation ceased. He stated substantial amounts of ice came off the airplane.

During the descent from 14,000 feet, the ice light on the memo panel began to flash indicating that the ice accretion had stopped, and the Level 3 ice protection was turned off.

Fort Worth Center handed off Flight 8284 to Lubbock approach control, and the flight was cleared to descend to 6,000 feet. Lubbock approach informed the crew of light freezing drizzle conditions at the Lubbock Airport. In addition, the reported ceiling was 500 feet overcast with 2 miles visibility, and the crew learned that the wind conditions at the time meant that they would be landing with a 10 knot tailwind.

Flight 8284 was then told to descend to 5,000 feet and was cleared for the ILS approach to Runway 17 right.

The Captain briefed the approach in anticipation of having to fly it since he was concerned that the First Officer had not accrued enough flight time in the airplane. Empire Airlines has a policy that restricts first officers with less than 100 hours in airplane type from executing takeoffs and landings in specified weather conditions.

After receiving the current weather conditions at Lubbock, the Captain realized that the weather would not restrict the First Officer from continuing to fly the approach.

At 4:34 a.m., Flight 8284 was cleared to land on Runway 17 Right. As the airplane approached the outer marker beacon, the First Officer called for the flaps to be extended to 15 degrees, the landing gear to be extended, and for the landing checks to be performed. The Captain confirmed that the icing angle of attack was on, and the landing gear was down and

locked.

Approximately 40 seconds after the initial call up for the flaps to be extended, the Captain stated, "You know what? We have no flaps." The Captain said he repositioned the flap handle several times and checked the circuit breakers with a flashlight while the airplane descended toward the runway. The Captain did not perform the reduced flap landing procedure for the Quick Reference Handbook and did not reset the speed bugs for a no flap approach.

Shortly after the airplane crossed over the outer marker, the first of five stick shaker warnings occurred, and the autopilot disengaged. The First Officer asked the Captain if she should go-around. He said no. The Captain stated his decision to continue with the approach was based on the runway conditions, icing conditions, and the flap problem. He stated, "I just wanted to land as soon as possible."

As the airplane continued to descend on the approach, the Captain noticed that the airplane was drifting off the localizer and saw the First Officer hand flying the approach when it should have been coupled to the ILS. He did not realize the autopilot had disconnected and had not heard the oral disconnect alert.

The Captain then asked the First Officer if she wanted him to take control of the airplane, and she said yes. Shortly after the Captain, the third and fourth stick shaker

warnings occurred, with the simultaneous pull-up alert from the electronic ground proximity warning system.

Moments later, the First Officer called the runway in sight, and the Captain requested maximum RPM. The stick shaker again activated and remained on until the airplane impacted the ground 300 feet short of the runway. After the airplane came to a stop, the crew was able to safely egress the burning airplane from the forward left door.

This first photograph is an aerial view of the accident site. The bottom red arrow depicts the initial impact point, and the top arrow depicts where the airplane came to rest.

The second photograph was taken just a few hours after the accident by an FAA inspector based at the airport. The white substance you see on the airplane is frozen foam used by airport rescue and fire fighting personnel.

The third photograph was also taken by a FAA inspector and depicts ice accretion on a section of the right aileron. This section of aileron had separated from the airplane and was found near the initial impact point.

The fourth and last photograph is an overall aerial view of the airplane depicting a good portion of the impact and post-impact fire damage.

A weather observation taken about 15 minutes after the accident recorded the wind from 020 degrees at 11 knots

gusting to 18 knots, visibility 2 miles in light freezing drizzle and mist, ceiling overcast at 500 feet, temperature -8 degrees Celsius and a dew point of -9 degrees Celsius.

This following slide depicts a band of echoes that span from the northeast to the southwest over the airplane's route of flight. The black line depicts the airplane's flight track from Fort Worth to Lubbock.

A three dimensional animation has been prepared to show the last few minutes of the accident flight. It depicts information from the flight data recorder, the cockpit voice recorder, FAA radar data, and aircraft performance data. It does not depict the weather or visibility conditions at the time of the accident and does not include sound. I will step through the data that will be displayed during the animation.

The animation begins at 4:33 a.m. and 59 seconds Central Standard Time. The FDR data stops at 4:36 a.m. 26 seconds when the airplane first strikes the ground. The animation will fade into a photograph of the ground scars and then to a photograph of the accident airplane. The CVR transcript will continue to play until the last comment at 4:36 a.m. and 52 seconds.

The upper portion of the animation shows a 3-D model of the airplane and the airplane's motions during the accident sequence. In this area, selected content from the CVR transcript or other annotations are superimposed as text at the

time the event occurred. All times are shown on the right side of the screen.

The lower portion of the animation depicts instruments and indicators which display selected FDR or calculated parameters. The instruments and indications are shown in three sections which are, from left to right, airspeed and altitude, an altitude indicator showing pitch and roll attitude, stick shaker and pusher indicated as text, and a control/wheel column icon depicting the control wheel rotating right or left and control column moving up or down inputs and also rudder pedal inputs are marked as an indicator. The power and flap handle selection are as indicators and the autopilot is indicated as text.

As the animation begins, the airplane is approaching the outer marker. The autopilot is on, the landing gear is up and the flaps are retracted. At 4:34 a.m. and 24 seconds, the First Officer called for flaps to be extended just outside the marker. The airspeed varies between 160 and 120 knots and the control wheel moves approximately 20 degrees to the left to counter the flap asymmetry.

At 4:34 a.m. and 55 seconds, the First Officer reduced power from about 58 percent maximum torque to about 3 percent. The autopilot corrected for the power change and increased pitch to maintain glide slope. The increase in pitch activated the stick shaker which disconnected the autopilot.

The autopilot was not re-engaged after its initial stick shaker event. No elevator turn inputs are recorded on FDR after the autopilot disconnected. Aileron or rudder trim were not recorded parameters on the FDR. After the autopilot disconnected, the crew were unable to maintain a stabilized approach.

We will now play the animation.

(3-D animation viewed.)

MS. YEAGER: The NTSB sent a go team comprised of six staff members to the accident site. Travel to the site was delayed by the recent ice storm. The team was on scene for three days documenting the wreckage, conducting interviews, and collecting records related to the accident flight, airplane, and crew.

Examination of the FDR data and performance analysis revealed that the airplane did accumulate ice during the accident flight and had an approximate 8 to 10 degree flap asymmetry. However, that data did not indicate a stall, loss of lateral control, or a sudden change in aileron hinge movement. The stick shaker triggered at the appropriate local angle of attack and airspeed, which provided sufficient stall margin. The back angle commanded wheel and aileron deflections throughout the approach and landing.

In addition, FDR data and ATR simulation analysis of the accident indicated that ice accretion during certain

portions of the flight did not exceed the control authority of the airplane.

During the accident flight, the right flap did not extend and the left flap extended approximately 9 degrees. The flap system on the ATR 42-320 was designed to sense an asymmetry and stop the traveling flap in continuing beyond 8 to 10 degrees. An examination of the flap system on the accident airplane revealed that the flap system functioned as designed. However, the initiating event for the asymmetry is part of the Safety Board's ongoing investigation.

Examination of both engines revealed they were producing power at the time of impact, and flight control continuity was established for all flight controls.

Over the next few days, we will gather additional factual information from key witnesses in several areas of the investigation. I will now discuss some of the primary areas of inquiry.

(1) Crew resource management decision making and actions leading up to and during the accident sequence.

(2) Empire Airlines' training program, policies, and procedures for flight and icing conditions and training to handle flap anomalies.

(3) The FAA's guidance for flight and icing conditions as well as identification and recognition of icing conditions.

(4) The design and performance characteristics of the ATR 42 with the flap anomaly and in icing conditions.

(5) The avionics systems and aircraft design modifications to monitor and mitigate effects of icing on aircraft performance.

I'd now like to take an opportunity to thank the NTSB investigators and staff who have supported the accident investigation and public hearing preparation.

Assisting the Safety Board were the parties to the investigation, the FAA, Empire Airlines and Federal Express.

As the state of design, the manufacturer for the airplane, the BEA sent an accredited representative from France to participate in the NTSB's investigation. The French representative is being assisted by technical advisors from ATR.

As the state of manufacture, the Transportation Safety Board of Canada assigned an accredited representative but did not travel to the accident site. The Canadian authority was assisted by a technical advisor from Pratt-Whitney Engines who did travel to the accident site.

There were several state, local and federal agencies that were not parties to the investigation but played an important role in assisting the NTSB team with the on-scene portion of the investigation. The various agencies provided manpower, facilities, transportation, and supplies. Their

assistance was invaluable to the on-scene process, and we were thankful for their assistance.

Madam Chairman, this concludes my opening statement. I would like to enter the exhibits into the docket at this time.

CHAIRMAN HERSMAN: Thank you. Consider them entered, Ms. Yeager. That was a great opening presentation and I think sets the stage well for what comes next. Thank you.

I'd also like to recognize the our -- staff for the CVR and FDR work and also Alice Park and Kristi Spangler who put that animation together for us. There's a lot of work behind the scenes. They're not on the Technical Panel, but we very much appreciate their contributions to the accident investigation. Thank you.

Mr. Broadwater, are you ready to call the first witness?

MR. BROADWATER: Would Ms. Heather Cornell please come to the stand?

(Witness sworn.)

MR. BROADWATER: Thank you, Ms. Cornell. Would you please state your name, employer, and title for the record?

MS. CORNELL: Heather Cornell, First Officer, ATR, Empire Airlines.

MR. BROADWATER: Thank you. Thank you, Madam Chairman. The witness has been sworn in.

CHAIRMAN HERSMAN: And we'll proceed to the Technical Panel. Dr. Wilson, will you be starting?

DR. WILSON: Yes, thank you, Madam Chairman. Good morning, Ms. Cornell. Thank you for being here today.

MS. CORNELL: Good morning.

DR. WILSON: Could you please begin by describing your experience as a pilot and the positions and aircraft you've flown at Empire Airlines?

MS. CORNELL: I started my flight training in 2001 in Western Washington. That's where I obtained my private instrument commercial and flight instructor licenses. I continued to work at that same flight school as a flight instructor for three and a half years and continued on and got my multiengine and instrument instructor licenses as well. In the meantime, I was earning my Bachelor of Aeronautical Science, and in 2008, I got a job at Empire Airlines as the First Officer in the ATR.

DR. WILSON: Have you held any other positions with Empire?

MS. CORNELL: No, ma'am.

DR. WILSON: Okay. Thank you.

As we just heard, Ms. Yeager provided us with an overview of the accident flight, and we also saw an animation of what occurred during the accident sequence. As you have firsthand knowledge of what occurred being in the cockpit on

that evening, we'd like to ask you more specific questions about the events as you recall them and also the insights that you have on what occurred on January 27th. How would you describe the workload leading up until the point when you ask for the flaps to be extended?

MS. CORNELL: It was pretty normal.

DR. WILSON: And we know that Captain Holberton briefed the approach that evening even though you were flying the approach. Could you please explain the reason for that?

MS. CORNELL: Well, prior to departing the forecasted weather in Lubbock was supposed to be down to minimums, and at the time, we were uncertain of my flight hours, and company policy at Empire states that if the first officer has less than 100 hours, the captain must fly the approach, and at the time we were unsure of my flight hours, and we hadn't gotten the current weather at Lubbock yet. So we were planning on the Captain flying the approach.

DR. WILSON: Okay. And we saw in the CVR transcript that Captain Holberton stated the airspeeds that you were to fly during the approach. How were those airspeeds determined?

MS. CORNELL: We have data cards for particular weights.

DR. WILSON: And did you verify that the airspeeds were correct when he briefed them?

MS. CORNELL: Not by physically looking at the cards.

I just verbally heard what he had told me.

DR. WILSON: And did you cross-check and verify that the speed bugs were correct?

MS. CORNELL: I looked at his airspeed indicator and looked at mine, and they were the same.

DR. WILSON: Okay. Are you familiar with Empire's descent and approach awareness procedures in the pilot handbook?

MS. CORNELL: Yes, ma'am.

DR. WILSON: What does standard calls and procedures mean to you?

MS. CORNELL: We call altitudes, we call airspeeds, any deviations from glide slope or localizer.

DR. WILSON: Okay. And who's responsible for making the call outs during the descent and approach?

MS. CORNELL: The pilot monitoring.

DR. WILSON: Do you recall during the accident sequence if those appropriate calls were made?

MS. CORNELL: I don't recall.

DR. WILSON: Okay. According to the CVR, what we saw in the animation, the stick shaker activated twice while you were at the controls. What was your response to the stick shaker activating?

MS. CORNELL: Well, I only remember it once, but I added power, and that's when I suggested the go-around to the

Captain.

DR. WILSON: What are you trained to do specifically in this situation when the stick shaker activates?

MS. CORNELL: Well, in a normal situation, when it shifts to stick shaker, we're trained to go-around, but that's not including any other emergencies or situations that may be going on at the time.

DR. WILSON: Okay. And as you just said, you asked the Captain if you should go-around when the stick shaker activated. What made you think to ask that?

MS. CORNELL: Because we did get the stick shaker and we had this flap anomaly going on.

DR. WILSON: When the Captain responded no, that you should continue the approach, what was your reaction to that? What were you thinking when he said that?

MS. CORNELL: Well, in my mind I also knew that we also had this unknown flap anomaly going on. We would have been climbing back into icing conditions that we had just descended through and we had our gear down, and I kind of understood his thought process at the time.

DR. WILSON: Okay. Once Captain Holberton took over the controls, the stick shaker activated about 8 seconds after that. As the pilot monitoring, what was your response?

MS. CORNELL: I don't recall.

DR. WILSON: Did you consider suggesting a go-around

again after he took over the controls and got the stick shaker?

MS. CORNELL: Well, it was always in the back of my mind, but I also knew that we had these other issues going on at the time.

DR. WILSON: Are you familiar with the stabilized approach criteria?

MS. CORNELL: Yes, ma'am.

DR. WILSON: Did the approach into Lubbock meet this criteria?

MS. CORNELL: No.

DR. WILSON: What are you trained to do if the approach is not stabilized?

MS. CORNELL: Again, in a normal situation, we're trained to go-around and try again, but we also had this situation going on that isn't a normal situation.

DR. WILSON: Did you suggest to Captain Holberton that you go missed approach?

MS. CORNELL: I did suggest it, yes.

DR. WILSON: And what was his response?

MS. CORNELL: He said no.

DR. WILSON: You received MU readings from air traffic control as you were on approach, and the MU readings were provided for Runway 35 Left, although you were landing on Runway 17 Right. Was there any concern about landing on a runway in which you didn't have the appropriate braking actions

reports?

MS. CORNELL: I don't recall.

DR. WILSON: Okay. How would you describe the CRM between yourself and Captain Holberton on that evening?

MS. CORNELL: I think we worked well together. There's -- after everything started happening, the fact that I asked the Captain if we should go-around instead of just doing it even though -- because we had this situation at hand, we had other factors involved as well as letting him take the controls when I didn't feel comfortable to continue.

DR. WILSON: Did you feel comfortable speaking up to Captain Holberton?

MS. CORNELL: Oh, yes, definitely.

DR. WILSON: What training did you receive on career resource management?

MS. CORNELL: We had two formal days of training at Flight Safety in Houston, but it's always integrated into any of our simulator sessions in any of our line checks and any training that we get.

DR. WILSON: Do you recall if assertiveness was covered during CRM training?

MS. CORNELL: I don't recall.

DR. WILSON: Okay. I want to shift focus to the icing conditions that you all were in. Did you see the weather package for the flight from Alliance into Lubbock?

MS. CORNELL: I don't recall. I'm sure I did.

DR. WILSON: Do you recall if anything concerned you about the weather?

MS. CORNELL: I don't remember.

DR. WILSON: What experience do you have flying in icing conditions?

MS. CORNELL: Just at Empire Airlines.

DR. WILSON: Okay. Have you ever flown any other aircraft with deicing or anti-icing equipment?

MS. CORNELL: No, ma'am.

DR. WILSON: Did you or Captain Holberton call for and using the icing checklists?

MS. CORNELL: Yes.

DR. WILSON: Which specific checklist did you use?

MS. CORNELL: We used the entering icing conditions checklist and the accreting icing conditions checklist.

DR. WILSON: Can you describe the ice that you were observing on the airplane during the approach?

MS. CORNELL: I don't recall.

DR. WILSON: Okay. Do you recall if it was severe icing, or how would you describe it in terms of light, moderate, severe?

MS. CORNELL: I definitely don't remember it being severe, and I can't remember taking any sort of mental note of what the icing conditions were.

DR. WILSON: Okay. Are there any restrictions that you're aware of for using the autopilot when in icing conditions?

MS. CORNELL: In severe icing conditions, you don't want to use the autopilot.

DR. WILSON: Okay. Are you familiar with the aircraft deicing program at Empire?

MS. CORNELL: Yes, ma'am.

DR. WILSON: At the time of the accident, when was the ATR approved to take off?

MS. CORNELL: In light freezing drizzle, light rain, light freezing rain, I'm sorry.

DR. WILSON: Are you aware of any changes that have been made to the aircraft deicing program since the accident?

MS. CORNELL: We're no longer allowed to take off in any freezing precipitation.

DR. WILSON: Okay. What training or guidance did you receive from either Empire Airlines or Flight Safety regarding icing and weather conditions?

MS. CORNELL: During our first initial week of indoc training, we watch a NASA tailplane video as well as the Empire ADP video, and then also down in Flight Safety, we cover all of the anti-icing and deicing equipment as well as using it in the simulator as well.

DR. WILSON: Okay. Does the company distribute any

FAA published Advisory Circulars, InFOs, SAFOs regarding operations and icing to the pilots?

MS. CORNELL: We get information on a regular basis.

DR. WILSON: Do you recall if you received the ATR Be Prepared for Icing document either from Empire or Flight Safety?

MS. CORNELL: Yes, we did.

DR. WILSON: Was this before or after the accident?

MS. CORNELL: I can't remember.

DR. WILSON: Okay. Did you read it?

MS. CORNELL: Yeah.

DR. WILSON: How would you describe the workload once the flaps were extended? Was there any change?

MS. CORNELL: Yeah, definitely once we realized we had a situation, the workload definitely went up.

DR. WILSON: Looking at the CVR transcript, about 6 seconds after the flaps were extended and just before Captain Holberton stated that you all had no flaps, you indicated that something was wrong, you said, what the heck is going on? What did the airplane and controls feel like to you at that time?

MS. CORNELL: I don't remember.

DR. WILSON: Do you recall any changes to the flight controls after the flaps were extended?

MS. CORNELL: I don't remember.

DR. WILSON: What procedure were you trying to follow

when there is a flap malfunction?

MS. CORNELL: If you know what the malfunction is, you would pull out the checklist.

DR. WILSON: Did you all follow that procedure?

MS. CORNELL: Well, the first page of the QRH says that we need to first figure out what the problem was, and at the time, we didn't know what the problem was. So we were in the process of determining that.

DR. WILSON: Could you explain a little bit more about how you all were making that determination? As we saw in the animation, Captain Holberton said that you had no flaps, and then there was no verbal communication about what action was being taken. Can you describe what was going on maybe implicitly between the two of you? What cues did you have to know what each of you were doing to address the problem?

MS. CORNELL: He tried to reset the flap handle to see if that would reset the system. He also was looking at the circuit breakers to see if that would help us solve the problem of what was going on.

DR. WILSON: Is checking circuit breakers something that you're trained to do by either Flight Safety or Empire Airlines?

MS. CORNELL: We're trained to figure out what the problem is by any means necessary.

DR. WILSON: Do you recall during your ATR check ride

if you received a flap anomaly?

MS. CORNELL: We received a no flap landing.

DR. WILSON: No flap landing. And you did not receive any other flap anomalies during the training?

MS. CORNELL: No, ma'am.

DR. WILSON: Okay. We know that Empire Airlines has approved the use of both Jeppesen and U.S. Government issued approach plates. What approach plates were you using the night of the accident?

MS. CORNELL: We were using the Government's.

DR. WILSON: And when you're on approach, where do you place the approach plates?

MS. CORNELL: We have a chartholder on my side to the right.

DR. WILSON: Okay. Have you observed any challenges from pilots who might be using different approach plates in the cockpit?

MS. CORNELL: No, ma'am.

DR. WILSON: Okay. Just a few more questions for you. Looking back on the accident event, is there anything that you would do differently?

MS. CORNELL: I think given the time constraints that we had, and the issues that we had, I think we handled it the best we could.

DR. WILSON: Do you believe that if you all had gone

around after the first stick shaker had activated, that the outcome would have been different?

MS. CORNELL: It's hard to speculate. In this instance, you know, there was some property damage, but we're still alive. Who knows what would have happened if we were to have gone around?

DR. WILSON: We always like to see pilots that are still living who can tell us their story, so thank you. What lessons do you think we can learn from this accident?

MS. CORNELL: That's tough. I guess rely on your training I guess, and trust your instincts, I guess. You have a very short amount of time, and you don't have a whole lot of time to think about what you're going to do. You just kind of have to make your decision and go with it.

DR. WILSON: Just one last question. Is there anything that we have not asked you about today that you would like to discuss here?

MS. CORNELL: I don't think so.

DR. WILSON: Okay. Thank you, Ms. Cornell, for your time. Madam Chairman, we have no more questions.

MS. CORNELL: Thank you.

CHAIRMAN HERSMAN: No additional questions from the Tech Panel? Mr. DeLisi.

MR. DeLISI: Thank you. Thank you, Ms. Cornell. Is it a procedure for crews at Empire Airlines to perform a

landing distance assessment prior to touchdown?

MS. CORNELL: Yes.

MR. DeLISI: Did you perform an assessment?

MS. CORNELL: I don't recall.

MR. DeLISI: You were provided some new information about one of the runways at Lubbock. Do you recall receiving that information?

MS. CORNELL: I don't remember.

MR. DeLISI: Okay. And are you aware of the flap lockout system on the ATR?

MS. CORNELL: Yes, sir.

MR. DeLISI: And how does that work?

MS. CORNELL: Since it's an asymmetry, it's 9 point something. I don't know exactly. The flap system will disengage to keep it from going further.

MR. DeLISI: Thank you.

CHAIRMAN HERSMAN: Additional questions from the Tech Panel? Ms. Cornell, how are you doing?

MS. CORNELL: Good.

CHAIRMAN HERSMAN: Needless to say, this is quite a challenge to you to come and be our first witness, and you're doing a great job. If you need a break, you just let me know, okay.

MS. CORNELL: Okay. Thank you.

CHAIRMAN HERSMAN: We'll go to the FAA.

MR. HARRIS: Thank you, Madam Chairman.

Good morning, Ms. Cornell. How are you today?

MS. CORNELL: Good. Thank you.

MR. HARRIS: We're awfully glad to see you, I can assure you that. I'd like to echo the comment from Dr. Wilson.

I have just a couple of small questions. You indicated that you did not identify the icing conditions you were flying in as severe. What did you base that statement on? What were your observations or your methods of identifying severe ice?

MS. CORNELL: Well, when we were coming in on approach, you can identify it by the side windows or looking at the spinner, finding ice on areas that wouldn't normally contain ice.

MR. HARRIS: And you didn't see any accumulation that would lead you to think it was severe?

MS. CORNELL: No, sir.

MR. HARRIS: Thank you. During the flap extension, you indicated that the workload increased during the flap extension. I believe I understood that correct.

MS. CORNELL: Yes, sir.

MR. HARRIS: During that time, was the autopilot engaged?

MS. CORNELL: At the time of the flap extension, yes, it was.

MR. HARRIS: Okay. Did you notice any change in control wheel position on the aircraft?

MS. CORNELL: I don't remember.

MR. HARRIS: Okay. After the autopilot disconnected with the first stick shaker firing, and you started to manually fly the aircraft, did you note any unusual control inputs required to maintain straight flight, wings level flight?

MS. CORNELL: I don't remember. It might have been happening subconsciously. It was just happening really fast. So I don't remember specifically.

MR. HARRIS: Thank you very much. If you did notice those conditions, would it have been normal for your crew resource management techniques to possibly communicate that to the other pilot?

MS. CORNELL: Yes, sir.

MR. HARRIS: Thank you very much. We have no more questions. Thank you.

CHAIRMAN HERSMAN: Traditionally we allow the party that has a witness on the stand to go last, and so we're going to go to ATR next.

MR. FLANIGIN: ATR has no questions for this witness.

CHAIRMAN HERSMAN: We're back to you, Mr. Mills.

MR. MILLS: Madam Chairman, we have no questions. Thank you very much.

CHAIRMAN HERSMAN: Okay. And I'll turn to the Board

of Inquiry. Mr. Haueter.

MR. HAUETER: Just a few. What was your previous experience of flying icing conditions before this flight?

MS. CORNELL: Prior to this flight, I had flown with the company for about four months online, and I had received during crews flight probably light icing during crews.

MR. HAUETER: But would you say that the ice on the accident flight was more severe than you had seen previously?

MS. CORNELL: Not severe, but it was more icing than I had previously seen.

MR. HAUETER: And in terms of, did the aircraft characteristics seem to be changing more with this flight than the other flight you were on in icing?

MS. CORNELL: Not during the approach, but earlier in the flight, when we were up at 18,000, our airspeed was declining a little bit, but once we descended, that went away.

MR. HAUETER: Did you receive any specific training on freezing liquid droplets?

MS. CORNELL: Yes, sir.

MR. HAUETER: And what was that training?

MS. CORNELL: During any of our training, we're trained in any kind of icing conditions at Empire, and in any of my instrument training that I've ever had, there's been icing training.

MR. HAUETER: Okay. Looking at the flap asymmetry,

have you ever experienced a flap asymmetry before?

MS. CORNELL: No, sir.

MR. HAUETER: And you said you had no training in flap asymmetries.

MS. CORNELL: Just verbally going through the checklist.

MR. HAUETER: And what was the checklist procedure for a flap asymmetry?

MS. CORNELL: I would have to pull the checklist up to see it. We just read through the checklist. I can't remember offhand what's on the checklist.

MR. HAUETER: Okay. In the simulator training, was flap asymmetry ever demonstrated to you?

MS. CORNELL: Never in the simulator.

MR. HAUETER: Thinking back now, were there any other procedures you believe that should be demonstrated in the sim that have not been?

