

NATIONAL TRANSPORTATION SAFETY BOARD  
Office of Aviation Safety  
Washington, D.C. 20594

ORIGINAL

April 15, 1998

Addendum 3 to  
Group Chairmen's Factual Report

**OPERATIONAL FACTORS/HUMAN  
PERFORMANCE**

DCA97MA017

**A. ACCIDENT**

Operator: COMAIR, Inc.  
Location: Monroe, Michigan  
Date: January 9, 1997  
Time: 1554 Eastern Standard Time (EST)<sup>1</sup>  
Airplane: EMB-120RT, N265CA Serial Number 1257

**B. OPERATIONS GROUP**

Not Applicable

**D. ADDENDA**

Attached under cover letter dated April 2, 1998, to Mr. Rodriguez, Investigator-in-Charge of the Comair accident, are copies of two inter-office memoranda issued by Captain Wayne Wolke. These documents were entitled "Winter Operating Tips-Freezing Rain/Drizzle".

The correspondence is included as Attachments 118-125.

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<sup>1</sup> All times are Eastern Standard Time based on a 24-hour clock, unless otherwise noted. Actual time of accident is approximate, determined by the Flight Data Recorder (FDR) and Air Traffic Control (ATC) transcript.

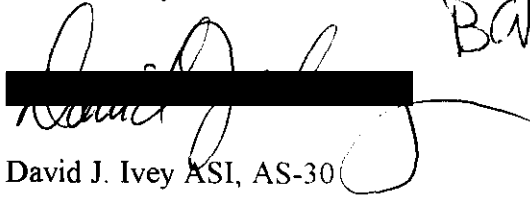
Attached under cover letter dated January 5, 1998 to Mr. Dave Ivey, Operations Group Chairman from Embraer are copies of a facsimile transmission cover sheet to Comair Airlines changing the EMB-120 FLIGHT CREW AWARENESS SEMINAR, a draft list of topics to be discussed at the meeting, a sign in sheet of the attendees at the meeting, and minutes of the meeting.

The correspondence is included as Attachments 126-135.

NTSB request number 98-017 to the FAA for a briefing on procedures/coordination between the Aircraft Certification Office (ACO) and the Flight Standards Service and the FAA response.

This correspondence is included as Attachments 136-137.

Submitted by:

  
[Redacted signature] *BCB 9/15/98*

David J. Ivey ASI, AS-30



April 2, 1998

Mr. Richard G. Rodriguez  
Investigator-in-Charge  
Office of Aviation & Safety  
490 L'Enfant Plaza East, SW  
Washington, DC 20594-2000

Dear Mr. Rodriguez: <sup>Stole</sup>

During the NSTB Technical Review on March 27, 1998, of the Comair Flight 3272, you requested clean copies of two inter-office memorandums issued by Captain Wayne Wolke. These documents were a draft dated December 7, 1995, and a final copy dated December 8, 1995, both of which were entitled "Winter Operating Tips - Freezing Rain/Drizzle". Both of these documents are attached.

Should you need any additional information, please do not hesitate to contact me.

Sincerely yours,

A handwritten signature is present, but the name is obscured by a thick black horizontal bar.

Kenneth W. Marshall  
Vice President,  
Inflight Service & Corporate Safety

**INTER-OFFICE MEMO**

**TO:** All EMB-120 / SAAB 340  
Flight Crewmembers

**DATE:** December 7, 1995

**FROM:** Wayne A. Wolke  
EMB-120/SAAB 340 Program Manager

**FILE NO.:** 95120001

**SUBJECT:** Winter Operating Tips - Freezing Rain / Drizzle

**Normal Icing**

Normal ice accumulation on an aircraft occurs at a relatively slow rate, and forms primarily on the leading edges of the aerodynamic surfaces which are protected with deicing boots. With routine vigilance for ice, and the proper use of the deicing boots, these icing encounters can easily be managed by our turbopropeller aircraft.

There have been incidents of EMB-120 aircraft flows by other carriers encountering such conditions, resulting in controllability problems. The three major factors which resulted in controllability problems were lack of airspeed control (and operation of the autopilot in the wrong vertical mode causing airspeed deviations); failure to recognize the ice accumulation and utilize the installed deicing equipment; and, failure to recognize and control ice accumulation while holding.

**Recognition / Escape**

Early recognition of ice accumulation due to freezing drizzle/rain is critical to safety of flight. Airframe icing will be noticed on the windshield wipers of the aircraft. Ice accumulations will also be observed on the unheated portions of the windshield (EMB-120) and the side windows (SAAB 340). Also check the propeller spinner for ice accumulation. A loss of airspeed will also occur as the ice builds on the aircraft, when this occurs a alternate plan should be discussed between flight crewmembers on the escape from moderate or greater icing conditions.