MS. CORNELL: I think there's so many things that can be demonstrated in the simulator that you never really think of until it actually happens. You just can't cover everything.

MR. HAUETER: Okay. Thank you very much.

CHAIRMAN HERSMAN: Dr. Kolly.

DR. KOLLY: I have no questions.

CHAIRMAN HERSMAN: Okay. We're moving very quickly. I have a few questions for you, Ms. Cornell. Mr. Haueter

talked to you, and I think this question was also asked by Dr. Wilson, about your experience in icing conditions, and you talked about only at Empire, and with Mr. Haueter, you talked about what you had seen, what you would consider in crews flight light icing.

MS. CORNELL: Yes, ma'am.

CHAIRMAN HERSMAN: And so is that the totality of your experience in icing conditions?

MS. CORNELL: Yes, ma'am. Prior to that, I was flying aircraft that weren't certified for known icing.

CHAIRMAN HERSMAN: And what happened when you were in those aircraft that were not certified for icing conditions?

MS. CORNELL: We just avoided the conditions where there might be icing.

CHAIRMAN HERSMAN: Did you ever encounter inadvertent conditions that you had to exit from?

MS. CORNELL: No, ma'am.

CHAIRMAN HERSMAN: Okay. So you just didn't enter them?

MS. CORNELL: Yeah.

CHAIRMAN HERSMAN: Okay. So when Dr. Wilson asked you the question, or maybe it was Mr. Harris, asked you the question of what were you looking for as far as icing, and I think we're talking about light, moderate, severe icing, and you were talking about where you would see it, you would look

out the side windows, you'd look at the spinner, things like that. If you hadn't been in icing conditions before, and the only encounter that you had was with the light icing, how are you trained to recognize whether you're in light, moderate, or severe icing? What visual cues are you looking for?

MS. CORNELL: Well, Empire lists a set of visual cues that will help us in determining severe icing conditions.

CHAIRMAN HERSMAN: Can you describe those to me? Are they written words or are they pictures? What are you using?

MS. CORNELL: Yeah, in our general operating manual, the severe icing checklist, it will list page 1.09 of the QRH, there's a section on detection which includes an unexpected decrease in speed, water splashing on the windshield, extensive ice accretion on the airframe not normally associated with ice, along with a list of other things as well.

CHAIRMAN HERSMAN: Okay. So it's more of a list form, not necessarily a picture of what you're looking for on the spinner?

MS. CORNELL: Yes, ma'am.

CHAIRMAN HERSMAN: Okay. So how do you figure out whether it's light, moderate, or severe and what kind of actions that you need to take commensurate with what type of ice is out there?

MS. CORNELL: Well, this whole thing is kind of a training process. The training doesn't end as you leave Flight

Safety. It's kind of continued on beyond that, and I'm flying with qualified captains that are kind of assisting me in trying to determine the different I guess qualifications for different kinds of ice.

CHAIRMAN HERSMAN: So during your descent, when I was reading the cockpit voice recorder, there was a reference to a noise that you all had heard that you referred to as kind of a burping noise, and there was a discussion about whether or not that was ice being ingested by the engines that was shedding off of the aircraft. Is that a cue that you would look for?

MS. CORNELL: I don't remember that.

CHAIRMAN HERSMAN: Okay. Dr. Wilson asked you if you could remember what kind of ice was here present on the accident flight, and could you describe that for me in the different phrases? You talked about the two encounters.

MS. CORNELL: Uh-huh. When we were up at flight level 1-8-0, I saw what I believed to be moderate icing, and the Captain can kind of confirm that for me, and then once we got down to the lower altitude, when we started getting ice again, I just can't remember what that was.

CHAIRMAN HERSMAN: You can't remember because you didn't look, or you can't remember because you can't recall what it looked like?

MS. CORNELL: I think it was just -- I did look and see. I think I just didn't take a mental note because I didn't

suspect it to be any form of danger I guess.

CHAIRMAN HERSMAN: So it looked less to you --

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: -- than that first encounter?

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: When you were asked a question earlier, you were asked about what had changed, and I think I heard you say that you're no longer allowed to take off --

MS. CORNELL: In it, yeah.

CHAIRMAN HERSMAN: I'm sorry.

MS. CORNELL: Or land.

CHAIRMAN HERSMAN: Or land in it.

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: What happens if you encounter it in flight?

MS. CORNELL: If you encounter it in flight, you're supposed to leave it, I suppose.

CHAIRMAN HERSMAN: So how do you know if you're encountering it in flight? I assume when you're taking off and when you're landing, you have the airport --

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: -- services there to report to you and tell you there's freezing drizzle. What would you be looking for in flight?

MS. CORNELL: I guess the same criteria that is

listed in the severe icing checklist.

CHAIRMAN HERSMAN: So are you saying that the guidance would be to exit severe icing?

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: Or can you operate in severe icing?

MS. CORNELL: Exit severe icing.

CHAIRMAN HERSMAN: Okay. In the animation, and I know I kind of just seen it once. There was a lot going on in the animation with respect to, you know, the picture but also some of the control actions that are going on. Did you happen to take note in the animation at the significant force required on the control wheel even when it was on autopilot to maintain stability?

MS. CORNELL: I noticed it on the screen. I don't remember it when it was actually happening.

CHAIRMAN HERSMAN: When autopilot is actually flying, do you actually have your hands on the wheel or do you have your hands in the lap when you're the flying pilot?

MS. CORNELL: Once you start the approach, you have your hands on the wheel.

CHAIRMAN HERSMAN: Okay. And so you don't recall feeling kind of that significant force on the --

MS. CORNELL: I don't recall.

CHAIRMAN HERSMAN: In your ATR training, you said you

got in training a no flap landing. Is that correct? Are you talking about in your simulator training?

MS. CORNELL: Yes, ma'am.

CHAIRMAN HERSMAN: Okay. And what procedures are you supposed to use if you can recall for a no flap landing? What would you do?

MS. CORNELL: You're supposed to go-around and figure out your new landing speeds.

CHAIRMAN HERSMAN: Okay. So go-around and recalculate your speeds?

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: Are these procedures the same or different for a flap asymmetry?

MS. CORNELL: I'd have to look at the check landing. We have a checklist for it, but at the time, we didn't know what was the problem, if it was just the flaps not working or the indicator or an asymmetry or maybe just a possible hydraulic problem. So we were trying to determine what the problem was before we applied the correct checklist.

CHAIRMAN HERSMAN: Okay. Did it occur to you all to use the no flap landing checklist if you thought you had no flaps?

MS. CORNELL: I don't remember.

CHAIRMAN HERSMAN: The MU readings, when the airport gave you the MU readings, that seemed confusing to you. I was

wondering how much familiarity you have with MU readings in general and if you understand kind of what those translate to?

MS. CORNELL: Yes, I do.

CHAIRMAN HERSMAN: And do you recall what the readings were at the time?

MS. CORNELL: No, ma'am.

CHAIRMAN HERSMAN: Okay. They were in the 20s, the mid 20s for the three different readings. What would that indicate to you? What are the landing conditions?

MS. CORNELL: Well, that would indicate poor.

CHAIRMAN HERSMAN: Poor. And at what point would you discontinue a landing if you got a MU reading of a certain number?

MS. CORNELL: Are you talking about how low the number is or --

CHAIRMAN HERSMAN: Yes.

MS. CORNELL: I definitely would want to go out to nil.

CHAIRMAN HERSMAN: Okay. So you're waiting to hear nil from the airport.

MS. CORNELL: Well, under certain wind conditions, we can still land with a poor indication.

CHAIRMAN HERSMAN: Okay. And this is kind of more an issue of just for you to kind of educate me. I'm very interested in your schedule, and I read kind of some of the

history about kind of what you did and the legs that you flew before and that you stayed over for a couple of days. Can you talk to me about kind of where your base is, you know, what type of routes you fly, how you get positioned ahead of time, and then I have some more questions, but kind of where your base is and kind of how the company schedules you and, you know, how you arrive at your destination, how long you stay over or layover before your flight sequence begins.

MS. CORNELL: I'm based in Salt Lake City, which is actually one of our floater bases. So whenever they need extra coverage in another one of our bases, that's where they send me. They buy me a commercial ticket to get to wherever I need to go usually a day or two in advance. In this case, I was there for the week previous, and I had the weekend off prior to this flight. So this flight in particular ran to the middle of the night. So I was even during the weekend sleeping through the day and staying awake through the night or, yeah, staying awake through the night, just to keep myself acclimated to this particular schedule.

CHAIRMAN HERSMAN: And you're saying they buy you a commercial ticket. Do they have a policy about how far ahead they pre-position you if you're, let's say you're based in Salt Lake and you're flying out of Texas. How long in advance before your flight would you get to Texas?

MS. CORNELL: Well, our travel time is still

considered duty time. So they still have to consider that as far as flying us somewhere. Usually it's a day or two in advance to get to where I'm going.

CHAIRMAN HERSMAN: Okay. So you have an opportunity for an overnight --

MS. CORNELL: Yes.

CHAIRMAN HERSMAN: -- in the location where you're going to be starting from.

MS. CORNELL: Yes, ma'am.

CHAIRMAN HERSMAN: And so you're scheduled, you stayed awake at night. Can you talk to me about how you do that when you're not on duty, when you're not flying because there's not really much to do?

MS. CORNELL: Lots of books.

CHAIRMAN HERSMAN: Yeah.

MS. CORNELL: TV, I guess. There's not a whole lot to do, but when you've been sleeping all day, it's not very easy to go to bed either.

CHAIRMAN HERSMAN: Okay. So you try to maintain the same schedule even over the weekend. What happens when you go home and you're off for four or five days? What kind of schedule do you use then? Do you still stay awake all night or do you change back?

MS. CORNELL: No, I change back.

CHAIRMAN HERSMAN: Okay. How far in advance do you

switch over to your awake at night schedule?

MS. CORNELL: A day or two beforehand.

CHAIRMAN HERSMAN: Okay. And my last question is this wasn't the intended flight route for the ATR. Is that correct?

MS. CORNELL: That's correct.

CHAIRMAN HERSMAN: So you had to add another leg or two on to your flight?

MS. CORNELL: It ended up being the same amount of legs. It was just another direction.

CHAIRMAN HERSMAN: Different location.

MS. CORNELL: Yeah.

CHAIRMAN HERSMAN: And why did you have to do that?

MS. CORNELL: Because the Caravans couldn't get into Lubbock on the first leg. So we met them in El Paso instead.

CHAIRMAN HERSMAN: And why couldn't the Caravans get into Lubbock?

MS. CORNELL: I believe it was because of the light freezing rain or the freezing drizzle.

CHAIRMAN HERSMAN: And so as a pilot, does that kind of give you pause when you know that another aircraft can't get in because of the freezing drizzle and you're going, or do you kind of have a sense that your aircraft has different or better capabilities and somehow you can get through that even though they can't?

MS. CORNELL: Well, there's always an added extra awareness, but I know that we're a little bit more capable, better equipment on our aircraft.

CHAIRMAN HERSMAN: Like what? What equipment kind of makes you feel that you have better capabilities?

MS. CORNELL: Well, we have the boots, our heated props; we're just equipped for it, to handle it.

CHAIRMAN HERSMAN: Okay. Do you have an understanding that freezing drizzle has different properties than other icing conditions?

MS. CORNELL: Yes, ma'am.

CHAIRMAN HERSMAN: And what is that?

MS. CORNELL: It can go beyond what our deicing equipment can shed.

CHAIRMAN HERSMAN: Okay. Ms. Cornell, thank you very much for answering my questions. I think we're a little bit ahead of schedule. So I'm going to turn back to the Tech Panel. Do you all have some additional questions for First Officer Cornell?

DR. WILSON: We have one additional question.

CHAIRMAN HERSMAN: Sure.

DR. WILSON: Ms. Cornell, when you received your training at Flight Safety International in the simulator, did you ever receive any training where you received multiple failures or multiple problems that you had to deal with in the

sim?

MS. CORNELL: I don't recall.

DR. WILSON: Okay. Thank you. That was all that we had.

CHAIRMAN HERSMAN: How about the Parties? Does anybody have any additional questions?

(No response.)

CHAIRMAN HERSMAN: No. Board of Inquiry?

DR. KOLLY: Yes.

CHAIRMAN HERSMAN: Yes, Dr. Kolly.

DR. KOLLY: Ms. Cornell, when you're receiving your training, with regard to the stick shaker, what is the response or what is the flying response you're supposed to give to a stick shaker?

MS. CORNELL: We're supposed to add power, flaps 15, and try to get it back stabilized again.

DR. KOLLY: In this approach, what were you able to accomplish? Did you attempt to do that and what were you able to accomplish?

MS. CORNELL: I attempted to -- I did add power, but I also knew that we had this other situation going on with our flaps and the icing condition and everything. So I added the power to discontinue the stick shaker to try to get it back.

DR. KOLLY: Have you ever had any training where you had let's say multiple failures or multiple issues, for

instance, this stick shaker issue and the fact that you couldn't set the flaps the way you'd like?

MS. CORNELL: No, sir.

DR. KOLLY: Okay. Do you think that type of training is something that you would see beneficial?

MS. CORNELL: It would be helpful, yes.

DR. KOLLY: Okay. Thank you.

CHAIRMAN HERSMAN: Ms. Cornell, it's been a pleasure to have the opportunity to question you. I think you've been told by other folks that we're glad to have you here, and we mean it. Unfortunately we have often public hearings where the crew is not here to tell us what happened, and we very much appreciate that you made yourself available and were willing to talk to us. Thank you very much for answering our questions.

If you feel like there's additional information that you want to provide to our investigative team, don't hesitate to do that throughout the course of the investigation, if there are any issues that you think you have recall on or you want to remind us of.

MS. CORNELL: Okay. Thank you.

CHAIRMAN HERSMAN: Okay. Mr. Broadwater, is the witness excused?

MR. BROADWATER: Yes, ma'am.

CHAIRMAN HERSMAN: You're now excused, Ms. Cornell. Thank you very much.

(Witness excused.)

CHAIRMAN HERSMAN: And we will take a break and reconvene at 10:45.

(Off the record.)

(On the record.)

CHAIRMAN HERSMAN: Mr. Broadwater, will you please call the next witness?

MR. BROADWATER: Yes, ma'am. Thank you.

Would Captain Rodney Holberton please come to the stand?

Thank you, Captain.

CAPT. HOLBERTON: Thank you.

(Witness sworn.)

MR. BROADWATER: Would you please state your name, employer, and title for the record?

CAPT. HOLBERTON: Rodney Holberton, Empire Airlines, Captain.

MR. BROADWATER: Thank you, sir.

Madam Chairman, the witness has been sworn in.

CHAIRMAN HERSMAN: Captain Gunther, are you leading this round of questioning?

CAPT. GUNTHER: Yes, ma'am. Thank you.

Good morning, Captain Holberton, and welcome.

CAPT. HOLBERTON: Good morning, Captain.

CAPT. GUNTHER: Thank you for being here today first

of all, and then could you do me a favor and please describe your experience and qualifications both prior to and with Empire Airlines?

CAPT. HOLBERTON: I started my flight training in the winter of 1976 at the age of 20 and received a private certificate in July of 1978, followed by an instrument rating in March of '80. In December of 1980, I received both the commercial and the multiengine rating. Up until that time, most of my flight time had been of a personal nature. In 1982, I was employed by an FBO in Medford, Oregon, flying Part 135 single engine VFR. Multiengine time came later on, first initially flying as a first officer and a captain for a non-profit air ambulance.

My first full-time employ came in April of 1985, flying Part 135 cargo in a C-45 or a Beech 18 model aircraft followed by the Cessna Caravan. Employment with Empire Airlines came in 1988. I received an ATP certificate in May of 1999, a type rating in the Fokker F27 in March of 2002, and a type rating in the ATR in April of 2004. At the time of the accident, I acquired approximately 13,800 flight hours, approximately 1800 hours in the ATR. With Empire Airlines, also I was a check airman in the Cessna Caravan, the 208, from 1995 to 2001, with Empire Airlines, and I acquired approximately 6600 hours in that aircraft.

CAPT. GUNTHER: Captain Holberton, thank you. What

weather information did you receive about your route of flight?

CAPT. HOLBERTON: On the route of flight? Can you be more specific?

CAPT. GUNTHER: From Alliance to Lubbock.

CAPT. HOLBERTON: From Alliance to Lubbock. We received the standard flight release along with the weather package that comes via fax machine to the crew room and at that facility.

CAPT. GUNTHER: Were you aware of the light freezing drizzle at the airport?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: And how about along your route of flight?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: At any time, did you talk to dispatch, either pre-departure or during the flight?

CAPT. HOLBERTON: It had been a topic of discussion throughout the evening.

CAPT. GUNTHER: And what did they tell you about the weather?

CAPT. HOLBERTON: The flight did not go according to schedule. Initially we were rerouted to El Paso, Texas.

CAPT. GUNTHER: And was that due to weather or due to cargo?

CAPT. HOLBERTON: It was a logistic suggestion from

the customer. Since they were sending some other aircraft there, they just decided it would be easier, knowing that they'd all be there at the same time. So they just sent them all there.

CAPT. GUNTHER: Okay. And the customer, when you say that, is that Federal Express?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: Okay. And was that a suggestion, or did they tell you that you needed to go there?

CAPT. HOLBERTON: It's a determination that's made between our company and them, and then they relay that information to the crew.

CAPT. GUNTHER: Okay. Logically, why did you have to go get the cargo?

CAPT. HOLBERTON: I'm sorry?

CAPT. GUNTHER: Why did you have to go pick up that cargo?

CAPT. HOLBERTON: We actually took the cargo from Midland, Texas to El Paso initially, instead of to Lubbock, because of the weather conditions.

CAPT. GUNTHER: Okay. And was that cargo scheduled to fly in another aircraft that day?

CAPT. HOLBERTON: I couldn't tell you that.

CAPT. GUNTHER: Okay. When you ended up going to Alliance, were you --

CHAIRMAN HERSMAN: Captain Gunther, can I interrupt. We're having some trouble hearing Captain Holberton. Maybe the AV crew upstairs could turn up the volume on the mics, and if not, just speak a little louder and closer.

CAPT. GUNTHER: All right.

CAPT. HOLBERTON: How about now?

CHAIRMAN HERSMAN: We'll never complain if you talk too loud.

CAPT. GUNTHER: Did any of the weather information that you received from your dispatch concern you?

CAPT. HOLBERTON: I don't know if concern is the actual -- awareness is heightened anytime you're operating in the environment that we were that evening.

CAPT. GUNTHER: Light freezing drizzle.

CAPT. HOLBERTON: At night in IMC conditions.

CAPT. GUNTHER: Does light freezing drizzle concern you?

CAPT. HOLBERTON: Absolutely.

CAPT. GUNTHER: Was that a concern before or after the accident?

CAPT. HOLBERTON: It's just a heightened awareness whenever that phenomenon is happening.

CAPT. GUNTHER: What kind of icing did you observe on the aircraft both en route and during the descent and approach?

CAPT. HOLBERTON: On the leg of the accident, there

was moderate, bordering on severe of mixed, both, you know, clear and --

CAPT. GUNTHER: Do you remember seeing any icing on the windshield wiper or on the window?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Could you describe it?

CAPT. HOLBERTON: There was a substantial amount around the outer portion of the window, the wiper arm or post where it's attached to the aircraft on the spinner's leading edge.

CAPT. GUNTHER: Do you remember describing it in a previous interview as a finger?

CAPT. HOLBERTON: I don't recall that.

CAPT. GUNTHER: Understand

CAPT. HOLBERTON: But that is something that you would see, yes.

CAPT. GUNTHER: Does the company give you any type of published advisory information either from the FAA or the manufacturer regarding icing?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Could you describe what you receive?

CAPT. HOLBERTON: I have a list of the items. Over the years I've had a number of them, mostly DVDs, handouts, Be Prepared for Icing, NASA In Flight Icing, Pilot's Guide to In Flight Cold Weather Operations.

CAPT. GUNTHER: The Be Prepared for Icing document that's published by ATR, have you read that?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Okay. Was that before or after the accident?

CAPT. HOLBERTON: It was before.

CAPT. GUNTHER: Okay. Do you remember where you received the document?

CAPT. HOLBERTON: It was during my initial training at Flight Safety or during my initial training for the ATR, and I don't remember in which packet of information that I received that.

CAPT. GUNTHER: Okay. Can you describe your previous experience while in icing conditions?

CAPT. HOLBERTON: After 30 plus years of flying in the Pacific Northwest in a number of different aircraft, it would be I would say very experienced in it.

CAPT. GUNTHER: Have you ever dispatched previous in freezing drizzle or freezing rain conditions?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: When did you realize you had a flap malfunction?

CAPT. HOLBERTON: It may have been -- well, initially when the flaps had been selected to 15 and we ran it through the checklist.

CAPT. GUNTHER: How did you determine that?

CAPT. HOLBERTON: The flap handle was in the flap 15 position and the indicator was at 0.

CAPT. GUNTHER: You stated that you had moved the handle a number of times after extending it when you realized that they weren't down. Do you realize that there's a lockout of any kind?

CAPT. HOLBERTON: I may have moved -- I may have cycled the handle once. I don't recall.

CAPT. GUNTHER: Okay. Do you remember what was being displayed on the flap indicator at the time when you realized you had a problem with the flaps?

CAPT. HOLBERTON: Zero.

CAPT. GUNTHER: What procedure were you trained to do when you receive a flap malfunction?

CAPT. HOLBERTON: Use the QRH.

CAPT. GUNTHER: Are you familiar with the procedure?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Did you know what type of flap malfunction you had?

CAPT. HOLBERTON: No.

CAPT. GUNTHER: Do you remember stating that you had no flaps?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Okay. Ms. Violette, could you bring

up Exhibit 2Z, please. 2 Zulu please. I'm sorry. Allison can't hear me probably. Maybe you can come up with the first page for the QRH.

Captain Holberton, is there any difference in the checklist regarding whether it's a no flap or whether there's an asymmetry?

CAPT. HOLBERTON: I don't believe that that's the correct display or checklist for the flap.

CAPT. GUNTHER: I'll be -- there you go. Very good. If you look to your right over there, is there any difference between either a flaps jam, uncoupled or asymmetry?

CAPT. HOLBERTON: There is the flap unlock, and then there's the flaps jam, uncoupled or asymmetry.

CAPT. GUNTHER: And for either a flaps jam, uncoupled or asymmetry, is there any difference in the checklist or is it all one procedure?

CAPT. HOLBERTON: Which one are you speaking about again?

CAPT. GUNTHER: The one that's titled flaps jam, uncoupled or asymmetry?

CAPT. HOLBERTON: It's one checklist.

CAPT. GUNTHER: Okay. How about for flaps unlocked?

CAPT. HOLBERTON: It's the one at the top.

CAPT. GUNTHER: Okay. How about for reduced flaps landing?

CAPT. HOLBERTON: That's the procedure to follow then.

CAPT. GUNTHER: Okay. If you have no flaps, is this a procedure that the QRH requires you to follow?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: Allison, let me go back to the first page of the QRH. For severe icing, do you have any other checklist other than this QRH to refer to in the aircraft?

CAPT. HOLBERTON: Prior to getting to the severe ice, you would have used the entering icing checklist.

CAPT. GUNTHER: Okay. Is that verbalized or a memory item or how do you do that?

CAPT. HOLBERTON: That's both in the QRH, and there's also a flap card on the control yoke in front of the flight crew.

CAPT. GUNTHER: Okay. The -- so it's a decal on the control unit?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: Okay. If you could go to the next page, Allison? Do you ever remember getting on the ADU either an aileron alarm or mis-trim after putting the flaps down?

CAPT. HOLBERTON: No, sir.

CAPT. GUNTHER: Did you see anything flashing?

CAPT. HOLBERTON: No, sir.

CAPT. GUNTHER: Did you attempt to re-trim the

aircraft?

CAPT. HOLBERTON: Did I attempt to re-trim the aircraft?

CAPT. GUNTHER: Uh-huh, after the asymmetry?

CAPT. HOLBERTON: Subconsciously that would just come with experience if I felt controller aileron rudder forces, it would have been an instinctive maneuver to trim those forces out, yes.

CAPT. GUNTHER: Do you remember what the control forces were like?

CAPT. HOLBERTON: No.

CAPT. GUNTHER: Why didn't you follow the procedure for the flaps?

CAPT. HOLBERTON: At the time I was attempting to assess the situation in whole and find out what capabilities of the aircraft were left. That was really, you know, there was no clear indication of what the issue was with the aircraft.

CAPT. GUNTHER: Was that how you were trained?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: What procedure did you follow?

CAPT. HOLBERTON: The very first item in the QRH that's on page 2.

CAPT. GUNTHER: Were you trying to use a flashlight and check the circuit breakers?

CAPT. HOLBERTON: We're trained to use all available

tools that are provided for us in the aircraft.

CAPT. GUNTHER: Close to the ground on approach?

CAPT. HOLBERTON: Whatever's necessary to assess the situation.

CAPT. GUNTHER: We know from the CVR and your previous statements that as you said, the QRH was not used and you've explained why you haven't or why you didn't use the QRH. If you had to do this again, would you have used the QRH?

CAPT. HOLBERTON: I actually did use the QRH. Physically did I pull it out, no, but I was attempting to assess the situation as a whole and determine what capabilities the aircraft still had available to me to make a decision as to what would be next.

CAPT. GUNTHER: Okay. How were you going to assess what airspeed bugs that you needed to set in order to be able to land?

CAPT. HOLBERTON: I hadn't got to that yet.

CAPT. GUNTHER: Would you have had enough time to get to that?

CAPT. HOLBERTON: I really can't answer that.

CAPT. GUNTHER: Okay. Prior to the anomaly, what would you characterize your workload as during the flight?

CAPT. HOLBERTON: Normal.

CAPT. GUNTHER: And how about afterwards?

CAPT. HOLBERTON: The workload began to increase.

CAPT. GUNTHER: According to the CVR transcript, you stated the airspeeds were 106, 112, 123 and 143. How did you determine those airspeeds?

CAPT. HOLBERTON: There are set up flip cards provided for the crew, and they're kept on the center console and they're referenced, the weight of the aircraft both for takeoff and landing.

CAPT. GUNTHER: Okay. Bring up, Allison, Exhibit 12A, page 9 please. 12 Alpha, page 9.

In the transcript, if you look on page 9, it says descent, anti-ice is level 3. Can you describe what that means?

CAPT. HOLBERTON: Yeah, if you could pull that diagram up for the -- that would be the ice accretion checklist.

CAPT. GUNTHER: Okay. And 12H, page 9, okay, where it says hot 1, you make the statement on descent, anti-ice is level 3. Could you explain what that means? What is level 3?

CAPT. HOLBERTON: Level 3 would be continuous relight and the airframe deice boots are on.

CAPT. GUNTHER: How do you determine when you need to activate the anti-dicing and deicing system on the aircraft?

CAPT. HOLBERTON: There's a ice light that lights up on the panel.

CAPT. GUNTHER: Do you do any type of visual checks

also?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: What are you looking for?

CAPT. HOLBERTON: Tactical clues such as, you know, ice buildup on the spinner, windshield, leading edges.

CAPT. GUNTHER: Do you remember if there was an ice evidence probe on this aircraft?

CAPT. HOLBERTON: There was not.

CAPT. GUNTHER: Okay. So what were you using? The spinners and leading edges then?

CAPT. HOLBERTON: That's correct.

CAPT. GUNTHER: What does standard calls and procedures mean to you, Captain?

CAPT. HOLBERTON: Just that.

CAPT. GUNTHER: Do you recall if the appropriate calls were made during the approach?

CAPT. HOLBERTON: I don't recall.

CAPT. GUNTHER: Okay. Can you describe the Empire descent and approach awareness procedure?

CAPT. HOLBERTON: It's in the training manual.

CAPT. GUNTHER: Do you remember any of it?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: And what do you remember?

CAPT. HOLBERTON: The descent and approach. Leaving 18,000, 10,000. There's a number of calls in there depending

on --

CAPT. GUNTHER: Are there standard call-offs that are required during the approach phase?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Do you know what those are?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Could you describe them to me?

CAPT. HOLBERTON: Not, not here at this time, not from memory.

CAPT. GUNTHER: No problem. Where do you keep your approach plates when you're on the flight deck and you're flying?

CAPT. HOLBERTON: On the left side.

CAPT. GUNTHER: Are they in a clip, binder?

CAPT. HOLBERTON: They can sometimes be loose in my bag. They're -- but they're on -- usually kept in a binder on the left on the floor on my side.

CAPT. GUNTHER: Do you use Government approach flights or Jeppesen?

CAPT. HOLBERTON: I prefer Jeppesen.

CAPT. GUNTHER: Okay. If your First Officer is flying and using Government approach plates, would you know how to read the symbology for that also?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Okay. Does it ever lead to any type

of confusion if you're using two separate sets of plates?

CAPT. HOLBERTON: No.

CAPT. GUNTHER: Does the company provide you with those plates?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: Or do you purchase them?

CAPT. HOLBERTON: I have my own personal subscription that the company reimburses.

CAPT. GUNTHER: Has the company ever provided you with plates?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: How about for this flight?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: And were these Government approach plates you were using or Jeppesen?

CAPT. HOLBERTON: They were Government.

CAPT. GUNTHER: How did the controls in the airplane feel when you took over control from First Officer Cornell?

CAPT. HOLBERTON: Once again, that -- when I took the controls, the aircraft was slightly off course, and so I was putting the aircraft back onto the correct course, onto the localizer and the glide slope. So at the time, you know, probably subconsciously, you know, I may have re-trimmed the aircraft. You know, I don't remember that maneuver.

CAPT. GUNTHER: Do you remember if it took a

considerable amount of either wheel force or input or rudder?

CAPT. HOLBERTON: I don't recall it requiring anything unusual.

CAPT. GUNTHER: Are you familiar with Empire Airlines' approach criteria?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Would you consider that approach to be stabilized?

CAPT. HOLBERTON: It was not.

CAPT. GUNTHER: What does the stabilized approach criteria require for a stabilized approach?

CAPT. HOLBERTON: The criteria for a stabilized approach?

CAPT. GUNTHER: Yes, sir.

CAPT. HOLBERTON: The aircraft in the landing configuration, minor changes to correction for course deviation, altitude, airspeed.

CAPT. GUNTHER: If you got a shaker during an approach, would that be considered destabilized?

CAPT. HOLBERTON: That's correct, yes.

CAPT. GUNTHER: It would be considered to be stabilized?

CAPT. HOLBERTON: No, that would not be stabilized.

CAPT. GUNTHER: How about high descent rate?

CAPT. HOLBERTON: That's correct. Unless it's brief,

for more than 1,000 feet a minute.

CAPT. GUNTHER: High above the glide slope, right at the localizer?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Was your approach stable when you took over the controls?

CAPT. HOLBERTON: I believe it was.

CAPT. GUNTHER: What's the procedure if an approach is not stabilized?

CAPT. HOLBERTON: To go-around.

CAPT. GUNTHER: Did you consider at any time going missed approach?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: And when was that?

CAPT. HOLBERTON: Well, it was always a consideration, but once I had determined that there was something seriously wrong with the aircraft, and making a change from the aircraft that I had controllable at this time to make severe changes in both pitch, power, attitude, airspeed without fully having -- aware of what capabilities were left for the aircraft, I didn't believe that a go-around then would be appropriate.

CAPT. GUNTHER: If you had done a go-around, would that have bought you more time to be able to run the procedures through the QRH?

CAPT. HOLBERTON: I had no idea what would happen if we went around.

CAPT. GUNTHER: What actions did you take when the stick shaker activated when you were at the controls?

CAPT. HOLBERTON: Well, I don't remember that. It would have definitely been to add power and correct it.

CAPT. GUNTHER: Do you remember either hearing or feeling the stick shaker?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: You do?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: How about auto pilot disconnect?

CAPT. HOLBERTON: No.

CAPT. GUNTHER: What action are you trained to do when the stick shaker does go off?

CAPT. HOLBERTON: A missed approach.

CAPT. GUNTHER: Do you use the ADI fast/low indicator at all during the approach?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Do you remember what it was showing at the time?

CAPT. HOLBERTON: No, sir.

CAPT. GUNTHER: How was that set?

CAPT. HOLBERTON: With the speed cards.

CAPT. GUNTHER: Is it manually set? Does the

aircraft do it automatically or --

CAPT. HOLBERTON: No, all four of them are manual.

CAPT. GUNTHER: Okay. What role, good or bad, did CRM play in the outcome of this accident?

CAPT. HOLBERTON: I'm sorry. Say again?

CAPT. GUNTHER: What role did CRM play in the outcome of this accident, good or bad?

CAPT. HOLBERTON: I really can't answer that.

CAPT. GUNTHER: Okay. Did you feel that you were communicating well with your First Officer?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Can you describe the training that you received on CRM?

CAPT. HOLBERTON: There initially is two days of formal training at Flight Safety, and then it's followed up by the continued training and checking that we have and, you know, used on a daily basis with the company and the coworkers.

CAPT. GUNTHER: Was assertiveness training covered during the CRM?

CAPT. HOLBERTON: I don't recall.

CAPT. GUNTHER: Why did you say no to the First Officer when she asked if you should go-around?

CAPT. HOLBERTON: Because I wasn't aware of the capabilities left of the aircraft and had not determined what the anomaly was.

CAPT. GUNTHER: What guidance do you receive from Empire Airlines or Flight Safety regarding icing weather conditions, including supercooled drizzle droplets or supercooled liquid droplets?

CAPT. HOLBERTON: The first part of that was blocked out.

CAPT. GUNTHER: What type of training do you receive regarding supercooled drizzle droplets or supercooled liquid droplets?

CAPT. HOLBERTON: I think previously I answered that with the numerous handouts, CDs and recurrent training that we get every year.

CAPT. GUNTHER: And did you receive that at Empire or at Flight Safety?

CAPT. HOLBERTON: I received both.

CAPT. GUNTHER: Okay. Did you receive a flap anomaly at any time during your ATR training?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Do you remember what type?

CAPT. HOLBERTON: They didn't work at all. The 0 flap condition.

CAPT. GUNTHER: How about during your check ride?

CAPT. HOLBERTON: The same.

CAPT. GUNTHER: How did they train you to handle that anomaly?

CAPT. HOLBERTON: We had a checklist.

CAPT. GUNTHER: Is there anything that you would add to the training that might have helped you in this situation?

CAPT. HOLBERTON: I think that that's being addressed at this time. I did receive a training in my most recent visit to Flight Safety.

CAPT. GUNTHER: And were you trained to use the autopilot during icing conditions?

CAPT. HOLBERTON: It's at the instructor's discretion as to, you know, at times when the aircraft will be hand flown and when the autopilot will be used.

CAPT. GUNTHER: How about the captain's discretion?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Okay. Did you realize that First Officer Cornell was on the autopilot during the approach?

CAPT. HOLBERTON: Yes.

CAPT. GUNTHER: Do you believe if you followed the published procedures, that the outcome might have been different?

CAPT. HOLBERTON: I thoroughly didn't understand the malfunction anomaly that we had at the time. So I really can't address that.

CAPT. GUNTHER: If you look back at the accident, is there anything you would have done differently?

CAPT. HOLBERTON: That's pretty hypothetical. I

really can't say.

CAPT. GUNTHER: I understand. What lessons do you think we can learn from this accident?

CAPT. HOLBERTON: There are so many areas here that can be discussed that we've taken measures on a number of these, but probably I think the biggest one was to add some additional training at the facility, at Flight Safety in the simulator and on the ground.

CAPT. GUNTHER: Okay. I've just got a couple of more questions for you, Captain. You flew the F27?

CAPT. HOLBERTON: Yes, sir.

CAPT. GUNTHER: Were the procedures any different with that aircraft regarding icing?

CAPT. HOLBERTON: It didn't have an autopilot.

CAPT. GUNTHER: Okay. How about activation of the boots?

CAPT. HOLBERTON: They were more of a -- the entire aircraft was manual. There was nothing automated about that aircraft, completely different systems and scenarios with that one.

CAPT. GUNTHER: During your simulator training, did they ever give you multiple failures or issues to deal with at one time?

CAPT. HOLBERTON: Although I don't specifically recall any of those, I'm sure that they were.

CAPT. GUNTHER: Did they ever train you to check the circuit breakers for a flap problem?

CAPT. HOLBERTON: I'll say, no, that they don't do that, but they do tell you to evaluate and assess and determine what the issue is. In the simulator, it's a different scenario in there, and usually there's, you know, there's the items that need to be covered. So you know, with the exception of V1 cuts, engine failures of which they don't tell you that, but usually you know that the flap malfunction, and as soon as you don't -- when you use the flaps and you don't get any, then it's a given. They're not going to, you know, the simulator traditionally doesn't fail. I mean if the simulator fails, the instructor usually stops and then it's repaired. So if something doesn't work in a simulator, you can assume that there's no -- you just go right to the checklist for that malfunction.

CAPT. GUNTHER: Did they ever teach you to cycle the flap handle?

CAPT. HOLBERTON: You're allowed one reset in the aircraft.

CAPT. GUNTHER: Is that for circuit breakers or for flap handle?

CAPT. HOLBERTON: Well, it's actually for a switch but --

CAPT. GUNTHER: Did you realize that the MU values

that they read off to you were for 35 Left and not for 17 Right?

CAPT. HOLBERTON: No, I didn't realize that but probably subconsciously when I was given those numbers, they were not for the runway that we were landing on.

CAPT. GUNTHER: In other words, in your mind, did you consider the flap anomaly to either be an emergency or abnormal procedure? Was it abnormal or did you consider it to be an emergency at the time?

CAPT. HOLBERTON: With the weather and the icing conditions that develop, it was an emergency situation, yes.

CAPT. GUNTHER: Did you talk to ATC and to the tower advising them you had a problem?

CAPT. HOLBERTON: Captain Gunther, when you're faced with a high workload and trying to operate your aircraft safely, calling someone on the radio is probably not going to really, you know, help the situation out at all, especially an air traffic controller. There's not a whole lot he can do except for vector you around. He really can't give you any instruction on the airplane.

CAPT. GUNTHER: If he had vectored you around, would it have bought you more time to be able to do the procedure?

CAPT. HOLBERTON: I wasn't in a position to be vectored around at that point.

DR. WILSON: Could you discuss for me what does red

bug speed mean to you?

CAPT. HOLBERTON: It's zero flap in icing condition.

DR. WILSON: Okay. Just for some clarifications on some of the answers that you had to Captain Gunther's questions, you said that the flap indicator was at zero, but then you also said that you didn't know what the problem was, that the aircraft was having. Can you explain this?

CAPT. HOLBERTON: Well, multiple items were going on at one time in the aircraft. There was the flap anomaly. There was no reason, you know, I hadn't determined what the problem was with that. Then there was the aircraft drifting off course and the autopilot was not longer engaged. So there were multiple things going on there at one time, and I just, you know, the workload became high in trying to determine the capabilities of the airplane that were still left and which course of action to take.

DR. WILSON: Are you trained so that if the flap indicator indicates zero, to try to identify what caused that to indicate zero, or are you trained to go to the QRH to fly the no flap approach?

CAPT. HOLBERTON: Trying to fly the no flap approach.

DR. WILSON: Okay. You said when the stick shaker activated, the procedure is to add power. Is there a certain amount of power that you're to add? Is it max power or 80 percent?

CAPT. HOLBERTON: In the training scenario, it would be go-around power. It would be maximum power. It would be a missed approach. Recovery from a stall.

DR. WILSON: And did you recognize when First Officer Cornell got the stick shaker that she did not add max power?

CAPT. HOLBERTON: No.

DR. WILSON: One last question for you. You said that you keep the approach plates sometimes on the ground next to you or in a binder on the left. If you have to go-around, how are you aware of what the go-around procedures are, the missed approach procedures, if you don't have the approach plate in front of you?

CAPT. HOLBERTON: I have the approach plate for the one that I'm using. The rest of them, there's multiple ones that we have. I mean for the entire route and area that we're flying.

DR. WILSON: Okay. So then the approach plate that you were using during the approach, where was that located?

CAPT. HOLBERTON: There's two places that they can be placed. It's the crew member's preference. There's either the clip on the control yoke itself or there's the left-hand side spot available, and that's the spot where I kept mine.

DR. WILSON: Okay, and actually just one last question. Is there anything that we haven't asked you today that you would like to discuss here at the hearing, anything

that relates to the accident?

CAPT. HOLBERTON: I can't think of anything.

DR. WILSON: Okay. All right. We have a few more questions from the Technical Panel. Thank you, Captain Holberton.

CAPT. HOLBERTON: Thank you.

MR. DeLISI: Thank you. Captain Holberton, can you tell me about the flap position indicator in the cockpit? What is that actually telling you?

CAPT. HOLBERTON: It's a round dial in there, and it indicates the flap position.

MR. DeLISI: And are you saying that that's the position of the left flap, or is it the position of the right flap?

CAPT. HOLBERTON: It should be the position of both flaps.

MR. DeLISI: We saw a QRH procedure earlier that talked about a flap asymmetry. How would you ever know if the flaps were asymmetric?

CAPT. HOLBERTON: In this particular airplane, and in that particular environment on that particular flight, it would be extremely difficult.

MR. DeLISI: Are there other circumstances that might allow you to differentiate the position of the left flap from the right flap?

CAPT. HOLBERTON: Yes.

MR. DeLISI: What might those be?

CAPT. HOLBERTON: There's some indication on the flap hinge, and during the walk around or preflight, you would be able to notice that.

MR. DeLISI: From within the cockpit, could you see the flaps and visually confirm the position of one versus the other?

CAPT. HOLBERTON: In the daylight.

MR. DeLISI: Okay. What is a landing distance assessment?

CAPT. HOLBERTON: It's the landing performance calculations that are provided in the aircraft.

MR. DeLISI: And what sort of information do you need in order to perform a landing distance assessment?

CAPT. HOLBERTON: Weight, runway temperature, speeds. There is a chart in the back of the QRH.

MR. DeLISI: Is it required for you to perform that assessment prior to each landing?

CAPT. HOLBERTON: Yes.

MR. DeLISI: Do you also need information about the runway condition in order to perform that assessment?

CAPT. HOLBERTON: Yes.

MR. DeLISI: If a plane lands in front of you, you might expect a PIREP about the runway condition. Is that

correct?

CAPT. HOLBERTON: It's possible.

MR. DeLISI: And if not, what other information might you be given about the runway condition?

CAPT. HOLBERTON: It could come from a Flight Service Station, the tower, a vehicle on the runway.

MR. DeLISI: So this reference chart that you have, it allows you to take an input like a MU value and work that into your assessment?

CAPT. HOLBERTON: Those are all performance data that our dispatchers have for us. This was an 11,000 foot runway.

MR. DeLISI: Is there a tailwind component under certain circumstances that would prevent you from landing on a certain runway?

CAPT. HOLBERTON: Yes.

MR. DeLISI: And what might that be?

CAPT. HOLBERTON: Aircraft limitations.

MR. DeLISI: Is there a limitation for the ATR?

CAPT. HOLBERTON: Yes.

MR. DeLISI: And what might that be?

CAPT. HOLBERTON: Under normal conditions, 15 knots.

MR. DeLISI: 15 knots. If there's a contaminated runway, is there a different limit for how much tailwind you can accept?

CAPT. HOLBERTON: It's reduced.

MR. DeLISI: And how does that reduction work?

CAPT. HOLBERTON: You'd have to go to the charts.

MR. DeLISI: Were you provided the winds for the landing that you were attempting in Lubbock?

CAPT. HOLBERTON: Yes.

MR. DeLISI: Did you do a calculation to determine how much of that was a tailwind component?

CAPT. HOLBERTON: It was, but we're still allowed to continue the approach and get a check at the last, just prior to landing, an update.

MR. DeLISI: And did you do a calculation to see if, based on the runway conditions and the tailwind component, if you were within compliance?

CAPT. HOLBERTON: That hadn't been determined yet because I hadn't gotten the final wind check.

MR. DeLISI: Okay. Thank you.

CHAIRMAN HERSMAN: Any additional questions from the Tech Panel?

CAPT. GUNTHER: The Technical Panel has no further questions. Thank you.

CHAIRMAN HERSMAN: Thank you, Captain Gunther. ATR.

MR. FLANIGIN: ATR has no questions for this witness.

CHAIRMAN HERSMAN: Thank you. FAA.

MR. HARRIS: Thank you, Madam Chairman.

And, Captain Holberton, I'd offer the same welcome to

this venue as I gave to your First Officer. It's a great relief to be able to speak to a pilot after an accident, and we thank you for being here today for this testimony.

CAPT. HOLBERTON: Thank you.

MR. HARRIS: Yes, sir. Captain Gunther asked you a question relative to icing experienced during the flight, and you indicated something on the order of moderate, bordering on severe mixed icing. What phase of flight did that occur in?

CAPT. HOLBERTON: 18,000 feet.

MR. HARRIS: Did that ice clear at any point during the descent into Lubbock?

CAPT. HOLBERTON: Yes.

MR. HARRIS: What were the icing conditions present during the approach at Lubbock?

CAPT. HOLBERTON: There was still some residual ice still left on the aircraft.

MR. HARRIS: Was the aircraft accreting the approach at Lubbock?

CAPT. HOLBERTON: Initially, no.

MR. HARRIS: Okay. Thank you, sir. When the aircraft was on autopilot during the initial portion of the approach, was it intercepting the localizer and glide slope appropriately?

CAPT. HOLBERTON: Although I at this time don't recall that, it would be an assumption that it was. I have no

reason not to believe it.

MR. HARRIS: And the aircraft, would you characterize it as under control when the autopilot was engaged?

CAPT. HOLBERTON: Yes.

MR. HARRIS: Including after the flap extension activity?

CAPT. HOLBERTON: Yes.

MR. HARRIS: Thank you. So the noting of drifting off localizer and glide slope did not occur until after the autopilot had disconnected at the stick shaker. Is that correct?

CAPT. HOLBERTON: Although I don't recall the stick shaker initially, you know, obviously I know about it now, but that was another concern of mine, why the aircraft was drifting off course, and probably even though it's noticed that the autopilot was no longer engaged and along with the flap anomaly, there were a number of unresolved areas.

MR. HARRIS: Thank you. You mentioned that you didn't understand the nature of the anomaly but that the procedure would have been to follow the QRH. Did you notice anything unusual -- and you mentioned also you noticed nothing unusual about the control of the aircraft after you took control of the aircraft. Is that correct?

CAPT. HOLBERTON: Well, remembering that is true. Instinctively and having my hands on the controls, that could

be, you know, like re-trimming an aircraft is just an automatic function.

MR. HARRIS: Okay. But you were able to exercise controls --

CAPT. HOLBERTON: Yes.

MR. HARRIS: -- and the aircraft responded?

CAPT. HOLBERTON: Yes.

MR. HARRIS: Okay. Madam Chairman, could we see Exhibit 2Z? And if you would please go to the second page of the actual checklist relating to the flaps jam, uncoupled, asymmetry. I'd like to actually carry through this discussion how one would resolve the appropriate speed to be flow in this condition.

So in the middle of the page, there's the flaps jam, uncoupled, asymmetry checklist, and then you would have identified whatever the malfunction was to the flaps were reduce to zero. Is that correct?

CAPT. HOLBERTON: I couldn't determine where the flaps were at.

MR. HARRIS: So the --

CAPT. HOLBERTON: The indicator showed zero.

MR. HARRIS: Okay. Thank you.

CAPT. HOLBERTON: But the aircraft had obviously moved off course.

MR. HARRIS: Okay. So how does one resolve the

approach airspeed to be flown in that condition using this checklist?

CAPT. HOLBERTON: You have to determine what the anomaly is first before proceeding with any checklist.

MR. HARRIS: So looking at the checklist where we have three potential failures driving us to the reduced flaps landing, flaps jam, uncoupled or asymmetry, is it -- are you offering that you would have to identify which one of those was occurring before you could continue further?

CAPT. HOLBERTON: You have to identify that you actually had a flap problem or the flap problem first.

MR. HARRIS: Had you identified that you had a flap problem?

CAPT. HOLBERTON: No.

MR. HARRIS: Okay. Thank you. In the CVR on page 12-9, you make reference to the speeds to be set in support of your briefing upon arrival in the Lubbock area. Was that -- what flap setting was that briefing based upon?

CAPT. HOLBERTON: Flaps 30.

MR. HARRIS: Okay. And I believe the line -- the statement you made was 106 is the icing speed.

Could we see Exhibit 2W?

How does this takeoff landing distance data card for 33,000 pounds, how is that issued by the crew to ascertain the appropriate speeds for approach and landing in icing

conditions?

CAPT. HOLBERTON: In icing conditions, the internal bug would be set at 116. The yellow bug would be at 121. The white bug would be at 123, and the red bug would be at 143.

MR. HARRIS: During the transcript, I believe there's a statement that you called out the speeds as 106, 112, 123 and 143. What were those in relationship to?

CAPT. HOLBERTON: Well, if you are talking about those numbers, they would have been the takeoff speeds in icing conditions.

MR. HARRIS: So those would be the takeoff speeds for icing conditions, and this is part of the before landing briefing, correct?

CAPT. HOLBERTON: Yes.

MR. HARRIS: Thank you, sir. I appreciate your candor, and again I'm happy to have the opportunity to speak to you.

CAPT. HOLBERTON: Thank you.

CHAIRMAN HERSMAN: Empire.

MR. MILLS: Thank you, Madam Chairman.

Captain Holberton, just for the sake of clarity, can you tell us, did you at any time prior to the accident, did you know that you had a flap asymmetry?

CAPT. HOLBERTON: No.

MR. MILLS: Okay. I wonder if we might put up

Exhibit 2KKK, please. I wonder if we could scroll that up just a little. A little bit further please. That's fine. Thank you.

Captain Holberton, does this particular reference look familiar to you?

CAPT. HOLBERTON: It's a page out of the QRH.

MR. MILLS: And can you tell us specifically where in the QRH you referred to earlier following the guidance of the second page of the QRH? Is this the guidance that you were referring to?

CAPT. HOLBERTON: That is correct.

MR. MILLS: And basically what does that guidance tell you to do?

CAPT. HOLBERTON: Item Number 2 states that before performing the procedure, the crew must assess the situation as a whole, taking into consideration the failure when fully identified and the flight constraints imposed.

MR. MILLS: Okay. Thank you very much.

CAPT. HOLBERTON: You're welcome.

MR. MILLS: I appreciate it.

CHAIRMAN HERSMAN: Mr. Haueter.

MR. HAUETER: Just a few questions. In preparing for the flight, did you have any concerns about this flight given that the 208s were grounded and you had flown those before?

CAPT. HOLBERTON: Anytime you're flying in this type

of environment, your awareness is heightened for it.

MR. HAUETER: I understand your awareness would be heightened, but you've been told that the 208s can't be flying that night?

CAPT. HOLBERTON: Those aircraft are restricted from flying into any type of freezing precipitation is my understanding.

MR. HAUETER: And given that, you've flown the 208. How many hours do you have in the 208?

CAPT. HOLBERTON: 6600.

MR. HAUETER: How's flying the 208 compared to the ATR in icing conditions?

CAPT. HOLBERTON: It's two complete different airplanes.

MR. HAUETER: Did you receive any specific training on flying an SLD in the ATR?

CAPT. HOLBERTON: I received training in flying in known icing conditions, yes.

MR. HAUETER: Anything specifically on supercooled liquid droplets?

CAPT. HOLBERTON: That has been a topic of discussion and although we don't use that term SLD on a regular basis, it is in the printed material that we do have.

MR. HAUETER: And what printed material is that? What does it describe?

CAPT. HOLBERTON: It's in a number of publications and, and training material that we use in Flight Safety and at Empire.

MR. HAUETER: And once again, what does it describe in terms of how the aircraft's going to behave or what to do or not to do?

CAPT. HOLBERTON: It really doesn't go into that. It just, you know, it's just the theories on it.

MR. HAUETER: And what is that theory, sir?

CAPT. HOLBERTON: I just can't answer that.

MR. HAUETER: Okay. Your Honor, based on all of your experience, you know, in flying, how would you describe the icing conditions that night?

CAPT. HOLBERTON: I've seen that type of icing in the past.

MR. HAUETER: Have you seen this similar icing when flying the 208?

CAPT. HOLBERTON: No.

MR. HAUETER: Okay. So was it -- I take it was greater than you had seen in flying the 208?

CAPT. HOLBERTON: Yes, sir.