### Autopilot Use

If icing conditions are experienced or residual ice is present, operate the autopilot in the LAS mode only (climb). The LAS mode will allow the aircraft to descend if airspeed cannot be maintained at the present power setting. Other autopilot modes will allow the aircraft to slow in order to hold the selected mode, or may not give the necessary stall margin required for residual ice on the aircraft. Monitor power settings and increase as necessary.

### Airspeed

When flying in icing conditions, do not fly the EMB-120 at less than 160 KIAS, or 150 KIAS in the SAAB 340. This will add to the stall margin when maneuvering with airframe ice. If necessary, power settings up to maximum continuous may be used to maintain airspeed. This includes increasing  $N_1$  to 100% in the EMB-120, or 1396 RPM in the SAAB 340. Avoid prolonged holding in icing conditions. Request a change in altitude or location to exit icing conditions once these conditions are encountered. Use a holding speed of 170 KIAS when residual airframe icing is suspected. Monitor airspeed closely when in icing conditions, especially in turns.

### Approach and Landing

Even with residual ice on the aircraft, 130 KIAS provides adequate margin for approach in the EMB-120 with flaps at 25°, and the SAAB 340 with flaps at 20°. Both aircraft should land with the approach flap setting (25° / 20°) when in icing conditions or with suspected residual airframe icing. The use of the lower landing flap setting improves controllability and eliminates the need to make a flap change on approach. Remember that airflow interruption on a horizontal stabilizer with residual ice may result in a tail stall, causing a nose down pitching movement. Do not add flaps at low altitude (short final) as there will be insufficient time for recovery if a tail stall is created by the flap change. The aircraft should be slowed on short final to cross the runway threshold at 50 feet at  $V_{REF}$  (or  $V_{REF} + 10$  KIAS if residual airframe icing is present).

### PIREPS

Probably the most important thing flight crews can do for each other is to provide PIREPS on areas when freezing drizzle/rain, or any other critical flight conditions are encountered. Your report will enable other crews to avoid the conditions by changing altitude or flight routing. These reports should immediately be given to ATC so that other flights in the immediate vicinity can take action, and to Flight Control so that they may plan succeeding flights accordingly.

## Freezing Rain / Drizzle

Recent testing of turbopropeller aircraft in freezing drizzle and freezing rain icing conditions have shown that ice may form on the aerodynamic surfaces behind the pneumatic deicing boots. Freezing drizzle and freezing rain will exceed the capabilities of the deicing equipment. Freezing drizzle/rain can be expected when flying in areas with liquid precipitation at temperatures below 0°C. This is especially dangerous as the liquid is supercooled and will freeze upon impact with the aircraft. Supercooled droplets form in stratiform clouds with temperatures between 0 and -15°C when accompanied by some mechanism, usually wind shear, to generate turbulence. The turbulence caused by the wind shear can increase the collisions between droplets, and help keep larger, heavier drops aloft. Very fast accumulation can be expected, and a change in altitude or course should be made to get out of the freezing drizzle/rain conditions. Special attention must be given to airspeed control and autopilot use.

The following recommendations should be followed to improve the safety of flights which encounter these icing conditions. These procedures supplement those in the EMB-120 and SAAB 340 Flight Standards Manuals. Additional procedural changes will be made when further icing tests are completed on both aircraft.

## Conclusion

The problems of encountering icing conditions can be lessened by following the following suggestions:

- ✓ Prepare for Icing Encounters.
  - Preflight Weather Analysis.
  - Crew Coordination.
  - A plan for avoidance and escape from severe icing conditions should be discussed by flight crewmembers as part of their Crew Briefing when icing conditions are expected.
- ✓ Recognize Icing.
  - Crew Vigilance.
- ✓ Autopilot Use.
  - Use only IAS Vertical Mode during Climb.
- ✓ Airspeed.
  - Minimum 160 KIAS for EMB-120 / 150 KIAS for SAAB 340.



## INTER-OFFICE MEMO

**TO:** All EMB-120 / SAAB 340  
Flight Crewmembers

**DATE:** December 8, 1995

**FROM:** Wayne A. Wolke  
EMB-120/SAAB 340 Program Manager

**FILE NO.:** 95120001

**SUBJECT:** Winter Operating Tips - Freezing Rain / Drizzle

### Normal Icing

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There have been incidents of EMB-120 aircraft flown by other carriers encountering such conditions, which resulted in controllability problems. The three major factors which result in controllability problems were lack of airspeed control (and operation of the autopilot in the wrong vertical mode causing airspeed deviations); failure to recognize the ice accumulation and utilize the installed deicing equipment; and, failure to recognize and control ice accumulation while holding.