MR. HAUETER: And about how many times have you encountered that in the ATR then?

CAPT. HOLBERTON: Multiple.

MR. HAUETER: Do you have an idea, when the problem

started, about where the airplane was on the approach, about how far out and what altitude?

CAPT. HOLBERTON: I believe it would have been normal procedure to call for the gear and flaps just prior to intercepting the glide slope.

MR. HAUETER: Okay. Is there training on when to take control of the aircraft in an abnormal procedure?

CAPT. HOLBERTON: That would be part of CRM, and I recognized that there was an issue and First Officer Cornell agreed.

MR. HAUETER: Well, when should the captain take control of the aircraft in an abnormal procedure?

CAPT. HOLBERTON: That would depend on the circumstance, sir.

MR. HAUETER: Did you believe at the time that you should take control of the aircraft and fly it and let her do the troubleshooting or --

CAPT. HOLBERTON: No, she was not to do the troubleshooting. When the aircraft drifted off course and I recognized the different malfunctions or the aircraft leaving course and not, you know, there seemed to be a concern that she had as well, you could, although not verbally said in the cockpit, you could tell, and that's when I asked her if she wanted me to take control of the airplane.

MR. HAUETER: Okay. And you mentioned that you

pulled out the flashlight and were troubleshooting the circuit breakers. What specifically were you looking for?

CAPT. HOLBERTON: I wasn't troubleshooting circuit breakers. I was looking for the reason for the anomaly and using all available information to me.

MR. HAUETER: And did you go to that first or what did you do prior to going looking for the circuit breakers?

CAPT. HOLBERTON: I don't recall.

MR. HAUETER: Did you also assess the position of the flight controls by putting your hands and feet on the controls and rudder to see where the flight control positions were?

CAPT. HOLBERTON: First Officer Cornell was flying the aircraft at that time.

MR. HAUETER: Okay. I have no further questions.

CHAIRMAN HERSMAN: Dr. Kolly.

DR. KOLLY: Yes, I have a couple of points I'd like to clarify here. During the first ice encounter, did you make an assessment of how much ice was accreting at the time to activate the icing system?

CAPT. HOLBERTON: Yes.

DR. KOLLY: And what was that?

CAPT. HOLBERTON: More specifically, sir.

DR. KOLLY: Well, I think you indicated that there was a light on the panel. Is that -- did you look at the leading edges? Did you, you know, what else was going through

your mind when you first made the encounter and you decided to -- you elected to deice the aircraft?

CAPT. HOLBERTON: At that altitude -- well, there's three stages of the deicing in our ice system, level 1, 2, and 3. 1 is on all the time. Then there's 2, when you actually enter the parameters for entering icing conditions, and then there's the third stage, and that's ice accretion, and we were at the third stage.

DR. KOLLY: And how would you describe the amount of ice accretion at that time?

CAPT. HOLBERTON: Moderate, bordering on, if we continued any longer, that, you know, that it would become severe.

DR. KOLLY: Once the deicing system was activated, specifically the boots, were you able to assess whether or not the ice shedding was successful?

CAPT. HOLBERTON: Yes, it was.

DR. KOLLY: And can you describe what you mean by that specifically? Was it -- did you have complete shedding of the ice between cycles?

CAPT. HOLBERTON: No, you're always going to have residual areas where it doesn't come off the aircraft such as windshield wipers, spinners, things like that. We also only stayed at that altitude for a short period of time, and then First Officer Cornell and I elected to descend to a lower

altitude.

DR. KOLLY: And in that particular encounter, and the deicing operations that occurred, was that more or less a usual type encounter?

CAPT. HOLBERTON: I had seen that type of icing before on that aircraft.

DR. KOLLY: Okay. Earlier you stated that you received, subsequent to the accident, you received training at flight safety regarding flap problems. Could you explain to me exactly what that training was?

CAPT. HOLBERTON: Both classroom and practical in the simulator.

DR. KOLLY: Was it scenario-based and if so, what were the specific details?

CAPT. HOLBERTON: Although each one, you know, I've been to Flight Safety multiple times. That procedure has traditionally been just 0 flaps, no flap at all.

DR. KOLLY: So nothing with asymmetric flaps?

CAPT. HOLBERTON: That is correct.

DR. KOLLY: I have no further questions.

CHAIRMAN HERSMAN: Thank you, Dr. Kolly.

Captain Holberton, I want to tell you that we're all Monday morning quarterbacks here, and so we could all fly this plane in perfectly, but we weren't in the seat at that time. So we appreciate you very much being here and letting us ask

these questions of you, and we recognize that hindsight is 20/20, and I know this is probably uncomfortable for you, but it would be a lot more uncomfortable for us if we were talking about your actions, and it was your family members sitting in the audience trying to understand what happened. So we're very grateful that you're here to tell us what happened.

CAPT. HOLBERTON: Thank you, Madam Chairman, and my family appreciates me being here today, too.

CHAIRMAN HERSMAN: Yes. So I was reading your interview. You had never flown into Lubbock before?

CAPT. HOLBERTON: For this company.

CHAIRMAN HERSMAN: Okay. And I'm going to follow up on a line of questioning that Mr. DeLisi was focused on, and you were landing on 17 Right. You had gotten the MU readings from 35 Left. You talked about your workload being normal up until kind of the flap problem. What I was trying to understand is you didn't perform a landing distance assessment. When would you typically a landing distance assessment? You talked about how you had to go back into the book to kind of get some of the information. At what point in the flight would you perform that?

CAPT. HOLBERTON: Those calculations had already been done based on the performance data that we get from our dispatchers.

CHAIRMAN HERSMAN: But en route things could change,

and so are you saying that, let's say the field conditions changed from when you were dispatched. How would you determine if it was appropriate to continue the landing?

CAPT. HOLBERTON: We can continue the landing and get a final wind check on final.

CHAIRMAN HERSMAN: Okay. But you have to actually kind of look this information up potentially based on the field conditions. Is that correct?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: Are you saying you would do that when you're inside the outer marker?

CAPT. HOLBERTON: The recommended tailwind component, braking action, runway length, is all calculated in there prior to leaving.

CHAIRMAN HERSMAN: I understand that. What I'm trying to figure out, at what phase of the flight are you going to actually take a look at this to decide if you want to continue with the approach given the information you have. You've got MU readings, and I -- first I guess I want to ask, are the MU readings helpful to you? Does that translate into something you can use?

CAPT. HOLBERTON: They certainly can but, you know, each aircraft is a little bit different, and one of the things that can help is air traffic control not giving you ones for a different runway.

CHAIRMAN HERSMAN: And if they do that, what should you do?

CAPT. HOLBERTON: At that time, I hadn't considered it. I mean I considered it, but it kind of threw me. I thought they were talking about a different runway at the time, which they were.

CHAIRMAN HERSMAN: And if they are talking about a different runway, would you query them back to get readings the runway you're landing on?

CAPT. HOLBERTON: Absolutely.

CHAIRMAN HERSMAN: But your work -- let's say your workload, you know, kind of was normal. At what point in the flight ideally do you want to do this assessment to decide if you should continue with the landing?

CAPT. HOLBERTON: I would say just right -- final approach fix inbound to get a final check on the weather. The conditions that day at Lubbock had been changing rapidly.

CHAIRMAN HERSMAN: And so did you do it or was your workload too high at that time to actually accomplish the assessment?

CAPT. HOLBERTON: I knew that if it fell within the limit, that the performance data was fine.

CHAIRMAN HERSMAN: Okay. And when you say if you fell within the limit, the limit of what?

CAPT. HOLBERTON: Three knots.

CHAIRMAN HERSMAN: How many knots?

CAPT. HOLBERTON: Three.

CHAIRMAN HERSMAN: Three.

CAPT. HOLBERTON: Yes, ma'am.

CHAIRMAN HERSMAN: What would it have taken for you to say you didn't fall within the limit? What kind of runway reading, distance, you know, wind component combination would you have said, we're not going to do this?

CAPT. HOLBERTON: On short -- on final, just prior to the final approach fix inbound.

CHAIRMAN HERSMAN: Okay. But given the conditions, you felt you didn't need to look up the assessment. Is that correct?

CAPT. HOLBERTON: I knew it fell within the limits.

CHAIRMAN HERSMAN: Okay. What I'm asking is if you got a different MU reading, what would that have needed for you to think you didn't fall within the limits?

CAPT. HOLBERTON: I'm sorry. Say it again.

CHAIRMAN HERSMAN: Let's say you had a MU reading that was something poorer than what you got. What's the threshold that you would have said I need to look it up, that you didn't know if fell within the limits?

CAPT. HOLBERTON: I can't answer that.

CHAIRMAN HERSMAN: Are you looking for them to give you a nil?

CAPT. HOLBERTON: Oh, absolutely, yeah. Nil would be -- you were not authorized to land then.

CHAIRMAN HERSMAN: Okay. And how helpful are pilot reports, PIREPs, in your line of work?

CAPT. HOLBERTON: They're very helpful.

CHAIRMAN HERSMAN: And how many aircraft had arrived at Lubbock within the 30 minutes prior to your landing?

CAPT. HOLBERTON: Prior, to my knowledge, none.

CHAIRMAN HERSMAN: So my questions is they're very helpful to you, but how likely are you in your line of work flying at the time that you fly in, to the locations you fly, to get a PIREP that's going to be current?

CAPT. HOLBERTON: On that particular flight in particular airport, I couldn't tell you because that was the first time I had gone in there with the company.

CHAIRMAN HERSMAN: Okay. How about other airports that you land at more frequently? Do you get PIREPs on weather conditions?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: Okay. And they would be large airports?

CAPT. HOLBERTON: They can be both.

CHAIRMAN HERSMAN: Okay. On the CVR, and also in your conversation, you talk about no flaps. That was kind of the announcement that you made. Are there any memory items

associated with no flaps configuration?

CAPT. HOLBERTON: No, you go right to the QRH.

CHAIRMAN HERSMAN: And as the pilot monitoring, what exactly are you responsible for monitoring? If you could prioritize it for me, what are you looking at when you're the pilot monitoring?

CAPT. HOLBERTON: If we could pull up that checklist, I could go over it very quickly with you.

CHAIRMAN HERSMAN: Do you have any memory items as the pilot monitoring for approach and landing? I mean just in your 20 year experience, tell me what you're doing as kind of a senior captain? What are you monitoring? You're monitoring airspeed.

CAPT. HOLBERTON: I'm monitoring the entire flight of the aircraft, airspeed, altitude, course direction, the progress of the flight.

CHAIRMAN HERSMAN: Okay. So while you're monitoring these things, do you recall kind of what your speed was and if you were on target?

CAPT. HOLBERTON: We were flying the appropriate speed, yes.

CHAIRMAN HERSMAN: With an icing additive?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: And was it stabilized? Was the approach stabilized?

CAPT. HOLBERTON: Initially, yes.

CHAIRMAN HERSMAN: And is there an expected call out when it becomes unstable?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: And did you all kind of have that conversation?

CAPT. HOLBERTON: I don't recall.

CHAIRMAN HERSMAN: Okay. How about if the aircraft's not on glide slope, you know, if you're off course. You talked about kind of drifting off course, that you recognized that. Are you supposed to say something?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: Are any of these things memory items?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: So what do you do when you get a stick shaker?

CAPT. HOLBERTON: It's a go-around.

CHAIRMAN HERSMAN: Go around.

CAPT. HOLBERTON: Yes, ma'am.

CHAIRMAN HERSMAN: And that's a memory item?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: Ms. Cornell got one stick shaker. Did you recognize that before she asked for the -- if you wanted to go-around? She had a stick shaker. Did you realize

she had gotten a stick shaker?

CAPT. HOLBERTON: No.

CHAIRMAN HERSMAN: Okay. Then there were three stick shaker activations while you were out acting as the pilot in command. Did you recognize that you got three stick shakers?

CAPT. HOLBERTON: I don't recall how many I got. I remember one.

CHAIRMAN HERSMAN: Okay. When you got that one, did you consider going around?

CAPT. HOLBERTON: At that point, no.

CHAIRMAN HERSMAN: Why not?

CAPT. HOLBERTON: Because I hadn't fully assessed what the condition and what was the performance of the aircraft. I had a controllable airplane at that particular time, and to radically change the -- both the pitch attitude, the power and configuration was a complete unknown, and I believe that the safest procedure was to continue the approach. The gear was down. I knew the aircraft could land that way, and I hadn't fully assessed why the airplane was behaving like it was or what the issue was.

CHAIRMAN HERSMAN: When you say you couldn't fully assess why the aircraft was behaving the way it was but you also say you had a fully controllable aircraft, what does that mean to you? I read some of your earlier interviews when you kind of indicated that the aircraft seemed more out of control.

CAPT. HOLBERTON: That wasn't until the latter part of the flight, you know, just prior to impact.

CHAIRMAN HERSMAN: Okay. And there's guidance regarding TAWS activation and except for in daylight, VMC, when you can immediately and without a doubt confirm that an impact with ground, water or obstacle will not take place from reacting immediately to a TAWS alert. If you get a pull up, what are you supposed to do?

CAPT. HOLBERTON: Initiate a go-around.

CHAIRMAN HERSMAN: And is that a memory item?

CAPT. HOLBERTON: Yes, ma'am.

CHAIRMAN HERSMAN: Okay. And you did not -- you had not realized that the autopilot disengaged for First Officer Cornell?

CAPT. HOLBERTON: I didn't realize that it had disengaged but, you know, when I took the air controls of the aircraft, I knew -- I didn't understand why the autopilot was off.

CHAIRMAN HERSMAN: Did you have a handful of airplane when you took over the controls? It sounded like there was some straining in the cockpit?

CAPT. HOLBERTON: I don't recall.

CHAIRMAN HERSMAN: So in CRM training when your fellow pilot asks about a go-around, what are you trained to do at that point?

CAPT. HOLBERTON: In a training situation like that, it would be to go-around. This was an abnormal situation with environmental conditions and an aircraft that we had not fully assessed what the issue was, and I believe that executing or attempting a go-around with the flap anomaly and the environmental conditions out was a complete unknown. So I exercised my authority to continue and land the aircraft.

CHAIRMAN HERSMAN: So attempting a go-around was a complete unknown of kind of what the outcome was, but wasn't also attempting to land the aircraft in the unstable condition it, wasn't that also an unknown for you, too?

CAPT. HOLBERTON: While technically speaking unstable approach, yes. I certainly -- I had the runway and runway environment in sight at that time. So attempting a go-around, like I say, changing the pitch attitude, adding maximum power to the aircraft and reconfiguring it was just -- was not -- I didn't believe that that was a safe option at that time.

CHAIRMAN HERSMAN: Okay. And this aircraft has a shaker. Have you been trained to the shaker in simulator?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: And can you describe to me the kind of training that you get in the simulator?

CAPT. HOLBERTON: It's to add maximum power and go-around.

CHAIRMAN HERSMAN: Okay.

CAPT. HOLBERTON: And move the flaps to 15.

CHAIRMAN HERSMAN: Okay.

CAPT. HOLBERTON: Resulting in moving the flap handle again.

CHAIRMAN HERSMAN: Okay. And have you ever gotten pusher in this aircraft? Has it ever moved beyond stick shaker to stick pusher?

CAPT. HOLBERTON: I don't recall ever getting the pusher. It may have happened in training in the simulator.

CHAIRMAN HERSMAN: If it happened in training in the simulator, what would your response be?

CAPT. HOLBERTON: To initiate the go-around.

CHAIRMAN HERSMAN: By doing what?

CAPT. HOLBERTON: Going max power, flaps 15.

CHAIRMAN HERSMAN: And this is kind of just more of a curiosity. But if you get pusher, what about the attitude of the aircraft?

CAPT. HOLBERTON: It would be pitched up somewhere in the neighborhood of 10 degrees.

CHAIRMAN HERSMAN: Okay. You transferred control of the aircraft, and I think, you know, this is an indication that there was some communication going on in the cockpit. You asked if she wanted, you know, to take over. She said, yes, she did. You said, "My airplane." She says, "Your controls." So clearly there was an exchange there. My question is, do you

have any training about transfer of controls very late in the sequence? You were, you know, you had gotten call outs, you're somewhere between 500 and 1,000, you know. So late in a landing phase, do you have any training about transfer of control?

CAPT. HOLBERTON: Anytime that you're involved in a situation that's developing into an emergency, the captain can deviate from any prescribed procedure that they've been taught or company policy.

CHAIRMAN HERSMAN: Okay. And Mr. Haueter talked about your 6600 hours in the Caravan, and I note some of that was as a check airman. Can you tell me about your familiar with the performance of that aircraft in icing conditions and the restrictions regarding operating and freezing drizzle?

CAPT. HOLBERTON: Yes, Madam Chairman. I haven't flown that airplane now in approximately nine years, and the airplane, you may know, has had some issues with icing conditions and the airplane is just strictly prohibited from flying into any kind of freezing precipitation at all.

CHAIRMAN HERSMAN: So that prohibition has been since you stopped flying the Caravan. It's more recent, yes.

CAPT. HOLBERTON: I'm sorry. Say again. The prohibition for flight in freezing drizzle has been since you stopped flying the Caravan. When you flew the Caravan, that restriction didn't exist. Is that accurate?

CAPT. HOLBERTON: Yes, it did.

CHAIRMAN HERSMAN: So did you fly in icing conditions in the Caravan?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: And did you -- do you have any recollection of challenges?

CAPT. HOLBERTON: Yes.

CHAIRMAN HERSMAN: Challenges that scared you or made you hyper-vigilant?

CAPT. HOLBERTON: It definitely made myself, you know, you have -- you always needed to have at least an out when you were going to fly in that type of environment in that airplane.

CHAIRMAN HERSMAN: Okay. One thing I do want to comment on in closing, I think we're focusing on a lot of areas in which we have concerns, and so, you know, it's normal that our questions will be focused there, but I'll also tell you that I've reviewed the CVR and the transcript, and we often hear a lot about violations of sterile cockpit, and I didn't see a lot of that here. So I want to commend you and First Officer Cornell. There's always many challenges in this environment, and so there are some things that I think we have concerns about, but that was not one that jumped out at me. So thank you for focusing on the task at hand while you're in the cockpit.

CAPT. HOLBERTON: Thank you.

CHAIRMAN HERSMAN: Tech Panel, any additional questions?

CAPT. GUNTHER: The Technical Panel has no additional questions. Thank you.

CHAIRMAN HERSMAN: Parties, any additional questions or follow-ups?

(No response.)

CHAIRMAN HERSMAN: No. Board of Inquiry?

(No response.)

CHAIRMAN HERSMAN: Well, thank you very much again, Captain, for making yourself available and helping us with our investigation. I think we're going to learn some important lessons from this accident, so hopefully no one else has to go through something like this again.

It is 12:07. We are going to take a lunch break until 1:30. We will reconvene at 1:30. The hearing is adjourned until 1:30.

(Whereupon, at 12:07, a luncheon recess was taken.)

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

(Time Noted: 1:34 p.m.)

CHAIRMAN HERSMAN: Good afternoon. I hope everyone had a good lunch. We'll reconvene for the afternoon proceedings.

Mr. Broadwater, are you ready to call the next witnesses?

MR. BROADWATER: Yes, ma'am. And I'll do it on mic this time. Will the first panel please come to the stand? It's Mr. William Carle, Mr. Randy Lanfell, Mr. Dan Perich, and Mr. Bill Tubbs.

(Pause.)

MR. BROADWATER: If you could remain standing. If you could please raise your right hand.

(Witnesses sworn.)

MR. BROADWATER: Thank you very much. You may be seated. And then if you could please state your name, employer, and title for the record, and I believe we'll begin here at the end with Mr. Carle. Mr. Carle.

MR. CARLE: My name is William Carle. I'm the lead forecaster with the National Weather Service at the Aviation Weather Center in Kansas City, Missouri.

MR. LANFELL: Randy Lanfell, Director of Operations at Empire Airlines.

MR. PERICH: Dan Perich, Manager of Dispatch for

Empire Airlines.

MR. TUBBS: Bill Tubbs. I'm with the FAA, and I'm the POI for Empire Airlines.

MR. BROADWATER: Thank you.

Madam Chairman, I believe the witnesses are sworn in.

CHAIRMAN HERSMAN: Thank you. And we'll begin with the Witnesses for Panel 1. Captain Gunther, are you leading this group?

CAPT. GUNTHER: Actually it'll start of with Don Eick.

CHAIRMAN HERSMAN: Mr. Eick, please proceed.

MR. EICK: All right. Thank you, Madam Chairman.

Mr. Carle, can you provide us a short summary of your meteorological background, your certifications, and forecasting experience please?

MR. CARLE: I have a bachelor's of science in meteorology from the University of Missouri at Columbia. I have a master's of meteorology from Texas A&M University. I have 30 years of experience forecasting with the National Weather Service, the last 25 of those as a forecaster at the Aviation Weather Center.

MR. EICK: I understand you prepared a short presentation for us.

MR. CARLE: As an introduction, yes, to how the Aviation Weather Center forecasters go about making their

forecast advice.

MR. EICK: Okay. Can I have Exhibit 5D, please?

And, Mr. Carle, you can continue when it's up.

MR. CARLE: Again, this is a brief overview of how we forecast at the Aviation Weather Center in Kansas City.

We have three divisions within our office. One is responsible for international operations, one for the convective or thunderstorm related areas, and then the third one, where I work, is the en route forecasting of hazards to aviation.

We have a picture here of the forecast area for the domestic or en route aviation forecasting.

We have three forecasters on duty at any given time, responsible for issuing the AIRMETs, SIGMETs and other products for the domestic aviation community. One person would be doing the east desk where they're responsible for the Boston and Miami so-called named areas, which extends from New England to the Eastern Great Lakes, Ohio, southward through Georgia, Florida and the Coastal Waters. We have a western person who is responsible for the Rocky Mountain states, westward through the Coastal states, and then a third person is responsible for a large area between the Great Lakes and the high plains of the Dakotas, southward through Texas. So we have three people on duty at any given time.

This is just a picture of a typical workstation that

the forecaster will be working at.

And of the forecasts that we put out, we put out area forecasts, which are state-by-state descriptions of significant clouds and weather. We put out AIRMETs which are Sierra for IFR and mountain obscuration, Tango for high and low level turbulence, low level wind sheer, and then AIRMET Zulu is the one that is concerned with icing and freezing levels.

We also issue SIGMETs, which are non-scheduled progress for severe conditions.

We also issue a four panel low level graphic which is used as a flight briefing tool by a lot of people.

AIRMET Zulu is issued every six hours. It's valid for six hours with a six-hour outlook. Our level of forecasting is moderate icing and greater. We are responsible for the volume of surface to flight level 45,000 feet, and AIRMETs are by regulation of a minimum size of 3,000 square miles.

Icing SIGMETs are for severe intensity of icing. They are considered to be conditions that affect all sizes of aircraft and they also have a minimum size of 3,000 square miles. SIGMETs are for icing that is non-convective, non-thunderstorm related in nature and may be valid up to four hours before being canceled or reissued.

Some of the tools we use are observations. We use model forecasts. We do a great deal of coordination with other

offices, and we have the experience of the forecasters ourselves as a forecasting tool.

Under the observations, we are a huge user of pilot reports both in the way of raw text and of decoded and plotted pilot reports. Every pilot report that comes into our office will be read by each forecaster in its raw text format. It'll also be decoded and plotted in various ways on top of satellite imagery, radar imagery, plotted over the tops of our AIRMETs and SIGMETs for verification purposes in real time so that we know what's going on. We use satellite imagery, radar, lightning data, so we know where the thunderstorms are occurring in real time. We use radiosonde. That's the weather balloon data twice a day. METARs are surface observations, the TAMDAR, the instruments attached to numerous aircraft, and we also use profiler data when it's available.

In the way of model forecasts as a tool for forecasting icing, we use the forecast soundings. We use particularly the relative humidity and temperature fields. We look for vertical motion, the general synoptic patterns within the model forecast. We also have algorithm output, automated output. One is called the NCAR RAP. That program gives us areas of supercooled water estimates, or you could say cold cloud areas for our first estimation of where one might see ice. We also have automated output, which is called current icing potential and forecast icing potential. Those are non-

human made automated algorithms from the model data.

We do a great deal of coordination with the Flight Service Stations, and we do a very great deal of coordination with the Center Weather Service Units, 20 of them located in the domestic U.S. or the contiguous 48 states. They are, in fact, our eyes and ears when it comes to what is going on out there in the real world. We can call them at any time that they are open and actually ask meteorologists to walk out to a specific sector and find out if they are getting reports where we might be expecting it to occur, or to find out what exactly the pilot said on a report that we've seen in the text format.

In terms of experience, we have 15 forecasters with an average of 15 years of experience of forecasting for these icing conditions and for other AIRMET-able, SIGMET-able conditions. We use our pattern recognition. We use the awareness of what trends are going on, and it all comes down to the forecaster's judgment at the end.

And, lastly, I would truly invite anybody who's interested in seeing what it's like to be forecasting in real time, to give the AWC a phone call and come and spend a day, not 10 minutes, but a day sitting or at least an 8-hour shift, sitting with us and seeing what it's like to forecast in real time. I think it's eye-opening, both good and bad. It's an informative experience as opposed to a walkthrough. It's very helpful for people to sit down and actually see what it's like

in real time for 8 hours.

MR. EICK: Thank you for your presentation.

MR. CARLE: Excuse me, sir.

MR. EICK: Sure. Do you have anything else to present to us?

MR. CARLE: I thought I had some additional slides there of the current ice potential and forecasted ice potential, but they're not on here. That's okay.

MR. EICK: I thought we had those in there. I apologize. You mentioned in your presentation that SIGMETs affect all sizes of aircraft and AIRMETs. You did not mention aircraft size or type. Do AIRMETs apply to only light aircraft or are aircraft like the ATR 72 in this accident also potentially affected by AIRMETs?

MR. CARLE: The intention is that an AIRMET is a description of a weather phenomena that should be of interest to everybody, but it's of an intensity less than severe. The AIRMETs in general are of particular interest to pilots who are in flight with aircraft that are sensitive to the phenomena that's being described and to VFR pilots.

MR. EICK: AIRMETs are often referred to as soft constraints, while SIGMETs are hard constraints that restrict air carrier operations or prohibit operations, i.e. if a SIGMET for severe icing was out, we'd likely see cancellations and so forth. Does the National Weather Service consider the

operational impacts when they issue advisories?