The following guidelines have been developed for operations in icing conditions, and for Deicing operations at the CVG Hub:

### CVG Deicing: (Reference Operations Bulletin 95-006)

1. Call Exceptions on 131.72 (Prior to Pushback) if deicing is required
2. On the first call to Ramp Control (122.82) tell them the runway planned and that deicing will be needed *if required*. (Frequency 131.02 next in line for the "pad")
3. After communications are completed with the deice truck (Deicing complete), contact Ramp Control on a frequency of 122.82 prior to aircraft movement.
4. There is NO longer a Snow Desk. The Coordinator has been trained specifically for this type of operation, and has decision making authority. (Type1/or Type2 fluid, how many trucks, and deice locations)
5. EMB-120 / SAAB 340 propellers must be *Feathered* before deicing starts

### Autopilot Use

If icing conditions are experienced or residual ice is present, operate the autopilot in the IAS mode only (climb). The IAS mode will allow the aircraft to descend if airspeed cannot be maintained at the present power setting. Other autopilot modes will allow the aircraft to slow in order to hold the selected mode, or may not give the necessary stall margin required for residual ice on the aircraft. Monitor power settings and increase as necessary.

### Airspeed

When flying in icing conditions, do not fly the EMB-120 at less than 160 KIAS, or 150 KIAS in the SAAB 340. This will add to the stall margin when maneuvering with airframe ice. If necessary, power settings up to maximum continuous may be used to maintain airspeed. This includes increasing  $N_p$  to 100% in the EMB-120, or 1396 RPM in the SAAB 340. Avoid prolonged holding in icing conditions. Request a change in altitude or location to exit icing conditions once these conditions are encountered. Use a holding speed of 170 KIAS when residual airframe icing is suspected. Monitor airspeed closely when in icing conditions, especially in turns.

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### Freezing Rain / Drizzle

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### Recognition / Escape

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### Pireps

Probably the most important thing flight crews can do for each other is to provide PIREPS in areas when freezing drizzle/rain, or any other critical flight conditions are encountered. Your report will enable other crews to avoid the conditions by changing altitude or flight routing. These reports should immediately be given to ATC so that other flights in the immediate area can take action, and to Flight Control so that they may plan succeeding flights accordingly.

### Conclusion

The problems of encountering icing conditions can be lessened by incorporating the following suggestions:

- ✓ Prepare for Icing Encounters.
  - Preflight weather analysis.
  - Crew coordination.
  - A plan for avoidance and escape from severe icing conditions should be discussed by flight crewmembers as part of their crew briefing when icing conditions are expected.
- ✓ Recognize Icing.
  - Crew vigilance.
- ✓ Autopilot Usage.
  - Use only IAS Vertical Mode during climb.
- ✓ Airspeed.
  - Minimum 160 KIAS for EMB-120 / 150 KIAS for SAAB 340.

✓ **Approach and Landing.**

- **Approach at 130 KIAS with flaps 25° for EMB-120 / 20° for SAAB 340.**
- **$V_{REF}$  at runway threshold (or  $V_{REF} + 10$  KIAS if residual airframe icing is present or suspected).**

✓ **PIREPs.**

- **Assist following flights with frequent reports of adverse conditions.**

January 5, 1998

Pages 1 of 5

Mr DAVE IVEY  
Operation's Group Chairman  
NATIONAL TRANSPORTATION SAFETY BOARD  
Fax # (202) 314-6339

Subject: New Information  
Re: Comair flight 3272 accident investigation

Dear Dave

As you may remember, when EMBRAER was gathering its documentation for discovery in the lawsuits, we came across the minutes of a meeting, in Ft. Lauderdale, where the so called "upsets" were discussed with the operators, operation of the aircraft in icing conditions and the operators' agreement to transmit EMBRAER's Operational Bulletin to their pilots.

That meeting had been attended by no less than 3 Comair pilots and/or instructors.

Now I attach for your knowledge a copy of a Comair Inter-Office Memo which we came across while going through Comair's discovery material and which was discuss during a recent Comair deposition. There has been a waiver of the Protective Order stamp for disclosure to the NTSB and FAA.

I understand from the deposition that the 160 Knot minimum airspeed in icing conditions recommended in the Memo, in fact, thereafter became company policy.