MR. CARLE: We are aware of the fact that different users and different regulations will come into play. Different criteria for different users, for example, the Air Force may not be able to fly a specific type of aircraft into a low level turbulence SIGMET. Different airlines who are operators will have their own rules regarding AIRMETs and SIGMETs. One of the ways that really impacts our operations is that as soon as a SIGMET especially or even an AIRMET is issued for a weather phenomena, we'll see fewer reports as people start avoiding that volume of airspace.

MR. EICK: Okay. How do you determine forecast icing type and severity?

MR. CARLE: When we're looking for areas of general icing, you're basically looking for cold clouds, colder than 0 degrees Celsius generally up to a cold threshold of minus 20 degrees Celsius. You're looking for high relative humidity, much more than 70 percent, closer to 90 percent. When you're getting into an area where you also have vertical motion for whatever reason, then you're going to be starting getting larger size droplets, and those are the areas that are of particular interest to us in way of intensity.

MR. EICK: Do you have any models that you use for icing intensity or severity?

MR. CARLE: We can use model forecast soundings, and

from those we can infer the signatures such as instability, vertical motion that would lead to larger size droplets that would increase the severity of the icing. We can look at the current icing severity potential, which is an automated algorithm, and see if that helps us out any. We also look at surface observations to see what's going on, and most of all, we use pilot reports. When we start seeing reports of mixed or clear icing, especially moderate and greater, mixed or clear icing, it's an indication that we have freezing drizzle or larger sized droplets.

MR. EICK: And what does the National Weather Service consider as supercooled large droplets, SLD?

MR. CARLE: Drizzle size drops and greater, 40 microns in diameter or greater.

MR. EICK: Does the report of freezing fog, light freezing drizzle, or light freezing rain automatically imply a SIGMET for icing, severe icing?

MR. CARLE: Absolutely not. In the situation we're dealing with today, we had freezing drizzle or freezing rain at numerous stations in southern Kansas, all over Oklahoma, northern Texas, west Texas, Arkansas, all the way to Paducah, Kentucky. I don't have the full dataset to know how many reports of severe icing we had, but the fact that we experienced that, a SIGMET was required. We definitely do not jump on any report of freezing drizzle, freezing rain as being

cause for a SIGMET.

MR. EICK: Okay. In reviewing the weather conditions on January of this year relating to the aircraft accident in Exhibit 5A and the weather factual report, can you tell me what you saw in regards to what classic pattern recognition you saw over Texas and the Lubbock area?

MR. CARLE: Well, we had high pressure and very cold air to the north over the central plains of the U.S. with northerly flow at the low levels pushing the cold air, you know, increasing the shallow dome of cold air southward across northwestern Texas. So we had the ingredient of very cold air at the surface. We had southwesterly flow aloft which helps to increase the overflow of the moist air to ride up and over the shallow cold dome. The radiosonde data at 0 Z and 12 Z is also indicative of that situation where you could have icing.

MR. EICK: So would you define this as a classic freezing rain, freezing drizzle scenario?

MR. CARLE: Yes, in the case that you had a very shallow, cold dome of air at the low levels, warm air above that and then, of course, cold air aloft, yes.

MR. EICK: Are there any other meteorological conditions that would produce any other causes of SLD aloft such as any warm cloud top scenarios?

MR. CARLE: Well, there are other reasons for lift other than a freezing rain situation. You can have up slope

conditions, topography comes into play. You can have local instability around the Great Lakes as cold air comes across those still warm lakes, and you have highly unstable air at the low levels. You have a great deal of vertical motion. In that case, you would have rather warm tops of the clouds that are low topped, but you're accumulating supercooled large droplets up in the atmosphere.

MR. EICK: Can you explain to us why many pilot reports indicate moderate to severe icing nearing cloud tops?

MR. CARLE: Because in the situation where you have vertical motion, either from instability or from being forced, topography or any other reason, if you have a natural limit to the top of the cloud, that's where you're accumulating larger size droplets. If it's well below freezing, then you've got the ideal situation for supercooled large drops. If they get too large, they're going to accumulate and fall out.

MR. EICK: Does that sound like the scenario the Captain referred to as the first major encounter of icing at 18,000 feet he encountered?

MR. CARLE: At 18,000 feet, no. It sounded to me like that was more of a classic mid to high-level icing.

MR. EICK: Okay. Can you infer anything from looking at the observation at the time of the accident? Two miles of light freezing drizzle, mist, temperature -8, -9. From that, can you determine icing severity or type right offhand?

MR. CARLE: Well, it would tell you that there would be at least moderate mixed icing, moderate mixed or clear icing at the lowest levels, but it doesn't tell you how high that level goes. It doesn't tell you the severity in terms of the length of flight path or the duration of flight, things like that.

MR. EICK: Right.

MR. CARLE: It just tells you that somewhere at the lowest levels, you do have supercooled large drops.

MR. EICK: Is freezing drizzle reported differently than freezing rain?

MR. CARLE: Well, freezing drizzle is a function of droplet size, and it's rated more on terms of -- it's judged in terms of visibility rather than precipitation rate. It's smaller drops. You lower the visibility and you have very little to trace accumulation.

MR. EICK: So I could report 10 miles light freezing drizzle, same temperatures, and still be within normal reporting boundaries?

MR. CARLE: Frankly I forget what the upper limit on freezing drizzle is. So I'm not sure on that.

MR. EICK: Okay. Could I have Exhibit 5A, page 30 please.

Do the ASOS sensors by the way have a problem detecting drizzle or freezing drizzle?

MR. CARLE: I'm not an expert on ASOS observations or the machinery involved. I know that the ASOS observation from Lubbock at the time appeared to be working and that that's all I know about that.

MR. EICK: Okay. Could I have that centered on that illustration please? This is a product that we were able to obtain from the National Center for Atmospheric Research, NCAR, basically trying to reproduce what the National Weather Service Aviation Center's Aviation Digital Data Service flight planning tool would provide with regards to the current icing product. Are you familiar with this product and can you walk us through it, what it says to you?

MR. CARLE: I'm familiar with it, although frankly it's not used a great deal by the operational forecasters. What this is is an automated machine generated algorithm. There's no human interaction involved in this. I just want to make that clear. Also it's an algorithm which is a diagnostic. This particular slide is a current icing potential. It is not --

MR. EICK: Forecasted.

MR. CARLE: -- forecast. And the top slide, the top portion of it would show an estimate of icing severity based on the algorithm's output. The algorithm takes into account model soundings, surface observations, radar data, satellite data, lightning data, and tries to make an estimate of what's going

on in the atmosphere. Again, this is at 10 Zulu I believe on the day in question. 10 Zulu diagnostic of icing severity at the top with Fort Worth on the left side, Lubbock on the right side. So the black area at the bottom is the rising slope of the ground to make that more clear, and then the bluish shades are showing different intensities of icing as indicated by the CIP or the current icing potential output. The highest one I see there is moderate, and it looks like it extends up to about 5,000 feet MSL in the Lubbock area but also extends well west back towards Fort Worth.

Coming down from that, there's an icing probability. That's basically a yes/no of icing. So it could be a very high probability of trace icing. It's a yes/no sort of a forecast, not an intensity. It doesn't have a threshold. The one below that is SLD or supercooled large drop percentile, and that's showing a large percentile over much of a flight path but then again as I was saying, you can see that from the surface observations of freezing rain and freezing drizzle all the way from Kentucky to west Texas.

I can't see what the bottom one is. Oh, there we go. I'm really not familiar with the thing at the bottom.

MR. EICK: I think it's visible moisture relative humidity.

MR. CARLE: Yeah, the bottom one is basically a cloud diagnostic, and the one just above that, supercooled liquid

water probability which shows a fairly high probability of supercooled liquid water in the area.

Again, as an explanation, if a person goes to the public website which is the AviationWeatherCenter.gov, you can click on our icing page. On that icing page, you can look at our AIRMETs and our SIGMETs, both in text and in graphical formats. You can also go to the current icing potential and the forecast icing potential pages. Those products are considered to be supplementary. They're not primary. They're intended to enhance situational awareness but they do not satisfy the regulatory requirements of a preflight briefing.

MR. EICK: Can we look at the little upper top portion of this chart again please? If we look at the conditions described in this accident, flight was operating at about 18,000 feet. After departure from Fort Worth, climbing up to 18,000 feet en route, and en route the Captain made a pilot report of moderate icing. Does that fit the current icing product here?

MR. CARLE: It seems to agree with what's indicated on this cross-section, yes.

MR. EICK: Descending below 14,000, ice shedding started to occur, got out of icing. Does that chart agree to conditions?

MR. CARLE: Yes.

MR. EICK: And upon descending down below 5,000,

6,000 feet, re-encountered icing conditions.

MR. CARLE: Right.

MR. EICK: Severity of the icing conditions in the terminal area of Lubbock. What was the strongest intensity shown on the current icing product here?

MR. CARLE: On the current icing product, it's showing a moderate icing.

MR. EICK: High probability of SLD?

MR. CARLE: Yes, it is, on the current icing product.

MR. EICK: About 80 percent?

MR. CARLE: Yes, or more.

MR. EICK: Okay. Would you say the AIRMET verified on the day of the accident moderate icing conditions below what was it, 18,000 feet?

MR. CARLE: I think it actually said below 20 or 22,000 feet because of the multiple levels of the icing in the atmosphere and the large size, east, west, of the AIRMET. When you get into the word verification of AIRMET, it's a tricky thing to get into, but clearly there was freezing drizzle all the way across Kentucky through west Texas.

MR. EICK: Okay.

MR. CARLE: So at some point, at some level, there was definitely an icing condition.

MR. EICK: Now you mentioned the current icing product, like what we're seeing up here. It's a probabilistic

forecast. Can you expand on that versus is the AIRMET and SIGMET a probabilistic forecast?

MR. CARLE: Well, the intention of the AIRMET is to indicate areas where over a six-hour period, you've got at least a 50 percent chance of encountering moderate or greater icing conditions.

MR. EICK: And a probabilistic forecast is what? Trying to give you a number that what you'd likely encounter or a flip of the coin type thing?

MR. CARLE: Are you talking about the CIP?

MR. EICK: Yes, the CIP.

MR. CARLE: It attempts to show the probability of those icing conditions, but that's only in a diagnostic, not in a forecast mode.

MR. EICK: Okay. At the top of the current icing product page on the ADDS website, at the Aviation Weather Center, it has an operational warning that this is restricted supplemental weather product authorized for use by meteorologists and dispatchers only. General aviation pilots and pilots in flying commuter aircraft, a lot of our turboprops, as well as in this case, Part 121 supplemental air carrier, do not require dispatchers, and therefore based by that warning, I guess they could not use the CIP. Is that correct or can they use it?

MR. CARLE: It does not -- nobody can use it as a

primary briefing tool.

MR. EICK: Okay. They can use it as supplemental to AIRMETs/SIGMETs, area forecasts?

MR. CARLE: Yes, the idea is to enhance --

MR. EICK: Situational awareness.

MR. CARLE: -- situational awareness.

MR. EICK: Okay. If the pilots had used this, would they have had a higher likelihood of understanding of the icing conditions in the area?

MR. CARLE: Well, I would hesitate to make a guess on that. I think it takes a great deal of knowledge, a great deal of knowledge to use these tools.

MR. EICK: Madam Chairman, that's all the questions I have. Thank you, Mr. Carle.

MR. CARLE: Sure.

CHAIRMAN HERSMAN: Additional questions from the Technical Panel for these witnesses?

DR. WILSON: We'd just like to continue with the rest of the Panel now.

CHAIRMAN HERSMAN: Good.

DR. WILSON: Good afternoon, Mr. Lanfell. Thank you for being here today. If you could please begin by describing your role and responsibilities as the Director of Operations at Empire as well as your background and qualifications for this position.

MR. LANFELL: Certainly. My aviation career started in 1977, earning a private pilot's certificate in early 1978. Later in 1978, I earned an instrument rating and a commercial pilot's certificate. In September of that same year, I worked -- I began working as an aircraft fueler and ground handler for a Part 135 operation. In the spring of 1979, I was offered my first position as a line pilot. I continued working as a line pilot for a variety of different Part 135 operations. In October of 1983, I acquired my airline transport pilot certificate. I started working for a commuter airline in October of 1987. In January of 1989, I moved into the training department of the commuter airline and worked as a flight instructor, check airman. In September 1989, I became a chief pilot. In May of 1994, I was offered a position as the Director of Operations. In November of 1998, I acquired my aircraft dispatcher's certificate while working as the Director of Operations for a Part 121 operation. I've been the Director of Operations at Empire Airlines since June of 2000. I currently have about 14,700 hours of flight time.

My duties as the Director of Operations at Empire Airlines primarily include the exercise of operational control over all the company flight operations. This includes initiating, continuing, diverting, or terminating any flight in the interest of safety. Secondarily, I establish, maintain, and revise programs and policies to ensure the safe, legal, and

efficient flight operations.

DR. WILSON: Great. Thank you. And as the Director of Operations, who do you report to?

MR. LANFELL: I report to the president.

DR. WILSON: Okay. And do you only interface with the airline, or do you also interface with FedEx?

MR. LANFELL: I have some interface with FedEx.

DR. WILSON: Could you describe the interactions that you have with them and who specifically you interact with?

MR. LANFELL: I interact with several different people at their Memphis office, primarily to include the schedules and routes that are assigned to us as a company to operate on their behalf.

DR. WILSON: Okay. And how much control or oversight does FedEx provide to your operations, if any?

MR. LANFELL: Well, I don't think there's any control other than they assign routes and city pairs and schedules, what time they would like us to depart.

DR. WILSON: Do they provide any input or guidance to how you operate the process or how you operate Empire Airlines, the operational side of it?

MR. LANFELL: Well, FedEx facilitates meetings with their different feeder operators or information sharing might be a better way to put that, to share best practices and here's what we learned from this incident and so that we can all share

that information and improve our operation.

DR. WILSON: Okay. And do you interface with the FAA POI, Mr. Tubbs?

MR. LANFELL: Yes.

DR. WILSON: Do you interact with anybody else at the FAA or directly with him?

MR. LANFELL: Primarily with Mr. Tubbs. There are others in the office that are assigned to our certificate that I get to interface with as well.

DR. WILSON: Okay. About how often do you and Mr. Tubbs interact?

MR. LANFELL: That's variable, once a week, twice -- it depends on what's going on.

DR. WILSON: Okay. How does Empire hire pilots? Specifically, what are the requirements for a first officer coming onto the ATR?

MR. LANFELL: Our pilot selection criteria for First Officers, which is our entry level position for pilots, is that they would have at least a commercial pilot certificate with an instrument rating and a multiengine land rating, a second class medical certificate, 1,000 hours total flight time, 500 hours of pilot in command time, 100 hours of multiengine land time and be IFR current.

DR. WILSON: Do the requirements vary at all depending upon the needs of the airline? For instance, if you

have a pilot shortage, do these requirements change?

MR. LANFELL: We have to look or we've not had to look at it yet. We've been fortunate in that way. We have wondered what would happen if we ever get to that place, but we haven't had to make a reduction in our minimum requirements.

DR. WILSON: And how would you say the pay and working conditions at Empire compare to similar operators?

MR. LANFELL: I don't know that I'm qualified to answer that question.

DR. WILSON: Okay. In your previous interview, you stated the decision that Empire made to allow the ATR to dispatch in freezing drizzle, and this was a change that was made to the GOM, could you describe the decision to allow the ATR to dispatch in SLD?

MR. LANFELL: Well, that was not a decision that we changed from the first day we operated the airplane. I guess I'm not sure of your question.

DR. WILSON: You had discussed in the GOM that it was stated explicitly that the ATR could dispatch in SLD and that the Caravan could not, and that was a recent change to the GOM.

MR. LANFELL: There is guidance for each aircraft type for their limitations. The Caravans are further limited by airworthiness directive for flight in freezing precipitation such as freezing drizzle or freezing rain.

DR. WILSON: I recall from your previous interview

that you had said that the decision to make it explicit that the ATR was able to dispatch was because of a query from Caravan pilots wanting to know what the restrictions were on dispatching in this type of weather. Do you recall that?

MR. LANFELL: Yeah, correct. We included that in the GOM as a clarification item and a quick reference for them. So when they're out making that decision, at the airport, they have that with them as a quick reference.

DR. WILSON: And when you made the -- when it was explicitly stated that the ATR could dispatch in these weather conditions, did you contact ATR for any guidance on whether the airplane was certified to dispatch in this weather?

MR. LANFELL: Not specifically.

DR. WILSON: How about what sort of guidance did you receive from the FAA when you made the change to the GOM?

MR. LANFELL: Well, I'd like to clarify this idea that you think we made a change. We, you know, we didn't change any of the release procedures for the ATR. We only put them in a quick reference format.

DR. WILSON: Okay.

MR. LANFELL: We've always released the ATR under those same conditions.

DR. WILSON: Okay. And why are there differences in the procedures for the ATR and the Cessna 208? What differences do the airplanes have that allows the ATR to

dispatch in this weather and not the 208?

MR. LANFELL: The Cessna 208 has an airworthiness directive that limits its ability to fly in freezing drizzle and freezing rain.

DR. WILSON: The changes that were made to the GOM or the clarification that was made that you said, was it submitted to the FAA for approval?

MR. LANFELL: The FAA has a copy of our GOM, and at the time, they were still accepting the contents of our GOM.

DR. WILSON: Okay. Were any concerns noted about -- from the FAA about allowing the ATR to dispatch in this weather?

MR. LANFELL: Not to my knowledge.

DR. WILSON: Okay. Did you know Captain Holberton or First Office Cornell prior to the accident?

MR. LANFELL: Yes.

DR. WILSON: How would you describe Captain Holberton's personality?

MR. LANFELL: A professional pilot. I was fortunate enough to be able to ride in the jump seat while he was the Captain on a crew, and for several legs, I observed him. My opinion of him, he's a professional pilot.

DR. WILSON: And how about First Officer Cornell?

MR. LANFELL: I only knew Ms. Cornell from the ground school, from initial hire training, and so I didn't get a

chance to know her very well.

DR. WILSON: Okay. Did you ever receive any complaints about anyone not wanting to flying with either Captain Holberton or First Officer Cornell?

MR. LANFELL: I don't believe so. It doesn't -- I don't have any recollection of that.

DR. WILSON: What factors are taken into consideration when creating trip pairings? For example, how to determine what captain will be paired with what first officer?

MR. LANFELL: Well, we do have some regulatory requirements. I mean we can't put two low time people together. So -- but beyond that, there isn't really any limit.

DR. WILSON: Okay. What is your role in the development of and changes to training and procedures?

MR. LANFELL: Well, I'm ultimately responsible for those.

DR. WILSON: Do you assemble a team to determine what changes are needed and you approve them or are you involved in the actual change process?

MR. LANFELL: I'm involved in it, and we do a lot of it through conference calls. We get feedback on, particularly from our check airmen on how's the training going because they can typically tell you that when they're doing check rides. So with that feedback, we introduce changes to our training program and to our standardization procedures which are shared

in the flight ops group, generally with the chief pilot and the training manager.

DR. WILSON: Okay. Do you observe the ATR ground school provided by Flight Safety?

MR. LANFELL: I've been through it.

DR. WILSON: So you have attended the Flight Safety ground school. Do you ever observe it now that you've been through it to see if it's still meeting the requirements that Empire has?

MR. LANFELL: Yes.

DR. WILSON: How often do you do that?

MR. LANFELL: Once a year.

DR. WILSON: Okay. And as a part of your observation, does that include CRM training?

MR. LANFELL: CRM is integrated in all the training that we get at Flight Safety.

DR. WILSON: I was under the impression that there's two days of CRM training provided in the ground school. Did you observe that as well?

MR. LANFELL: Yes, I have. I haven't observed it -- I've only observed that one time. So I haven't sat through that class a second time.

DR. WILSON: Okay. And what were your impressions, not just of the CRM training, but the training as a whole that Flight Safety provides for pilots?

MR. LANFELL: I thought the quality was good.

DR. WILSON: When was the last time that you observed the training?

MR. LANFELL: I think it was a year ago in November, last November.

DR. WILSON: So if it's determined that the training or procedure needs to be changed, what is the process that is taken to make those changes?

MR. LANFELL: Well, we look at what we've identified to make change. We try to outline it in a way that will make sense and will fit into either the time constraints that we have or the training environment constraints that we might have. And then through our flight operations department management team, our chief pilot, our training manager and myself, we'll figure out how to outline that and put it into a training program format which then we'll share with our local FAA office for their review and they'll make comments about their -- what they think they'd like to see or they'll just approve it and return it to us, and then we implement those changes.

DR. WILSON: Okay. And so how is it determined what items will be trained as a part of the ATR training?

MR. LANFELL: Initially, we determine that by receiving what's called the core curriculum from Flight Safety. They have a standard training curriculum that they use to train

individuals that would come to their facility to receive initial training on an ATR. So we took that curriculum and made some changes to it to fit our operation and got it approved by the FAA, and that's the current program that we're using.

DR. WILSON: Okay. And so how are training and procedures evaluated to determine that they're adequate or working at Empire?

MR. LANFELL: As I mentioned before, we have instructor check airmen standardization calls or face-to-face meetings where we solicit feedback from them because they're out conducting their different experience modules or checking modules. They'll make note of the results of the training program that they'll observe in the performance, the proficiency of the different airmen, and we use that feedback to analyze our training program and make adjustments.

DR. WILSON: Do you query the pilots at all to get their feedback on the training and what they would like to see added or changed, improved?

MR. LANFELL: Yes, we do that as much as we can.

DR. WILSON: Okay. According to your Ops Spec 006, Empire Airlines is to provide flight crews with approach plates, and I understand that right now flight crews purchase their own approach plates and Empire reimburses them. They can purchase either the Jeppesen or the U.S. Government issued

approach plates. How does Empire ensure that the approach plates used by the flight crew are up to date?

MR. LANFELL: We have an internal evaluation program. So we send out check airmen out to ride in the jump seat with flight crews on a somewhat unannounced basis, and one of the things that they're going to check for is that the crews' manuals, whether they're navigation chart manuals or operational manuals, have the most current revisions in them.

DR. WILSON: And in line with that, what documents or manuals are pilots required to carry on board with them?

MR. LANFELL: Navigation charts and the General Operations Manual.

DR. WILSON: Do you distribute any FAA published Advisory Circulars, InFOs, SAFOs to pilots or dispatchers --

MR. LANFELL: Yes.

DR. WILSON: -- specifically related to icing?

MR. LANFELL: Yeah, we routinely send all that information out to our flight crews and dispatchers.

DR. WILSON: And how is that distributed? Is it electronically, paper?

MR. LANFELL: Electronic.

DR. WILSON: Okay. Does Empire distribute the ATR Be Prepared for Icing document to its pilots?

MR. LANFELL: It's called the Cold Weather Operations pamphlet or brochure, if you will, and, yes, we do.

DR. WILSON: Okay. The winter operations online materials and tests focused on ground deicing. Was any of this information provided to pilots regarding in flight icing or flight into icing?

MR. LANFELL: That's part of our winter operations training. It's not just the ground deicing program, but in flight as well.

DR. WILSON: Okay. How are you informed about safety concerns that pilots have?

MR. LANFELL: A variety of ways. Certainly, we have an open door policy and they can let us know anytime, through telephone or e-mail. We have a couple of other ways of doing it. Our company website contains what we call "I have a concern" which they can, you know, open up and enter a safety concern and send it off to Empire's headquarters. That ends up in the Director of Safety's hands, as well as a confidential safety report. So if they feel like they want to be anonymous, they can also send us a report that way.

DR. WILSON: I know that at the time of the accident, Mr. Mills was the Director of Safety and Compliance, and now that role is filled by Mr. Slater. What interaction do you have with them to understand what safety concerns are being provided by pilots?

MR. LANFELL: Well, we have regular meetings about reports and feedback that we get from a pilot group or any

group that's out in the field that makes safety reports for that matter. In addition to that, the internal evaluation program requires that the Director of Safety and I meet on a regular basis to discuss the results of those audits that are performed and any trends in safety that we might see that need to be addressed.

DR. WILSON: Do you recall any concerns that pilots had about flight and icing conditions?

MR. LANFELL: Not specifically.

DR. WILSON: Not necessarily related to icing, but do you recall what the most common concerns that pilots have are?

MR. LANFELL: No.

DR. WILSON: Okay. Since the accident, have there been any changes to training or procedures or discussions about changes to training or procedures at Empire?

MR. LANFELL: Yes, there have been a number of changes that we've implemented as a result of what happened at Lubbock.

DR. WILSON: Such as?

MR. LANFELL: Well, there's quite a list of them. So I've got a reference here.

DR. WILSON: Okay.

MR. LANFELL: If I might make a comment about the operation group chairman's factual report, these changes have been, the term corrective actions have been used there, and I'm

not sure that's an accurate description because that would imply that we were doing them incorrect prior to these changes, and I don't think that's the case. These were improvements we think we made to broaden our safety margin, not to correct out of compliance actions.

But here's some of the items that we've done, we've completed or are in the process of completing. We instituted a special emphasis icing training program for all pilots and dispatchers to cover things like the ATR cold weather operations brochure. We've reviewed the different in flight icing, whether it's for regional pilots or tailplane icing videos with our pilot group. We've spent some time discussing the Part 25, Appendix C, icing envelope. We've reviewed SLDs and SCDDs, specifically because these are not terms that pilots use on a daily basis. We don't get weather reports and forecasts that use those acronyms. So it's not something that we see on a regular basis, and so a review of those acronyms was important, I guess.

We talk about many of the things, icing reports, icing forecasts from NOAA's Aviation Digital Data Service, icing advisories to include AIRMETs and SIGMETs. We did a review of aircraft performance for operation in icing conditions. All of our pilots and dispatchers successfully completed that special emphasis icing training by the 15th of September.

We issued an operations bulletin to restrict flight in freezing rain and freezing drizzle. It's a known or reported freezing rain or freezing drizzle for takeoff or landing. This was done due to the accident at Lubbock, the ongoing investigation, and since we don't know the outcome of that yet, in an abundance of caution, since there was icing present, we thought that might be the right thing to do.

We've installed the icing evidence probe on the remaining ATRs that didn't have it. There were only three of them left that didn't have it. I'm trying to pick out some of the more -- the changes that had more impact. We've done additional training and sent out bulletins to all of our ATR crew members explaining the proper determination of setting airspeed bugs for flight in icing conditions. We've added expanded procedures to our ATR pilot handbook for flight crews to be aware of errors in setting airspeed bugs and added a procedure for setting and read back of those bugs during departure briefing and approach briefings.

We developed a method of how to annotate on the flight release that the captain gets to show if either of the crew members is in high minimum status, and that procedure was implemented back in March of this year.

We've asked all of our Empire check airmen and Flight Safety evaluators, that worked in our program, that while they're in the course of conducting flight training or checking

in the ATR, and specifically while executing flap malfunction and reduced flap landings, not to let the flight crew think that we want them to continue the approach without taking time to complete the QRH procedures, reset the bugs and rebrief the approach. So depending on where the crew recognizes the flap problem, they should probably ask for a delay vector or a hold while they work through the different requirements in the QRH.

We implemented changes to our release policies, so that all ATR flights are released under Part 121 rather than any flights under Part 91.

ATR's training department provided Empire with a copy of their flight crew training manual, and we adopted some of the task-sharing and priority management guidance that was published in that manual in our training program.

We've implemented a procedure to set the internal airspeed bug at the cruise speed as a method to help the crew detect performance degradation.

We've increased the number of simulator sessions for initial from six to eight. Two of those sessions will primarily be conducted in icing conditions. We have hired a company simulator instructor who will be based in Houston as a company employee who will also work part-time as a line pilot, so that he can add an element of standardization to our training program in Houston.

As a company, we're in the final stages of

implementing an ASAP program. We are in the beginning stages of implementing a FOQA program. And part of the increases to our simulator sessions at Flight Safety will be to add stick pusher recovery demonstration training, stall warning recovery with the autopilot engaged, and we are currently covering flap asymmetry during approach with every flight crew member that goes through Flight Safety.

We've implemented a remedial training program for crew members, and I'm not suggesting at all that the crew we're talking about has that, but these are just some of the programs that have been implemented recently, changes to it. We implemented a remedial training program for crew members with persistent performance deficiencies. We now have a low time flight crew member tracking program with augmented experience in checking modules.

As I mentioned earlier, we have an internal evaluation program. Its primary focus is to check for airman duties and flight deck procedures. Those are some of the more significant changes that we've made to our program since the Lubbock accident.

DR. WILSON: Great. Thank you. It sounds like you all have been very busy. One of the things that you mentioned was that the simulator sessions have now been increased from six to eight. Do any of those simulator sessions include multiple anomalies or multiple emergency situations that a

flight crew has to deal with concurrently?

MR. LANFELL: I think they always have. For instance, if one day the simulator is icing conditions, that's an underlying change in operating procedures and now on top of that you'll add a variety of other faults and scenarios. So it's always been that way, and like I mentioned, we're going to add another day of icing training. So that will be increased in terms of having the crew multitask.

DR. WILSON: In your previous interview, you stated that if you had been faced with a similar situation to the accident crew, you would have gone through the flap failure procedure rather than landing. If the flight crew had followed the published procedures, do you think the outcome of this flight would have been different?

MR. LANFELL: That would be speculation on my part. But I think for us to suggest that had they done the go-around that, you know, everything would have been better is pretty difficult for us to speculate on. Obviously the crew was with us, and we could interview them is proof that they didn't make the wrong decision.

DR. WILSON: In the event that this situation would happen again, where a flight crew was faced with multiple problems to deal with, what procedures would you expect the flight crew to follow?

MR. LANFELL: Fly the airplane, assess the problem as

a whole, apply the QRH procedure if they can determine it. If not, to make their best judgment on how to proceed.

DR. WILSON: Just one last question for you. Is there anything that we have not asked you today that you were hoping that we would have asked you or any items that you wish that we could have discussed here at the public hearing that we have not done so yet?

MR. LANFELL: No, I don't think so.

DR. WILSON: Great. Thank you, Captain Lanfell. We appreciate your time.

CHAIRMAN HERSMAN: No other questions?

DR. WILSON: That's all the questions we have for Captain Lanfell now.

CHAIRMAN HERSMAN: Does the Tech Panel want to take a break after this witness before moving onto the next?

MR. EICK: Yes, ma'am.

CHAIRMAN HERSMAN: Okay. We'll take a 10-minute break and be back at 2:40.

(Off the record.)

(On the record.)

CHAIRMAN HERSMAN: We'll reconvene. Captain Gunther, are you ready to question the next two witnesses?

CAPT. GUNTHER: Yes, we are, Madam Chairman.

CHAIRMAN HERSMAN: Thank you.

CAPT. GUNTHER: Mr. Perich, good to see you. Thank

you for coming, and we appreciate it. Could you describe for us your duties and responsibilities as the Dispatch Manager at Empire?

MR. PERICH: Yeah, my duties include running the dispatch and the crew scheduling office as well as company travel. We dispatch our flight release, all our 121 flights and some of our 135 flights in Alaska, flight follow on accordingly, close out the flights, feed the information into our computer system and disseminate that appropriate to all the different agencies within the company. I am responsible for the crew, the dispatch training and making sure they're trained appropriately, and do their flight observations as part of training and so forth.

CAPT. GUNTHER: And could you tell us a little bit about your aviation background and qualifications?

MR. PERICH: Sure. I began my aviation career in 1984 when I entered the Air Force. I was trained for a year as a navigator/electronic warfare officer. After that I was assigned to B-52s and flew as a crew member, instructor, evaluator on that aircraft for approximately seven years. During that time, I was an instructor for ground, simulator, and aircraft as well as an evaluator in those positions as well. My last three years in the Air Force, I served as the chief of bomber scheduling in the missions development branch, which is basically like a dispatch version for the Air Force.

I obtained my dispatch certificate in August of '92 from ATI in Minneapolis. After leaving the Air Force in December of '92, I was hired on by Empire Airlines as a line dispatcher. I served on the line as a dispatcher with Empire for two years before becoming the Manager of Dispatch, and I've been the Manager of Dispatch ever since.

CAPT. GUNTHER: Approximately how many aircraft do you dispatch for Empire?

MR. PERICH: We have approximately 35 Caravans that we flight follow. We have nine ATR 42s and three ATR 72s that we do flight releases for.

CAPT. GUNTHER: And I understand that your employees are all primarily flight followers, but the majority of them have dispatcher certificates?

MR. PERICH: That's correct. When I initially came to Empire, we ran flight and supplemental operations as well as domestic, and dispatchers were required at that time. When we shut down the passenger side of the house, we continue to run our operation like a dispatch operation, and we continued to hire flight followers that are licensed dispatchers, and if not, we train them and then send them to school to become licensed dispatchers.

CAPT. GUNTHER: Do you have a high turnover of your employees in dispatch?

MR. PERICH: No, I don't. I have two of our -- two

of my employees have been with the company over 20 years now. I myself have been with the company approximately 17, another dispatcher approximately 16 years, another one after that 10. I do have one that's just been with us about three years and a new hire that is coming up on a year timeframe. He is currently unlicensed and only serves in flight following type functions and as soon as we're -- he has enough experience, we'll be sending him off to get his dispatcher certificate.

CAPT. GUNTHER: And how would you characterize the workload of your dispatchers?

MR. PERICH: The workload varies throughout the day. We have a couple of heavy periods, usually one in the morning and then one in the evening where we have the majority of our flights launch and recover, and then in between that, it's relatively mild or calm.

CAPT. GUNTHER: And approximately how many flights is each dispatcher responsible for during a given shift?

MR. PERICH: That varies also depending on the shift. I stagger the shifts so that we usually have two dispatchers on during the heavy periods of time, sometimes three, and I would say from a flight following standpoint, including the aircraft, the 135 that are strictly flight followed, you're looking at probably 30 flights at a time during the two heavy periods.

CAPT. GUNTHER: And do they basically set their own schedules as to -- in other words, do you have some dispatchers

that prefer to work nights, some that prefer to work during the day?

MR. PERICH: It's usually based off seniority. However, because I'm without a permanent graveyard dispatcher right now, I do rotate my dispatchers in that position, but primarily my senior people have the shifts that they desire and my less senior people have the -- what's left over.

CAPT. GUNTHER: And what is your understanding as to why the ATR can be dispatched in the freezing drizzle and the Cessna 208 can't?

MR. PERICH: I'm sorry. Could you repeat that?

CAPT. GUNTHER: Yes. What is your understanding as to why the ATR can be dispatched into freezing drizzle and the Cessna 208 can't?

MR. PERICH: The Cessna 208, as Mr. Lanfell said, the Cessna 208s have an AD out that restricts them in freezing precip, and we've been following that guidance for quite a while.

CAPT. GUNTHER: And all your dispatchers are aware of that?

MR. PERICH: Yes, they are.

CAPT. GUNTHER: And what are the qualifications that someone needs to be a flight follower/dispatcher at Empire?

MR. PERICH: Well, for the dispatcher/flight follower, what I usually look for is somebody that fits in well

with my team. I've got a -- it's a small company, small organization, and it's tight-knit, and I look for somebody that can handle the pressures there, that can think on their own, make good quality decisions, and first in with my team. The mechanics of the job, preparing flight releases and calculating fuel burns and stuff like that, can be taught relatively easily to many different people. It's the personality more that I look for than I do for the actual qualifications at the time. That's why sometimes I hire people that are not licensed and see how they work out within my office before sending them off to school.

CAPT. GUNTHER: And what type of training do they get in meteorology?

MR. PERICH: During -- well, when they're becoming certified as a dispatcher, meteorology is obviously a major part in dispatching. So it's quite extensive during the dispatch school. For a flight follower that has not received a certificate yet, he gets meteorology training during our basic indoc. In addition to that, a new unlicensed person usually spends anywhere from six months to a year under a licensed dispatcher learning all the ins and outs of meteorology and flight operations in general.

CAPT. GUNTHER: Do you need a specific type of training for adverse weather?

MR. PERICH: Yes, we receive training in all kinds of

adverse weather, whether it's a thunderstorm, icing, you name it.

CAPT. GUNTHER: How about weather decision-making?

MR. PERICH: I'm not sure I understand the question.

CAPT. GUNTHER: Well, for instance, when they're looking at weather reports, do they do any type of analysis prior to dispatching a flight?

MR. PERICH: Well, yeah, they look for the weather, both at the departure, of the destination, the alternate, to meet all the regulatory requirements. We take a vast amount of different objects and look at it to make the decision whether or not we think the flight can be done safely. That includes looking at, you know, radar echoes, looking for hooks such as an area that might indicate tornado activity, severe thunderstorms, even quite frankly volcanic ash and incidents like that which we've experienced before in the areas that we fly in.

CAPT. GUNTHER: And who is your supplier? Do you have weather supplier?

MR. PERICH: Currently our supplier is WSI.

CAPT. GUNTHER: And how do the dispatchers receive the weather from them?

MR. PERICH: It's electronic format. We have two methods. Primarily we use an internet-based system. Each of the dispatchers have their own individual login that allows

them to set up their computer screens however they choose to monitor either a particular area or a particular product that they want to monitor at that time. We also have a backup system either using Du Watts or through WSI, a satellite-based weather system.

CAPT. GUNTHER: Do you use any weather observers at any of your out stations?

MR. PERICH: No, we do not. Two of my dispatchers have been certified and trained as weather observers themselves when we operated many years ago in Coeur d'Alene. They used to make observations for the Coeur d'Alene Airport, but that hasn't been done in many years.

CAPT. GUNTHER: You stated before that dispatchers are trained like the pilots. Do they also receive training both in-house and at Flight Safety, or is it all done in-house pretty much?

MR. PERICH: When the ATRs initially came online, I did not send my dispatchers down to Houston for the initial training or the transition training from the F-27s into the ATR. Instead, Flight Safety provided a go-to team, I don't know how to explain it, but basically they came to us with instructors so that I could pull out dispatchers and have it done during the -- with little interruption to my operation.

CAPT. GUNTHER: And could you, just an overview because I realize that there are a lot of steps involved.

Could you tell us what the dispatch flow is? In other words, if a given dispatcher is going to dispatch a flight, how do they start off, put together the weather package, the release, et cetera, and how is it transmitted to the flight crew?

MR. PERICH: Usually anywhere from two to four hours prior to the scheduled departure time, they'll prepare the flight release with -- listing everything on there that's required, you know, the crew and aircraft and everything. They'll review MEL type items, if there's any anomalies with the aircraft, and they usually at that time use the forecast winds to calculate fuel burn to the destination and to the alternate, also taking into account usually at that time, looking into the weather and everything else at that time, deciding which alternate to use. After that, approximately 70 minutes prior to scheduled departure time, we transmit, we pull fresh weather and transmit the release along with the weather to the flight crew. Usually that's done via fax machine. We usually fax it directly to a station where the crew picks it up. However at some locations, we can scan the document in and send it via e-mail to the crew, and they can pull it up and print it out from there.

CAPT. GUNTHER: And once the crew sees that, is there any type of feedback that they get? Do you get calls or questions from them?

MR. PERICH: Yes, we do. The crew is required to

check in at their show time, 70 minutes prior. If we don't hear from them an hour prior to scheduled departure time, we go looking for them actually. When the crews check in, the dispatcher that signed the release and sent it out as well as the captain review anything they see pertinent there and discuss it. If any changes need to be made at the time, we make appropriate changes, and if everything is agreed on between the two parties, the captain usually signs it at that point, and the flight release is activated.

CAPT. GUNTHER: Do you ever have flight crews that disagree with the weather and the launch decision?

MR. PERICH: Disagree with a launch decision, no. Usually my dispatchers will back up the captain. He's the one that's in the seat. So if he's uncomfortable launching, my dispatchers are going to back him up. If there's any disagreement, I wouldn't say it's necessarily a disagreement, but sometimes the captain would prefer a different alternate, and the dispatcher looks at it and goes, you know, everything -- that alternate looks just fine as well, sure, we'll pull fresh weather for a new alternate or whatever and send that to them and change the release to indicate a new alternate on there. If the conditions are deteriorating at the time that the captain picks up the release, you know, the weather conditions are going down at the departure/destination, we might have to amend the release to include a takeoff

alternate or something like that, but it happens, but not often.

CAPT. GUNTHER: As part of the decision-making process for dispatch, does the customer's needs ever enter into selection of alternates or rerouting?

MR. PERICH: Yes, they do. When we are looking at selecting an alternate, a lot of times we'll look at where we can move the freight to a location if we don't think we're going to get into a particular location where we might move the freight to meet the trunk. But irregardless of that, our alternates are picked from a safety standpoint, not from an economic standpoint, and a regulatory.

CAPT. GUNTHER: And as part of the WSI product that you receive, does it display areas of significant weather, SIGMETs, AIRMETs?

MR. PERICH: Yeah, it does. We have both textual and graphic formats available to us.

CAPT. GUNTHER: Do you find that the dispatchers, are they more inclined to look at the graphic package other than reading the actual weather package itself?

MR. PERICH: No, they do both. Most of the time when they're doing the preparatory stuff, a couple of hours prior, they're looking at the graphical, but when the release, when the fresh weather is printed and sent out, usually the dispatchers are going through the text, line by line, sometimes

circling or highlighting particular areas that they want to bring to the crew's attention.

CAPT. GUNTHER: And you talked an analysis before the weather. Do they do any type of trend analysis?

MR. PERICH: Trend analysis on the weather?

CAPT. GUNTHER: Yes.

MR. PERICH: When we pull up our textual package that we send with the flight release, it includes usually three hours worth of METARs with that. We can individually pull up a longer period of time if we so choose.

CAPT. GUNTHER: And under your company policies, do the dispatchers share responsibility with the captain in regards to dispatch of the flight?

MR. PERICH: Yes, they have the authority per the Director of Operations to exercise operational control on his behalf. They have the full authority to cancel, divert, or delay a flight for anything they believe is unsatisfactory, as does the captain.

CAPT. GUNTHER: Are there any consequences if a flight crew or a dispatcher cancels a flight?

MR. PERICH: No. I mean I'm not saying that the situation isn't necessarily reviewed by me or my boss, but, no, their decision is final, and I pay them to make a decision, and they're comfortable doing it.

CAPT. GUNTHER: And who is your boss? Who do you

report to?

MR. PERICH: Director of Operations.

CAPT. GUNTHER: Captain Lanfell talked about distribution of InFOs, SAFOs, Advisory Circulars. Do you something similar with your dispatch personnel?

MR. PERICH: Yes. Usually the ADs like I said come directly from the Director of Operations, and he usually sends them to the dispatch group. We have a group e-mail that goes to all of us and gets distributed out to each of us. If I have something of significance that I want to get out to my dispatchers, I use the same method.

CAPT. GUNTHER: Do your dispatchers also receive the winter operations guide that's published by ATR?

MR. PERICH: I don't recall whether we had that during initial training or not. We have extensive training in icing. My dispatchers go through annual training with icing and, in fact, quite frankly we go through training twice a year, once in the spring and once in the winter. Of course, in the spring we're looking at different operations when we have meetings and training sessions. In the winter, our focus is obviously on icing and what we anticipate is coming up during the coming winter season. So we look at, you know, icing, meteorology, review regulations and all that. We have this year completed the ATR, I don't know exactly how it's termed, the testing that we did, that was sent out, same as our flight

crews.

CAPT. GUNTHER: Are your dispatchers familiar with the approved deicing program?

MR. PERICH: Yes, they are. We have training on that annually, usually in September.

CAPT. GUNTHER: And what's your understanding regarding departure of flights if, for instance, they're deiced on the ground and you have either light freezing drizzle, freezing drizzle, light freezing rain at that airport that they've been deiced at. Are they good to go at that point, or how does that work?

MR. PERICH: There were no restrictions at the time of the accident that would prevent us from launching in light freezing drizzle or light freezing rain. The deice program that we had available to us at the time did allow that as well, although freezing rain is something that we discuss quite extensively during training in dispatch, and most of us are relatively uncomfortable with freezing rain.

CAPT. GUNTHER: And do you ever get any questions from pilots regarding that after they've been deiced, whether it was good for them to go or not?

MR. PERICH: No. The crews make the decision at departure time based off the hold overtimes and everything else, whether or not they can go. Dispatch rarely enters into that conversation, except if they can't meet the holdover time,

they notify dispatch that they can't meet the holdover time, and then we adjust as necessary.

CAPT. GUNTHER: Do you ever receipt PIREPs from your pilots?

MR. PERICH: No, the PIREPs we receive are what we get through WSI or through the National Weather Service, you know, in a textual format. There is a graphical display also where it shows where different PIREPs are being reported and they can be pulled up individually. At times, if we are sending multiple aircraft in a certain direction, the first aircraft out or whatever, we may ask them to report back any anomalies or irregularities in the weather that we're not 100 percent sure of.

CAPT. GUNTHER: If they needed to contact you, for instance, how do they do that? Let's say if they're airborne.

MR. PERICH: We have ACARs, I'm sorry, ARINC available to us in the aircraft. Basically it would be via phone patch through ARINC.

CAPT. GUNTHER: And do you ever go through ATC to contact them or through ARINC?

MR. PERICH: Yeah, yeah, we've been through ATC as well, if we're trying to reach an aircraft and we can't reach them through ARINC, we'll contact a particular sector and see if they are in radio contact, and they can contact the aircraft, and that has been throughout the years been done

several times.

CAPT. GUNTHER: What usually is the reason that you guys contact them?

MR. PERICH: Could be anything. Could be possible diversion, could be a weather problem that we anticipate. Nine times out of ten, it's the crew calling us indicating that, you know, this is what's going on or we're intending to divert here. We may have a mechanical issue, and they're informing us they're diverting because of that or whatever.

CAPT. GUNTHER: You stated before that dispatching the ATR was not a concern during one of the interviews that we had with you. Is it a concern now into freezing drizzle?

MR. PERICH: Well, yeah, it's a concern because my boss put out a directive saying we're not going to launch or land in freezing drizzle. So we'll, of course, follow his direction.

CAPT. GUNTHER: Have any changes or activities occurred in your department since the accident?

MR. PERICH: Other than the directive that came out not to launch or land in freezing drizzle any longer, no, we still perform our functions the same way we did before. We still continue to do our weather observations the same way we did, flight release the same way, and our training and icing has already started and will continue through the end of next week when we prepare for our winter operations.

CAPT. GUNTHER: So I assume there was a memorandum or notice to your dispatchers regarding that. Was there also an explanation as to why?

MR. PERICH: To be honest with you, I don't recall if there was an explanation why. There was a operations bulletin that came out, and we received the operations bulletins like the flight crews do and, of course, adhere to them.

CAPT. GUNTHER: And one last question. Is there anything that we haven't asked you about that you'd like to discuss here today that could help us with our investigation?

MR. PERICH: No, no, but if you have any further questions, I'm here.

CAPT. GUNTHER: Okay. Thank you.

MR. PERICH: Sure.

CAPT. GUNTHER: Madam Chairman, we'd like to continue with Mr. William Tubbs.

Good afternoon, Mr. Tubbs. Could you describe your duties and responsibilities as an FAA POI for Empire Airlines?

MR. TUBBS: Yes. I'm the principal contact to the FAA for Empire Airlines. So when they have ops changes or need to approve or change programs, they bring it to me for review and approval or acceptance. I also, I guess, you know, I also am primarily responsible to surveil them to make sure that, you know, it's our audit program to see that they're doing what they say they're going to do, and they're following the rules

and their guide.

CAPT. GUNTHER: And could you tell us a little bit about your aviation background and qualifications?

MR. TUBBS: I started in aviation in 1965, joined the Army, became an Army helicopter mechanic. I crewed two different helicopters for the Army. I did a tour in Vietnam in the flying trade. Got out of there, got my pilot's license, went to work in Missoula, Montana, at a -- primarily a for service contract operation, did flight instruction, 135 charter, right seat in a DC-3, smoke jumper kind of activity. Owned my own fixed based operation from 1975 until about '82, did some more smoke jumper operations after that, went into the commuter operations, worked at Big Sky in Montana for a couple of years or for a year, went to Pascal, Washington with United Express Operation, where I became a check airman instructor, and that's when I got hired on with the FAA, 1991.

CAPT. GUNTHER: And did you previously work at any airlines with any of the individuals that are involved in the Flight Operations Department at Empire?

MR. TUBBS: Yes, I did. Some of my smoke jumper activity was with Empire on a part-time basis. I also worked with Mr. Komberec, the CEO at Big Sky. He was my Director of Ops, and then he's the person that did the start up at United Express in Pascal, Washington. I went with him through the start up in Pascal, Washington.

CAPT. GUNTHER: So in total then, how long have you been with the FAA?

MR. TUBBS: Eighteen years.

CAPT. GUNTHER: And how long have you been the POI at Empire?

MR. TUBBS: Seventeen.

CAPT. GUNTHER: What type of training did you receive to become a POI?

MR. TUBBS: The FAA has a program where they have a basic indoc. It takes about a year to do the basic indoc. It was three months at Oklahoma City. After that, it's OJT and the whole gambit of FAA certifications, you do a demonstration and, you know, somebody teaches it, somebody -- you demonstrate your ability to do it and what have you, and it includes everything.

CAPT. GUNTHER: And when you talk about on-the-job training, did you start off as an assistant POI, or did you hold another position prior to becoming a POI?

MR. TUBBS: I actually started off as an aviation safety inspector. You're not assigned a POI or assistant POI position at all. The first year I was with the FAA, it was basically training. It wasn't until after that training was complete and I became an assistant POI on the Empire certificate and other certificates at the time.

CAPT. GUNTHER: And, Bill, you're overmodulating just

a little bit. So if you can --

MR. TUBBS: Stand back.

CAPT. GUNTHER: Yeah, just move the mic forward a little bit.

MR. TUBBS: All right.

CAPT. GUNTHER: Are you responsible for any other certificates?

MR. TUBBS: I am not.

CAPT. GUNTHER: And that's currently?

MR. TUBBS: That's currently, that's correct.

CAPT. GUNTHER: How about in the past?

MR. TUBBS: Several years ago I was. I had another 121 operator in Spokane; Salair was the name of it. They operated Convairs and DC-3s.

CAPT. GUNTHER: Can you provide us an overview of your surveillance and work and your activities regarding the carrier?

MR. TUBBS: Yes, I believe I can. I searched our databases the best I could. We looked specifically for the word training, and since 2002, I've done 29 PTRS events that involved the word training, and I split it up that way. I don't do a lot more than that in overall surveillance with en routes and so on, but that was the specific training stuff. We have since changed to the ATOS program about a year and a half ago. Since then, I've done five major inspections on the

training and pilot operations programs of the airplane including simulator, and I've done 35 just the process measurement inspections.

CAPT. GUNTHER: And do you do this all by yourself, or do you have an assistant POI or anybody helping?

MR. TUBBS: I've got an assistant POI and a geographic inspector that work on the certificate, all ops.

CAPT. GUNTHER: You stated during the interview that you thought ATOS might be overkill for a carrier this size.

MR. TUBBS: I knew you'd bring that up.

CAPT. GUNTHER: Yeah.

MR. TUBBS: It's one of the things I wished I hadn't have said in my interview. I'm beginning to believe that ATOS is the way to go. As an example, because of the previous Colgan hearing, we've had a great emphasis on low time pilots, and in the process of doing the guidance from Headquarters, we've done 28 en route inspections on low time pilots with Empire throughout their entire system. We did three complete reviews of recurrent training. I had an inspector down at Flight Safety for all three of them, myself included, three weeks ago where we watched low time pilots go through the recurrent training program from ground school through the simulator and check ride.

CAPT. GUNTHER: Now, was that part of the normal duties, or is that a special emphasis?

MR. TUBBS: That was a special emphasis for low time pilots.

CAPT. GUNTHER: And have any other special emphasis inspections been done on the carrier after the accident either through yourself or FAA Region or Headquarters?

MR. TUBBS: No.

CAPT. GUNTHER: Do you believe that there needs to be one?

MR. TUBBS: Randy Lanfell's exactly right. We have interfaced several times a week, if we're both there, average of a couple of times a week. I was very well aware of the changes they've made. They've made these changes without me, you know, forcing them to make changes or what have you. We've had discussions over what we've learned from this thing, and so I quite frankly didn't have time to make the changes because they were way ahead of me.

CAPT. GUNTHER: How would you characterize your workload as a POI?

MR. TUBBS: I have plenty of time to surveil the airline. It's, you know, it's a busy workload. I get to organize the ATOS program for all three of the ops inspectors, but it's pretty well self-sustaining. I have my own responsibilities that come out of that guidance, and I do those and have ample time to do that. I also have ample time to review changes or manual changes that they may come up with or

what have you. So I think I have plenty of time to do it.

CAPT. GUNTHER: Under ATOS, is there any other type of surveillance activity that's done outside of the FSDO by any branch of the FAA?

MR. TUBBS: Actually it's all our responsibility now. We kind of stopped using the inspectors from other places to come and look at it because they're not trained and qualified in Empire's program. So we do a lot more traveling than I used to do in the PTRS system where I relied on geographic inspectors to help me out with those things, and we do the surveillance in all the outlying stations ourselves.

CAPT. GUNTHER: Is there any type of auditing as part of ATOS of either the FSDO, of yourself either by Region or FAA Headquarters regarding --

MR. TUBBS: Oh, yes. It's intensive. They keep track of what I'm doing on that. It's an automatic computer program, and if we don't get the inspections done that are scheduled for this quarter, they automatically go under the red. The Region monitors that, and I'm sure my friends here in Washington, D.C. also see that.

CAPT. GUNTHER: And as part of the surveillance that you do under ATOS, do you also inspect the dispatch operations?

MR. TUBBS: Yeah, that's correct, I do. In fact, one of the major, the SAI, the major review of the program, has been on for other people with operational control.

CAPT. GUNTHER: And either prior to or after the accident, in the last few years, have you discovered any problem area that needed correction?

MR. TUBBS: I have not.

CAPT. GUNTHER: As part of your duties as a POI, is there any one area where most of your time is spent?

MR. TUBBS: I don't believe so. It's pretty varied. The guidance I get leads me to try to inspect the entire system.

CAPT. GUNTHER: And how would you -- how do you think your working relationship is with the carrier?

MR. TUBBS: I think we have a good working relationship. I believe that Empire tries to be compliant. Anytime I send them a letter of concern or a letter notifying them that I think there's a problem, I get action.

CAPT. GUNTHER: Do they self-report to you?

MR. TUBBS: On -- yes, occasionally.

CAPT. GUNTHER: Anything with flight operations?

MR. TUBBS: Well, I have had self-reports on flight operations, but quite frankly, very few.

CAPT. GUNTHER: Have you ever had any complaints of anything from any of the pilot group or dispatchers?

MR. TUBBS: We did a couple of years ago. We had a complaint from a pilot that we did great research into the claim that the airline was making him fly airplanes that

weren't airworthy. We spent a great effort through ops and the maintenance people to investigate it, and we settled the investigation with no finding.

CAPT. GUNTHER: What kind of guidance do you get from FAA on icing?

MR. TUBBS: We get ACs, SAFOs, the normal guidance I think.

CAPT. GUNTHER: Is there any type of structured guidance of training that they give you regarding icing?

MR. TUBBS: Well, certainly. There's training on icing, you know, I mean we've done a lot of work with the deice program, and there's always instruction and training about the ice that you're involved in at the time for ground deicing and what have you. But, you know, I mean I don't go on an annual basis to Oklahoma City to get a weather training program. I have had training on weather throughout my career with the FAA.

CAPT. GUNTHER: Were you the POI at the time of the approval for dispatch into light freezing drizzle --

MR. TUBBS: For the ATR, yes, I was.

CAPT. GUNTHER: Do you have any concerns about that?

MR. TUBBS: We actually discussed it, even if Randy doesn't remember it. We did discuss it, and we both came to the same conclusion, that the airplane is certified under Part 25, flying into known icing conditions, and that we were within the realm of that, and I believe that there's enough exit

strategy in this, if they run into icing, that they determine it to be severe icing, that the system works.

CAPT. GUNTHER: Was there any type of discussion regarding either a proactive approach to prohibit the aircraft from operation into those conditions?

MR. TUBBS: Well, yes, that discussion was done at the level that's above their manual. They purposely picked light freezing rain, light to moderate freezing drizzle, and then the snow, that's in the guidance in the GOM.

CAPT. GUNTHER: Why did they purposely pick that?

MR. TUBBS: Because they felt that above that level, they would be going into extreme icing conditions and would not dispatch an airplane into that.

CAPT. GUNTHER: And when you -- and I'm assuming that their GOM is approved, is an approved document?

MR. TUBBS: Actually it's an accepted manual, but, in fact, it probably carries the same weight.

CAPT. GUNTHER: Okay. Did you have any discussions with any other branches with FAA or your supervisors or anything before you made the decision to approve that, the GOM, with the flight into light freezing drizzle?

MR. TUBBS: I did not discuss it with any Regions. We have meetings three days a week in the office. These things are always kicked around within the office. I get direct supervisory approval. When I approve something, I generate a

letter with it. My office manager and my ops supervisor both review it. So I think I had plenty of oversight on this.

CAPT. GUNTHER: No discussions with anyone from aircraft certification?

MR. TUBBS: I didn't think it was necessary. I went to the flight data sheet, and the airplane is certified for known icing conditions.

CAPT. GUNTHER: And you're talking about your surveillance activities, and excuse me if I don't remember, but did you attend any training at Flight Safety?

MR. TUBBS: I did. I'm typed in the airplane. I've gone through the same training as Empire's pilots have gone through, except that it was Flight Safety's training; it wasn't Empire's training. And I do that on a recurrent basis. In fact, I flew the simulator two weeks ago.

CAPT. GUNTHER: Do you remember when you took that training, if Flight Safety's materials had a prohibition for flight into freezing drizzle, freezing rain?

MR. TUBBS: I don't remember, no.

CAPT. GUNTHER: Do you monitor the ground school that Empire teaches also?

MR. TUBBS: I do.

CAPT. GUNTHER: Okay.

MR. TUBBS: That's part of the 28 PTRS training things that I've done is monitor the ground school --

CAPT. GUNTHER: How often --

MR. TUBBS: -- both at Empire and Flight Safety.

CAPT. GUNTHER: How often do you do that?

MR. TUBBS: You know, I try to do that as often as I can. I can't give you a figure of two or three times a year because I do that when I get it. When I know that there's training going on, I get a chance to go it, I go do it.

CAPT. GUNTHER: Do you remember when the last time you did it was?

MR. TUBBS: Yeah, three weeks ago.

CAPT. GUNTHER: Okay. And have you noticed any differences between pre-accident ground school versus post-accident ground school?

MR. TUBBS: The actual material that was went over, no, but what I did notice is we had an extra simulator session for the recurrent program. So I saw the additional that Empire has put in and we also did -- I watched, observed them do asymmetry, flap asymmetry.

CAPT. GUNTHER: How would you characterize the quality of the training?

MR. TUBBS: I think that Flight Safety cannot do it any better than they're doing it now. They train Empire's program. They're using Empire's checklists. They're using Empire's performance information. They're using Empire's weather packages. Even the systems presentation that Flight

Safety puts up are Empire's manuals, their pilot operating handbook for systems. It doesn't get any better with outsourced training.

CAPT. GUNTHER: And would you say the same thing about Empire's in-house ground school, that portion of it?

MR. TUBBS: Yes, same material.

CAPT. GUNTHER: Do you remember if they taught anything on adverse weather during that ground school?

MR. TUBBS: Yes, in both cases, Flight Safety and Empire Airlines.

CAPT. GUNTHER: Could you describe a little bit what they were teaching and what you can remember?

MR. TUBBS: For what I remember, they're going over the ACs and the guidance on adverse weather, and they go into the requirements for dispatch, and they not only do that for their pilots, but their approved dispatch training program which is optional for them is the very same training.

CAPT. GUNTHER: How they do work out who does what portions of the training? Is there a document or anything that you're aware of or that you've seen?

MR. TUBBS: You know, actually, no. They are doing Empire's training. It's all by Empire's training manual.

CAPT. GUNTHER: And how does FedEx fit into the training?

MR. TUBBS: I don't believe FedEx fits into the

training at all.

CAPT. GUNTHER: Federal Express, are they the ones that have the contract with Flight Safety, or is it the airline?

MR. TUBBS: That is true, but at this time, they are not, you know, I mean I don't see them guiding where the training's going. The training comes from Empire, and I have approved it.

CAPT. GUNTHER: Do you also monitor the CRM training?

MR. TUBBS: I have, yes.

CAPT. GUNTHER: And how often? When was the last time you did that?

MR. TUBBS: It was, you know, three weeks ago I watched them do CRM training.

CAPT. GUNTHER: Okay. Does the FAA provide you with any type of criteria or documentation on how to evaluate the CRM portion of the training?

MR. TUBBS: Just the ACs that are out on CRM training, whatever guidance they put into the 8900 inspector's manual at this time.

CAPT. GUNTHER: Have you attended any other CRM programs outside the carrier?

MR. TUBBS: Yes, that's correct because I'm current in the FAA flight program, I get -- every other year I get CRM training.

CAPT. GUNTHER: And when was the last time you criticized or ended up requiring changes to operational or training subjects?

MR. TUBBS: You know, probably the last time that we had a big program, was the FAA came out with new guidance on 142. I forget the name of it. I think it was Bulletin 73 something. Anyway, they came out with new guidance to try to get outsourced training back to where they were training the company's program instead of training just their own program. There was a time limit that that had to be imposed in the guidance that I had. I gave Empire notice that if we didn't have the program up to the standards that they told me we had to have it to at this time, that I would pull the operation specifications, and which we did, and Empire got the program right up to where I think it is as good as you're going to get with an outsourced training program, and we reissued the A31 I believe it is, op specs for outsourced training.

CAPT. GUNTHER: And other than the Director of Operations, do you interact with anyone else at the carrier?

MR. TUBBS: I'm not restricted from operating or I mean interacting with anybody else, but Randy Lanfell, the Director of Ops, is the primary point that I go to.

CAPT. GUNTHER: So would it be fair to say that when it comes to the company's procedures and manuals that are either approved or accepted by the FAA, that you're the sole

source?

MR. TUBBS: That's correct.

CAPT. GUNTHER: Do you have any interaction regarding approval of check airmen or how they're chosen by the carrier?

MR. TUBBS: I don't have any interaction of how they're chosen. That's up to the carrier. They just present them to me after they've completed the training, and I do the qualification check ride.

CAPT. GUNTHER: So you do all the check rides for the check airmen then. Am I understanding that correctly?

MR. TUBBS: I'm not restricted to that. I do now with the other help I have. They can do that, but right now neither one of them are qualified in the ATR, and one of them is not qualified in the 208 by FAA standards. So primarily I've done all of the check airmen evaluations.

CAPT. GUNTHER: And other than the evals that you do with them, do you have any other type of interaction with the check airmen, whether that be monthly get-togethers or --

MR. TUBBS: No, we don't have monthly get-togethers, and on occasions I've been involved with the standardization program that Empire has where they either call in their check airmen or try to do it over the phone. It's not on a regular basis.

CAPT. GUNTHER: Regarding standardization, in the manual system, Captain Lanfell was saying that they're required

to carry the GOM on board. Is there any other documents that the crew is required to have on board other than their normal airmen's certificates?

MR. TUBBS: I think that's exactly right. They're required to carry the GOM and their navigation manuals or whatever you want to call them.

CAPT. GUNTHER: And, Allison, if you could do me a favor and pull up Exhibit 2YY. And I'm looking for page 8-1-6.

And, Mr. Tubbs, if you'll look at the screen there, page 8-1-6, as it's displayed up there, the top paragraph has a number of bullet items regarding items that are required to be covered during ground training. Are you aware if they're done by the carrier or are they done by Flight Safety International?

MR. TUBBS: You know, normally I believe they're done by the carrier. A lot of the ground school and especially the initial ground school is done in the indoc, and it's done at the operator. I don't think they're restricted to that. I think they can get that at Flight Safety.

CAPT. GUNTHER: When you've attended their ground school, have you seen them do a review of their meteorological conditions that are likely to cause freezing drizzle, freezing rain, or SCDD?

MR. TUBBS: I have seen them do a review of meteorological conditions. I can't say that I saw them do the freezing drizzle.

CAPT. GUNTHER: I understand. How about the identification of severe icing conditions?

MR. TUBBS: Yes, I've seen them train that. Flight Safety trains that. I was trained in that. I don't think they have a problem identifying icing conditions.

CAPT. GUNTHER: Do you remember whether or not there was a review of the cold weather operations guide when you attended class?

MR. TUBBS: The last time I went to --

CAPT. GUNTHER: The last time and before the accident?

MR. TUBBS: I really don't remember.

CAPT. GUNTHER: Do you ever receive written reports from the company regarding check rides that are done by the check airmen, pass/fail, performance of the crew members?

MR. TUBBS: I do, yes, monthly.

CAPT. GUNTHER: And I understand that both First Officer Cornell and Captain Holberton were both given a 709 check?

MR. TUBBS: That's correct.

CAPT. GUNTHER: And did you do the 709?

MR. TUBBS: I did not.

CAPT. GUNTHER: Were you familiar with the 208 accident that happened in Lummi Island?

MR. TUBBS: Oh, yes, very familiar.

CAPT. GUNTHER: And could you describe to us how the accident occurred? Do you remember?

MR. TUBBS: Yes, the pilot elected to get a special VFR to leave the control zone. The weather, I think it was 400 overcast and less than three miles visibility. The airport is a couple of hundred feet above sea level. I think he assumed that things were going to get better when he got over the Puget Sound. Evidently they didn't.

CAPT. GUNTHER: And have you run into any other instances of pilots or the carrier pushing weather?

MR. TUBBS: I'm sorry. What?

CAPT. GUNTHER: Have you run into any other instances of carriers or pilots either pushing weather to complete the flight?

MR. TUBBS: No, I don't believe I have.

CAPT. GUNTHER: How were you informed about the accident?

MR. TUBBS: We've got a standard way of getting informed about accidents. It came right out of the -- immediately came out of our communication center in Seattle. I'm sorry. Are you talking about Lummi Island or are you talking --

CAPT. GUNTHER: No, I'm talking about the ATR in Lubbock.

MR. TUBBS: Actually Richard Mills called me up.

CAPT. GUNTHER: You said that you're type-rated on the aircraft?

MR. TUBBS: That's correct.

CAPT. GUNTHER: Okay. In the event of something like a flap asymmetry or no flaps, what would you expect the crew to do?

MR. TUBBS: I would expect them to take the time to complete the QRH.

CAPT. GUNTHER: And is that how you were trained also?

MR. TUBBS: That's correct.

CAPT. GUNTHER: Did you do any route inspections or observe operations prior to the accident in icing conditions?

MR. TUBBS: Yes.

CAPT. GUNTHER: Were the reactions of the crews fairly standardized in those conditions?

MR. TUBBS: I don't understand what you're asking.

CAPT. GUNTHER: For instance, did you hear them verbalize the enter icing checklist, following standard operating procedures for the aircraft?

MR. TUBBS: I thought you were talking about ground deicing. In flight icing, yes, I've observed in flight icing and, yes, in every occasion, I've seen them the entering icing checklist.

CAPT. GUNTHER: Do you think if the flight crew had

followed the published procedures, the ones that you were taught, utilizing the QRH, that the outcome of the accident would have been different?

MR. TUBBS: I would hope so.

CAPT. GUNTHER: In the event that something similar happens again, where there's either a flap asymmetry or flap failed of some type, will you expect them to go ahead and use the procedures that are published in the future?

MR. TUBBS: That's correct.

CAPT. GUNTHER: Anything that you think we should have asked you but we didn't?

MR. TUBBS: No.

CAPT. GUNTHER: Bill, thank you. And, Madam Chairman, the Technical Panel has no further questions.

CHAIRMAN HERSMAN: ATR.

MR. FLANIGIN: Madam Chairman, ATR has no questions for these witnesses.

CHAIRMAN HERSMAN: FAA.

MR. HARRIS: Thank you, Madam Chairman. We have several questions.

Mr. Carle, you mentioned that the current icing potential and forecasting icing potential products are supplementary, not for primary use. Can you describe what the official primary use products are that are created by the National Weather Service that support flight planning relative

to icing?

MR. CARLE: From the Aviation Weather Center, we issue the AIRMETs, which are the advisories, both graphical and text, of moderate or greater icing. Those are scheduled. Those are issued every six hours, valid for six hours, with a six-hour outlook. We also issue SIGMETs, which are for severe icing conditions. Those are unscheduled. They run up to four hours before being either continued or canceled.

Outside the Aviation Weather Center, there are computer model forecasts of freezing levels and relative humidity and temperature that people can access. There's TAPS, the terminal forecasts that are issued by the forecast offices, for surface based observations. There, of course, are also the METARs or the surface obs that are taken hourly. That's it.

MR. HARRIS: Thank you. Were there any SIGMETs issued? I want to be clear on that. Were there any SIGMETs issued for icing in the area of the route of flight on the accident day?

MR. CARLE: No.

MR. HARRIS: Thank you. Mr. Lanfell, how does Empire Airlines develop the general operations language that is used or submitted to the FAA for acceptance?

MR. LANFELL: I'm primarily responsible for the General Operations Manual so that changes, revisions would come from my office.

MR. HARRIS: So if we could look at Exhibit 2BB. This is particularly on page 8-9, speaking to icing operations in the General Operations Manual.

At least as of revision 43, there's some language that speaks to being able to operate the aircraft in supplemental service under Part 121, with a, I think you can see it, the language there, down on number 4, aircraft may operate, and then in number 4. What would have been the technical basis that Empire Airlines used to develop that language for submission to the FAA?

MR. LANFELL: I think we primarily based it on previous experience with other aircraft and also with holdover tables that were provided to us that would have authorized takeoff in those conditions as well.

MR. HARRIS: Okay. Well, specifically this is about landing in light freezing rain, or light or moderate freezing drizzle, or light, moderate, or heavy snow. So what source documents would you have used? I'll ask. Did you use the airplane flight manual?

MR. LANFELL: Certainly. We didn't see any limitations in the airplane flight manual.

MR. HARRIS: Okay. Thank you. And if I could please ask -- oh, there was a question from Dr. Wilson about procedures that you had developed post-accident. And one of those procedures was to reaffirm the procedures for airspeed

bugging by crews. Is that correct?

MR. LANFELL: That's correct.

MR. HARRIS: If I could ask that Exhibit 2Z be placed on the screen, specifically the section relative to flap malfunctions. That would be following failure - flight control. Here we go.

You're qualified on the ATR 42?

MR. LANFELL: That's correct.

MR. HARRIS: Are you a check airman or instructor on the aircraft?

MR. LANFELL: No.

MR. HARRIS: Okay. As the Director of Operations, how would you expect your pilot to apply this checklist to the conditions that apparently occurred having to do with a flap selection followed by a failure to see flap deflection on the indicator?

MR. LANFELL: I think specifically that the Lubbock crew did the first action. I think in his testimony this morning, he put the flap handle back in the position closest to what was indicated on the indicator. The one item they didn't do was take a look at their airspeed bugs. I don't know that I answered your questions.

MR. HARRIS: No, no, you've started down the path, and I appreciate that. What -- how would that play out in this? I mean I'm interested in understanding what you would

expect a crew member to do utilizing your QRH in this condition. So the first step we understand. The second step is to identify or deal with it looks like the reduced landing, flaps landing when applicable, procedure apply. Could you talk us through that process about ultimately identifying what the minimum Vref would be?

MR. LANFELL: Certainly I can get to that point but, you know, first we have to recognize that the crew was never able to get to this checklist because they didn't recognize that they had a flap asymmetry.

MR. HARRIS: Well, I don't want to get involved in speculation on that, and I think I would acknowledge that there might be some concern that that would be the case. Thank you.

Actually I'll redirect this question instead perhaps to Mr. Tubbs if you would. You're qualified on the aircraft and understand the construction of this checklist. The flaps jam, uncoupled and asymmetry checklist covers more than one kind of event?

MR. TUBBS: That's correct.

MR. HARRIS: Any of which might be identified by extending the flap selector and not seeing the movement of flaps?

MR. TUBBS: That's correct.

MR. HARRIS: So if one got to this point, it really -- in your mind, do you have to fully understand the

specific mechanics of the failure that you have had to apply this checklist?

MR. TUBBS: I don't believe so, no.

MR. HARRIS: Assuming that were the case, and you have given check rides in this aircraft and qualified the check airmen on this aircraft, what do you expect an Empire pilot to do with this checklist?

MR. TUBBS: I would have expected them to take the time to pull the QRH and go through it. With the flaps jam or the asymmetry, any one of those problems, put that control lever back to whatever the indicator is, and that backs up the safety system so that it won't run further, and the next step is to apply the reduced flap landing. In this particular case, they had less than 15 degrees of flaps. So they would have applied the 0 flap landing speed plus the wind effect.

MR. HARRIS: And the landing speed on the checklist is identified, I think we would have to roll down just a wee little bit on the -- is identified as being VmLB 0 plus wind effect. Is that correct?

MR. TUBBS: That's correct.

MR. HARRIS: And how do you determine VmLB?

MR. TUBBS: You go to the toll card for the weight that they are given in the aircraft just like they would for approach with normal flaps.

MR. HARRIS: And I think in actuality if we were to

scroll further down, we would find in the exhibit, the ops data for that. And at this point, does this chart show you the VmLB for flaps 0?

MR. TUBBS: It does.

MR. HARRIS: And what is that?

MR. TUBBS: 143 knots.

MR. HARRIS: You would expect 143 knots to be the minimum Vref to be flown by the crew?

MR. TUBBS: That's correct.

MR. HARRIS: Thank you.

Mr. Perich, what weather products are used by Empire in their dispatch procedures?

MR. PERICH: We use WSI.

MR. HARRIS: Okay. That's the source, but what are the products that you use for icing? Let me rephrase the question. What weather product types do you use for icing considerations in your flight planning as a dispatch facility?

MR. PERICH: We use all different weather types. For example, SIGMETs, AIRMETs, the TAF, METARs, area forecasts, graphical displays, severe weather outlooks, surface analysis, upper air currents. I mean there's a variety of things that we can use.

MR. HARRIS: Thank you. But they're the approved National Weather Service or FAA approved products, correct?

MR. PERICH: Correct.

MR. HARRIS: Thank you, sir.

And then finally back to Inspector Tubbs. How do you -- what is your process for evaluating documents like the QRH, the General Operations Manual, the checklists that are submitted by Empire Airlines to you for your approval or acceptance?

MR. TUBBS: Well, my primary guidance for checklists, QRH is also a checklist, and the normal checklist, is the ARM provided by ATR. And then my secondary guidance is the guidance that I get for reviewing any document to make sure that we're not going outside of the -- whatever authorized for the airplane.

MR. HARRIS: In an earlier question from Captain Gunther, there was a statement made that he might be the sole source for approval of these documents. I would just like to clarify what we're speaking of are documents provided by Empire Airlines to the FAA for evaluation and acceptance, correct?

MR. TUBBS: That was my intention when I answered that I am. You know, I don't know that I'm the sole source, but I'm sure close to it. There are occasions when my assistant will review it when I'm not there, but I do most of the review and acceptance or approval.

MR. HARRIS: Thank you. And in the terms of some products such as minimum equipment list and things of that nature, that have an avionics and a maintenance component, you

do that in consultation and agreement with the avionics and maintenance inspectors?

MR. TUBBS: That's correct. We have a process where MELs are reviewed by each specialty. We track that in a PTRS system to make sure that it's done.

MR. HARRIS: And there are some products that are actually developed by the carrier that are submitted only to the PAI and PMI such as maintenance programs, things of that nature, correct?

MR. TUBBS: That's correct.

MR. HARRIS: Okay. Thank you very much. Thank you very much, Madam Chairman.

CHAIRMAN HERSMAN: Empire.

MR. MILLS: Madam Chairman, thank you very much. I don't believe we have any questions for any of the Panel members.

CHAIRMAN HERSMAN: Mr. Haueter.

MR. HAUETER: Captain Lanfell, were there any previous events at Empire of an asymmetrical flap issue?

MR. LANFELL: Not that I know of.

MR. HAUETER: And also prior to the accident, did you have any previous events of flights of SLD that resulted in aircraft controllability issues or any other problems?

MR. LANFELL: Not in the ATR.

MR. HAUETER: But with other aircraft?

MR. LANFELL: I can remember an incident in a Caravan.

MR. HAUETER: Okay. It was mentioned before that apparently Flight Safety pays for your training program. I'm just wondering, what input does Flight Safety have to your training program?

MR. LANFELL: I'm not sure I understand that question. Flight Safety doesn't pay for our program.

MR. HAUETER: I'm sorry. I mean FedEx. I'm sorry.

MR. LANFELL: FedEx actually has negotiated the commercial arrangement for our training at Flight Safety. Since they represent several feeder carriers, they had the opportunity to negotiate the best arrangement there. Beyond that, some facilitation of standardization meetings that they helped to provide, they really have no other input to the training program.

MR. HAUETER: So effectively the training program is yours.

MR. LANFELL: That's correct.

MR. HAUETER: Okay. Also I see you've made quite a few changes to your program since the accident. And based on that, it's my understanding that you would not have dispatched a flight given your new guidance?

MR. LANFELL: Our new guidance is that we will not release a flight into known or reported freezing rain or

freezing drizzle of any intensity. That was done in an abundance of caution based on the accident, the ongoing investigation that we don't know the outcome of, and because there was the presence of icing in the accident.

MR. HAUETER: Okay. But going back again, there's enough information, if you would do that night over again, with your new information, you would not have dispatched the airplane?

MR. LANFELL: Yeah, I think we would have.

MR. HAUETER: Even though there's a forecast of freezing rain and drizzle?

MR. LANFELL: Well, we have the current -- I guess I don't understand your questions, sir.

MR. HAUETER: Well, I mean, you know, given the forecast for that evening and the information you had, now using your current new guidance, would you have dispatched the airplane that night if you --

MR. LANFELL: No, not with our current new guidance.

MR. HAUETER: That's what I was getting at.

MR. LANFELL: Yes.

MR. HAUETER: Thank you. Did you ever have a chance to talk to ATR about operation of the aircraft in freezing rain, drizzle, or SLD prior to the accident?

MR. LANFELL: Prior to the accident. I attended a winter operations meeting I think probably in 2005. It was

actually held in Miami, that they put on specifically about flying the ATR in icing conditions. So while that wasn't directed at Empire, it was for any operator that wanted to attend.

MR. HAUETER: And were you given any guidance about not to fly in freezing drizzle, rain, or SLD?

MR. LANFELL: Well, severe icing was what we were to avoid.

MR. HAUETER: Okay. And, Captain Tubbs -- well, actually let me go back for a second.

Mr. Lanfell, are you familiar with the accident at Roselawn, Indiana, with the ATR 72?

MR. LANFELL: A little bit.

MR. HAUETER: Have you had a chance to read the report on that?

MR. LANFELL: Not all of it, but some of it.

MR. HAUETER: Okay. Thank you. Now, I'm sorry, Captain Tubbs. Are you familiar with the accident at Roselawn?

MR. TUBBS: Yes.

MR. HAUETER: Did you use any information from that accident in your oversight of Empire or --

MR. TUBBS: I don't think that their -- no, what I did get from that is I know an AD came out. The aircraft was recertified. The ATR was recertified for flight in known icing under Part 25. They changed the configuration of the boots.

They also came up with the increased speeds in icing conditions, and all of that was applied at Empire.

MR. HAUETER: Okay. And is freezing rain, freezing drizzle part of the known icing environment for the certification requirements?

MR. TUBBS: I think that it didn't limit it, and what we went through was the AFM for the ATR, and there's cautions for operating in freezing drizzle and freezing rain --

MR. HAUETER: Uh-huh.

MR. TUBBS: -- but there were no limitations for operating in those conditions.

MR. HAUETER: But if you were to find out that SLD is not included in the certification standards, how would that impact the standard?

MR. TUBBS: I think that they were -- the weather conditions that they were going into, what was reported as light freezing drizzle, that you don't -- we don't have the way of -- pilots don't have a way of figuring out what size the droplets are, and the droplets may indeed be within the design limits of Part 25 testing.

MR. HAUETER: Uh-huh.

MR. TUBBS: And there's enough backup for recognition of severe icing that they had an escape plan if they got into something that was above and beyond the capabilities of the airplane.

MR. HAUETER: I guess these aircraft weren't equipped with the ice monitor device, I understand?

MR. TUBBS: They have an ice detection system. Is that what you're talking about?

MR. HAUETER: There was some device that bolts onto the aircraft that this one didn't have that was added after Roselawn.

MR. TUBBS: The only thing that's been added to these aircraft was an ice recognition light. These particular aircraft came from Continental Express, and they weren't bought with this ice recognition light. They had -- they still I believe had ample indication that there were -- if they were in severe ice, and they demonstrated en route, they were able to ascertain that they were in moderate ice and they needed to depart that or they would exceed the capabilities of the airplane. So that I think there's ample indication of being in whatever level the ice is, they can tell in this airplane even without the ice evidence light.

MR. HAUETER: You know, I guess it kind of brings up a question though I have. We have an area that we know from accidents that exist that it's not in the certification envelope, but we're expecting pilots to detect it and get out of it, but we're not providing them any information. Perhaps you, Mr. Tubbs, or Captain Lanfell can tell us what you expect pilots to do without adequate information.

MR. TUBBS: Can I address that?

MR. HAUETER: Please.

MR. TUBBS: I believe with the information that we use today, there's no way a pilot can tell what size the droplets are, and I think there's people coming up in panels tomorrow that will be far better able to answer that question than myself or Captain Lanfell because I think they're following the guidance that we have out there today on it.

MR. HAUETER: Okay. Thank you. Dr. Kolly.

DR. KOLLY: Yes. Mr. Perich, had there been a decision not to dispatch the flight that night, what other options were available?

MR. PERICH: I'm sorry. If we had not decided to launch that aircraft that night?

DR. KOLLY: Right. What --

MR. PERICH: We would have waited out. If the dispatcher and the captain determined, that was on duty at the time, determined that they were uncomfortable going in those conditions, the aircraft would have remained in AFW until the weather changed or the crew ended up timing out, in which case we probably would have put them to bed in Alliance.

DR. KOLLY: With regard to dispatch, how do your customers' needs come into play? For instance, is there any pressure from the customer say to make that flight?

MR. PERICH: No. In fact, FedEx feeder operations

have made it abundantly clear that there is no pressure at all to do anything that would be unsafe or illegal. In fact, we don't even report weather deviations to them at all or weather delays at all to them for anything. It's a non-event I guess is the best way to describe it. If we take a delay because of weather or cancellation because of the weather, it just happens. It's a non-event. No pressure.

DR. KOLLY: I assume that your new policy about I guess restricting dispatch in a freezing drizzle situation, I assume that that's going to restrict some flights obviously. So you'll have a certain amount of less flights. What's the overall impact on your operation? For instance, do you have any plans to compensate for that in any other way?

MR. PERICH: I guess I don't understand plans to compensate.

DR. KOLLY: Well, I'm wondering --

MR. PERICH: We don't lose revenue if that's what you're asking. We lose -- we don't lose revenue. The company, Empire Airlines, does not lose any revenue as a result of not making that flight because of weather or anything else. Is that what you're asking?

DR. KOLLY: When I was asking about compensating, I was also thinking about are you planning on say sharpening your pencil in any way with regard to analyzing weather data or training your dispatchers to try to make more accurate or more

refined analysis of the weather, and in particular of any potential icing conditions?

MR. PERICH: I guess, yeah, I would say we were. In light of the accident, we probably are a little bit more leaning towards reviewing the icing conditions a little bit more and I'm sure -- I have a training session scheduled for my dispatchers October 4th, and I'm sure that will be a large portion of our training going on there, but the procedures will remain the same. I mean we, with the exception of the restrictions that my boss has put on me, we view every flight as critical, okay. Every flight is critical. We make decisions based off whether we think we can get from point A to point B safely and legally. I run a tight ship. I run a close-knit operation, and because we are such a small company, these pilots that we fly with are not only colleagues but a lot of them are friends. So we have no desire to put any of them in danger.

DR. KOLLY: There was some discussion about the sources of weather function that you have available to you, and there was, I believe Mr. Lanfell mentioned them specifically. Do you feel that they are sufficient for you to conduct your dispatch operations?

MR. LANFELL: The products available to us?

DR. KOLLY: Yes.

MR. PERICH: I'm sorry. Are you asking Randy or both

of us?

DR. KOLLY: I'd like to ask both of you.

MR. PERICH: The products we have available to us are extensive. I mean American Airlines uses WSI for their weather product as well. And we have basically almost identical access to the same systems that we have or that they have. I'm sorry.

DR. KOLLY: Mr. Lanfell.

MR. LANFELL: Our weather source is extensive, and it contains all the icing reports and forecasts that we could possibly need to make decisions on flight releases.

DR. KOLLY: Thank you. I'm done.

CHAIRMAN HERSMAN: Mr. Carle, you mentioned that there were no SIGMETs on icing for the route of flight. Can you tell me what products were available for them to make determinations about what the weather conditions were?

MR. CARLE: Well, there would be the AIRMETs, which are the scheduled products, either describing the areas of moderate icing or of areas with no expected icing of moderate intensity. So the AIRMETs. The TAFs, the area forecast which is a state-by-state description of significant clouds of weather which also had freezing drizzle listed in low IFR conditions, or excuse me, low ceilings and freezing drizzle mentioned in the area forecast. So really that's the suite of products that would have been used from the Weather Service. Officially it would have been the AIRMETs, the area forecast,

and the TAFs.

CHAIRMAN HERSMAN: So the areas of forecast are where they would have gotten the freezing drizzle information that would have resulted in the restrictions for the Caravans?

MR. CARLE: Well, since Lubbock has a TAF --

CHAIRMAN HERSMAN: Uh-huh.

MR. CARLE: -- and since area forecasts are most useful for locations that do not have a TAF or space in between locations of TAFs, I would think that a TAF would be a more primary source of weather information than the area forecast would be.

CHAIRMAN HERSMAN: Okay. And how often do these products come out? How often are they updated?

MR. CARLE: The area forecast is scheduled to be issued every eight hours, and it's updated as needed, amended as needed. The AIRMETs are issued every six hours, amended as needed. The TAF's put out by the forecast offices, not by the Aviation Weather Center. The TAFs are put out every six hours and amended as needed.

CHAIRMAN HERSMAN: Okay. When you say amended as needed, so if conditions change, they have to amend them?

MR. CARLE: Yes. There are different criteria for different forecasts as to when is it needed, when an amendment is necessary.

CHAIRMAN HERSMAN: So kind of in your experience,

would the occurrence of freezing drizzle that wasn't in the forecast before necessitate an update?

MR. CARLE: It generally would. In this case, it was in the forecast.

CHAIRMAN HERSMAN: It was in the forecast.

MR. CARLE: Yes.

CHAIRMAN HERSMAN: Right. Okay. So who's qualified, let's say this information is kind of put out and updated, then it's used for dispatching. Let's say they're en route and the information kind of changes. What's the -- maybe Mr. Perich can kind of jump in here, too. What's the mechanism for providing that information for flight crews if there's changes en route?

MR. CARLE: As far as I'm concerned, if we update the product and the pilot requests information en route, he would hopefully get the updated product.

CHAIRMAN HERSMAN: From air traffic control services?

MR. CARLE: From Flight Service en route, AFOS, whatever source he's calling to, yes.

MR. PERICH: That's correct. Our route segments are generally pretty short, and so we don't see a lot of changes in the TAF with, you know, less than an hour, hour and a half type flight sequences. So you don't see a lot of changes there, but it's not uncommon if the dispatchers are aware of a change to a TAF, they can contact the crew. That doesn't happen a lot to

be honest with you because our flight segments are so short, but the crews can also access weather via Flight Service Stations en route as well as ATC if needed to.

CHAIRMAN HERSMAN: Okay. Do they have any requirement to get updated weather en route?

MR. PERICH: When they're closing in on the destination and reporting PIREPs or anything like that, if they encounter significant weather.

CHAIRMAN HERSMAN: Okay. And so your new guidance wouldn't apply just to dispatch, but if they're en route, and they get an updated weather forecast for freezing drizzle at their landing location, they would be expected to go to an alternate?

MR. LANFELL: If I could address that. A forecast of freezing drizzle or freezing rain at a destination wouldn't limit us. It would have to be a known or reported. If we're en route to a destination and the forecast says it might start freezing drizzle, we can continue to that destination, and if it's not reported, then we can do the approach and landing.

CHAIRMAN HERSMAN: And, Mr. Lanfell, it would be reported by whom?

MR. LANFELL: By the airport.

CHAIRMAN HERSMAN: And how, I know that Mr. Eick asked this question, whether or not the airport equipment can detect freezing drizzle. Who's supposed to recognize the

freezing drizzle at the airport? I know that you guys have flights that are coming in, in the dark. There's not a lot of people operating at that time of night. Are we expecting air traffic controllers or airport personnel to recognize that it's freezing drizzle, or are we expecting a weather provider service to recognize freezing drizzle?

MR. LANFELL: A weather provider.

CHAIRMAN HERSMAN: Okay. And so they might have a forecast of freezing drizzle. You still dispatch. How far out when you're expecting them to check to see if they should continue or go to an alternate?

MR. LANFELL: Well, typically at the top of descent, they would check the ADIZ, weather information, to get the latest report from the airport. That would be their first indication of what's being reported at the airport. So they would have a decision to make then if it had changed from forecast to reported.

CHAIRMAN HERSMAN: Okay. And, Mr. Carle, what's you're saying is there would, if they check the weather at that point, they would have updated weather if there was freezing drizzle. Would they get it reported? That's my question. Are you alternately doing forecasts?

MR. CARLE: I'm sorry. Can you say it again?

CHAIRMAN HERSMAN: If you're -- if Empire dispatches when there's a forecast for freezing drizzle, that doesn't

prohibit them from dispatching the aircraft to the end destination. You all are providing forecasts. You're not actually providing reports

MR. CARLE: Correct.

CHAIRMAN HERSMAN: -- correct?

MR. CARLE: Correct.

CHAIRMAN HERSMAN: Who provides reports? That's kind of my question I'm trying to understand. Are we relying on air traffic control, airport personnel? Who's reporting that there's freezing drizzle if what you're providing is not a report but a forecast?

MR. CARLE: Well, there's an automated surface station at Lubbock that's reporting the current conditions.

CHAIRMAN HERSMAN: And are automatic surface stations good at detecting freezing drizzle?

MR. CARLE: Yes, I believe they are.

CHAIRMAN HERSMAN: Okay. And in this case, we did have a report of freezing drizzle, correct --

MR. CARLE: Yes.

CHAIRMAN HERSMAN: -- when they were coming in? So they got the report. Mr. Lanfell and Mr. Perich, Cessna 208 AD prohibits them operating in freezing rain or freezing drizzle. I believe that change has come out since both of you have been employed at Empire. Is that correct?

MR. LANFELL: That's correct. I don't remember the

exact year but --

CHAIRMAN HERSMAN: Okay. And I was just kind of interested in your perspective as an operator. What was the reaction of the pilots when this came out and kind of changed, you know, kind of their operation? They've been operating this equipment for decades I guess. What was the perception of pilots when this came out? What was the perception from the operations side when this AD came out to prohibit operations in these conditions? Was it something that was applauded? Were people disappointed, surprised, unhappy?

MR. LANFELL: Well, probably all of those emotions at some point, but I think primarily since it was a level playing field, all of the airplanes were in the same category, that it was received in a fairly neutral manner.

CHAIRMAN HERSMAN: Okay. And, Mr. Perich, can you tell me what percentage of flights that you've had to cancel because of these conditions that they were prohibited from operating in?

MR. PERICH: You mean the Caravans?

CHAIRMAN HERSMAN: Yes.

MR. PERICH: Boy, that would be tough to go back through the years and figure that out. I honestly have no idea. We fly in the Pacific Northwest. We, in my opinion anyway, we encounter freezing drizzle a lot, and I know we've grounded aircraft in the out stations many times because of our

host base, Spokane, for example, might be experiencing freezing drizzle but I don't -- maybe 5 percent, 2 percent. I don't know. That's just a wild guess.

CHAIRMAN HERSMAN: Okay. And this is -- I think that I got the slogan right. I hope it's the right operator. These are things that have been advertised that they absolutely, positively have to be there overnight. So are there any incentives or penalties applied to your operation for on-time delivery so that when you have to cancel due to the weather conditions, are there pros and cons? Is there a balancing that goes on there?

MR. LANFELL: No. Weather cancellations and delays are -- we're not held accountable in terms of our performance for our customer for those kinds of cancellations or delays. If they're related to weather or safety of flight operations, they don't -- they're not a performance efficiency, if you will, with our customer.

CHAIRMAN HERSMAN: Do you get an incentive payment for on-time delivery?

MR. LANFELL: No.

CHAIRMAN HERSMAN: Okay. Mr. Perich, you talked about that there were kind of a certain percentage of flights of the Caravans that were canceled because of the drizzle, freezing drizzle. Have you had to cancel, I guess we're probably not to that stage in the season, but did you have to

cancel any ATR operations?

MR. PERICH: So far this year, no.

CHAIRMAN HERSMAN: Not yet?

MR. PERICH: No, it's kind of early in the season.

CHAIRMAN HERSMAN: Yeah.

MR. PERICH: We haven't really seen freezing drizzle or freezing rain yet.

CHAIRMAN HERSMAN: Okay. And so you talked about that folks might have to wait it out, you know, if they're canceled. What do you do with respect to how long you wait it out and their duty days? How long are they going to wait it out and, you know, when do you call it and say they're just going to have to overnight here?

MR. PERICH: It's pretty subjective. Basically we look at the forecast, we look at the TAF. We try to figure out if there's any trend moving up or down on the weather. If we see that there is movement, we might hold the crew right there at the airport and have them wait it out for an hour or two, and then have them check back with us and see how it's improving. If it's pretty obvious that nothing's moving any direction, you know, weather up or downwise, then usually we'll put them to -- we'll send them to a hotel for rest.

CHAIRMAN HERSMAN: Okay. And you don't apply these restrictions differently if you're flying under Part 91, do you?

MR. PERICH: No.

CHAIRMAN HERSMAN: As far as dispatching the aircraft into the weather conditions?

MR. PERICH: A year ago, maybe two years ago, we were -- we would do all the same items to do, like we would release any air flight, but we just wouldn't provide them with the cover sheet which is basically the flight release itself, the signatures and stuff, but the weather package, flight planning them, flight following them, all that was done just like we would any other flight. However, just, I don't know how long ago, six months ago, nine months ago, we started releasing all our 121 flights, I mean all our aircraft, even Part 91 flights primarily because that's something we started doing a couple of years back up in Anchorage as part of the Medallion Safety Program that we had up there, and we just started using it down here as well.

CHAIRMAN HERSMAN: I just want to make sure I'm clear. You're operating all of your flights as Part 121 flights. You're not operating tail end ferry flights under Part 91, right? Is that what you're saying? Everything's being dispatched under Part 121?

MR. PERICH: That's correct, unless it's under a maintenance ferry flight.

CHAIRMAN HERSMAN: Okay. Could we talk a little bit about your days, the crew days and their bases? Is there

another panel who might be better suited to address this issue, just your different bases and the commuting?

MR. LANFELL: No, I think we would have the answers for you.

CHAIRMAN HERSMAN: Okay. How many bases do you have?

MR. LANFELL: Our system, you know, in most cases we have one airplane at a base that flies a specific route five days a week. So if we have 12 aircraft, we have close to that many bases, not quite that many because we have a spare and we have one route that has a couple of airplanes on it. So for the ATRs, we have I think 9 or 10 bases.

CHAIRMAN HERSMAN: Okay. And do your crews usually, are they required to live in close proximity to their base?

MR. LANFELL: By the working schedule, yes. It really is not a commutable job. Like I say, they work Monday through Friday, and then they're going to come back to work the next Monday through Friday.

CHAIRMAN HERSMAN: Okay. But this crew, they both came in because they were not based in Texas. I think they were both Salt Lake City based, correct?

MR. LANFELL: We do have that one crew base where we have what we refer to as float pilots that we send around our system to cover for vacations and training and sick calls and things like that.

CHAIRMAN HERSMAN: And do you have any written

programs that define kind of how those floaters need to be pre-positioned before a trip and who pays for that?

MR. LANFELL: Yes. I mean we always assume that we're paying for it as was mentioned before. We buy -- we pay for the airfare, and we always get them there so that they can get legal rest before they have to show up for duty.

CHAIRMAN HERSMAN: Okay. So you pay for their overnight accommodations. You preposition them. How many hours in advance? Are you talking about 12 to 24? I know both of these crew members actually had a full, you know, I don't know if you want to call them a day for them because their days and nights are mixed up, but they had a full day before they went on duty that they were in.

MR. LANFELL: That's correct. I'll let Mr. Perich answer that question.

CHAIRMAN HERSMAN: Okay.

MR. PERICH: I deal with the scheduling a lot more. The thing is it depends. It depends on the route that they're going to. If it's one of our routes that begin Monday evening through a Saturday morning or a Friday morning type run, where we have four to five round trips on there in a week's timeframe, we usually position them in a couple of days in advance. So, for example, if they were going to begin on a Monday, we would probably travel them in either that previous Friday or that Saturday to get in there in time. A lot of our

routes, most of our routes begin on Monday evening. So if it's a route that could end up flying all night, we would preposition them in advance. We do have a few routes that operate early on Monday morning, and they get legal rest at night, for example, on a normal schedule, and they could be pre-positioned in only a day in advance, but generally it's a Saturday or a Friday prior.

CHAIRMAN HERSMAN: Okay. Mr. Lanfell, you talked about when there was a discussion about operational control, that kind of really what they're doing is coordinating best practices, that FedEx was really kind of coordinating best practices for the feeders, that they didn't necessarily tell you how to run your business but when they'd like you to depart and things like that, correct? And so it was kind of your characterization that they coordinate best practices for the feeders?

MR. LANFELL: Yeah, I'd like to think of them as a facilitator. Since they have numerous feeder operators like Empire Airlines, they have opportunity to be aware of a lot more learning opportunities and best practices, and so they serve as a clearing house to make sure that information's gathered up and disseminated out to all the other carriers that work for them.

CHAIRMAN HERSMAN: So when you all made these changes about not taking off and landing in freezing drizzle

conditions, I know that there's an East Coast feeder that operates some more aircraft. Did FedEx apply the same provision that you all have adopted to other feeders that operate the same equipment?

MR. LANFELL: I think they have.

CHAIRMAN HERSMAN: Okay. So there is no AD like there is for the Cessna 208. What did you base your operations bulletin for the ATR on?

MR. LANFELL: Well, I based it on the fact that we had an accident that we're here talking about, that we had this investigation going on for which we don't know what will be the cause of the accident, and since icing was present there, it seemed like an abundance of caution, the right thing to do.

CHAIRMAN HERSMAN: Did you use the ATR FM? I know they talk about conditions that they have concerns about.

MR. LANFELL: No.

CHAIRMAN HERSMAN: Okay. Are you familiar with some of the modifications to the original ATR equipment? I know that Mr. Haueter talked about the ice evidence probe a little bit. There's also aircraft performance monitoring systems. Are you familiar with any of those?

MR. LANFELL: I'm familiar with it. It's in the latest version of the ATR Cold Weather Operations brochure. It explains equipment and what functions it'll serve.

CHAIRMAN HERSMAN: And the operator has kind of made

these tips available. They have a service bulletin out. Who makes the decision about whether to install or implement kind of additional products?

MR. LANFELL: The aircraft owner.

CHAIRMAN HERSMAN: So that would not be you all. That would be FedEx.

MR. LANFELL: Thank you.

CHAIRMAN HERSMAN: Do you all have any opportunity to let the owner know that there is equipment that's out there that's helpful to you for your operation that you'd like to have installed on the aircraft?

MR. LANFELL: We've always found them to be open to that sort of thing and, in fact, we've discussed the APM modification, and they asked us to do our research on it and respond back to them, you know, our recommendation on whether it should be installed in the ATR fleet or not.

CHAIRMAN HERSMAN: Okay. Mr. Tubbs, what guidance does FAA provide to POIs with respect to flight and icing conditions for things, for aircraft such as ATR or the Caravans?

MR. TUBBS: Well, we have access to a copy of the type certificate for the airplane which tells us whether the airplane is certified for icing conditions or not. We're provided with the same ACs that the company uses for making the decision of where they're going to fly and how they're going to

fly in ice. We're provided with the same weather information that the airlines get, that they make the decisions on.

CHAIRMAN HERSMAN: So when you talk about the information that you're provided with respect to whether or not they're certified to operate in icing conditions, the Caravan and the ATR are both certified to operate in icing conditions, correct?

MR. TUBBS: That's correct.

CHAIRMAN HERSMAN: But the Caravan is no longer permitted to be operated in freezing drizzle conditions, correct?

MR. TUBBS: That's correct.

CHAIRMAN HERSMAN: And how did that change come about?

MR. TUBBS: By 80.

CHAIRMAN HERSMAN: So what's most helpful to you as a POI in order to communicate things to your operators? What do you need?

MR. TUBBS: Well, I get the bulletins, bulletins or SAFOs or new Acs, and they come through a FAA process that comes right out of Washington, D.C. and goes down through the Regions into the local offices. I get those either electronically or I get them in updates to the 8900, which is the inspector's handbook. So primarily I get them electronically. And those systems all have controls to make

sure that I get them and what have you.

CHAIRMAN HERSMAN: Okay. So it sounds like you get lots of stuff pushed down to you that you've got to incorporate, but you're actually on the ground and you have the opportunity to kind of see some of the operations kind of as they're going on, and you have an operator who's made a decision to limit a flight in certain conditions. I understand from your kind of back and forth with Mr. Haueter that you had your supervisor's support for signing off on that, you know, ops bulletin for the operator to restrict operations. Rather than information being pushed down, is there any way for you to push back up information that you've found in this situation, you know, kind of had a situation that's a learning opportunity, operations have been changed because of that. Is there any mechanism for you to be able to provide feedback up the chain, if it's been a problem for Empire, could it be a problem for other operators who operate similar equipment?

MR. TUBBS: Yes, there is. There is a system where we can put in suggestions for changes to the inspector handbook, the 8900. There's also a safety reporting system that we can use at any time. If we see something we think is a problem, we can just write a safety recommendation, and it goes right to Washington, D.C. and skips all the normal chains of review and gets reviewed at that level to see if we know what we're talking about or not. But there are several ways of

doing that, yeah.

CHAIRMAN HERSMAN: Did you try to kind of exercise any of those options to kind of address the issue of limited operations in freezing drizzle conditions for the ATR back up through either to certification or D.C. or, you know, whatever office would be the appropriate recipient?

MR. TUBBS: No, I did not.

CHAIRMAN HERSMAN: Okay. Does the Technical Panel have any additional questions for the witnesses?

CAPT. GUNTHER: No, we don't, Madam Chairman.

CHAIRMAN HERSMAN: How about the Parties?

(No response.)

CHAIRMAN HERSMAN: No. Board of Inquiry?

(No response.)

CHAIRMAN HERSMAN: Seeing no further questions for this Panel, we would like to thank you very much for appearing today and helping us kind of get more information on the record and for your honest and frank responses to our questions. Thank you very much for participating.

We will now adjourn the public hearing for today. We will resume tomorrow with the next panel of witnesses, and we're still on for 9:30 to start? 9:00. 9:00 start tomorrow morning, and we will resume the hearing and complete with the last three panels.

Thank you.

(Whereupon, at 4:31 p.m., the hearing was adjourned, to reconvene on Wednesday, September 23, at 9:00 a.m.)

CERTIFICATE

This is to certify that the attached proceeding before the

NATIONAL TRANSPORTATION SAFETY BOARD

IN THE MATTER OF:	EMPIRE AIRLINES FLIGHT 8284 OPERATING A FEDEX-OWNED ATR 42 (N902FX) WHICH CRASHED 300 FEET SHORT OF THRESHOLD ON INSTRUMENT APPROACH TO RUNWAY 17 LUBBOCK INTERNATIONAL AIRPORT LUBBOCK, TEXAS - JANUARY 27, 2009
DOCKET NUMBER:	SA-533
PLACE:	Washington, D.C.
DATE:	September 22, 2009

was held according to the record, and that this is the original, complete, true and accurate transcript which has been compared to the recording accomplished at the hearing.

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Dominico Quattrociocchi
Official Reporter