Best Regards

  
Manuel Monteiro

Enclosure:



**EMBRAER AIRCRAFT CORPORATION**

276 S.W. 34th Street  
Ft. Lauderdale, FL 33315



**FACSIMILE TRANSMISSION COVER SHEET**

**Date & Time: 11/10/95 15:19**

**Ref: 517/TN/ML-95**

**Pages including cover sheet: 1**

**Please deliver the following pages to:**

<b>Name:</b>	<b>RICK sT.ONGE/WAYNE WOLKE</b>	<b>From:</b>	<b>MARK LOWELL</b>
<b>Company:</b>	<b>COMAIR AIRLINES</b>	<b>Company:</b>	<b>EMBRAER AIRCRAFT CORP.</b>
<b>Dept.:</b>	<b>FLIGHT OPERATIONS</b>	<b>Dept:</b>	<b>TRAINING</b>
<b>Phone No.</b>		<b>Phone No.</b>	<b>[REDACTED]</b>
<b>Fax No.</b>	<b>(606) 767-2476</b>	<b>Fax No.</b>	<b>(305) 359-8196</b>

**SUBJECT: EMB-120 FLIGHT CREW AWARENESS SEMINAR**

## **SCHEDULE CHANGE**

Please be advised that the EMB-120 FLIGHT CREW AWARENESS SEMINAR previously scheduled for Thursday November 16th has been rescheduled to Tuesday November 14th at 9:00 AM.  
the address is:

Embraer Aircraft Corporation  
276 SW 34th St.  
Ft. Lauderdale FL 33315

Please make your plans accordingly.

Please feel free to contact me by phone at [REDACTED] if there are any questions or requests.

Sincerely,

[REDACTED]  
Mark Lowell  
Instructor Supervisor

-127-

The information contained in this facsimile message is privileged and confidential information intended for use of the addressee listed above. If you are neither the intended recipient nor the employee or the agent responsible for delivering this message to the intended recipient, you are hereby notified that any disclosure, copying, distribution, or the taking of any action in reliance on the contents of the telecopied information is strictly prohibited. If you received this telecopy in error, please immediately notify us by telephone at the above number to arrange for the return of the original document to us.

## **EMB-120 Flight Crew Awareness Seminar Aircraft Icing**

The purpose of the seminar is to discuss operation of the EMB-120 in icing conditions and as a result, to generate recommendations for a flight crew awareness program to be implemented by EMB-120 operators, and to recommend changes or additions to aircraft publications regarding operations in icing conditions.

The following is proposed as a draft list of topics to be discuss at a meeting of EMB-120 operators at Embraer Aircraft Corporation scheduled for 9AM Tuesday November 14th, 1995.

### **Aircraft Characteristics:**

- Aircraft flight characteristics in icing
- Ice recognition and monitoring
- Aircraft buffet characteristics in icing conditions / recognition of impending stall
- Autopilot characteristics in icing conditions
- Stall warning system characteristics
- Discussion of known icing incidents

### **Aircraft Procedures:**

- Autopilot modes of operation/procedures
- Holding in icing conditions
- Operation of deice/anti-ice systems
- Deicing systems failures and tests
- Approach and landing in icing conditions with and without deice system failures
- Deice system maintenance

### **FAA / ATC Topics:**

- Identification of icing conditions in weather reports and forecasts
- New FAA weather report formats
- Dispatch criteria based on known icing conditions
- Ground deicing and dispatch procedures in icing conditions
- Escape procedures for severe icing encounters
- ATC information and cooperation regarding icing conditions

**EMB-120 Flight Crew Awareness Seminar; Aircraft Icing**  
**Tuesday November 13th, 1995**

14

	Name (please print)	Title	Company	Phone	Fax
	Ken Mayfield	CHECK AIRMAN	FC GULF AIRLINES		904-741-9901
1	William Dudley	Sr Check Pilot	ASA		404-209-0162
2	DAN ENKE	Dir of FIT Stds	skywest		801-634-3705
3	Robert Melcher	Asst. Chief Inspector	Comair		407-851-1570
4	WAYNE A. WOLKE	PROGRAM MANAGER	Comair		606-767-2476
5	RICK ST. ONGE	DIR of OPS	Comair		606-767-2452
6	LANGHERNE BONIS		EAC		202-966-4165
7	MANUEL MONTEIRO	MGR. TECH. LIAIS	EAC		305-359-8173
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11-20-95 09:15PM FROM EMBRAER PTL TECH TO TEN NOV-95/MAD/IRG P000006

← EMBRAER AIRCRAFT CORPORATION

NEO

November 20, 1995

**TO:** All EMB-120 Operators, FAA, NTSB, RAA, Embraer

**From:** Mark Lowell, Instructor Supervisor

**Re:** Meeting Minutes; EMB-120 Flight Crew Awareness Seminar; Aircraft Icing

The attached document contains the meeting minutes from the EMB-120 Flight Crew Awareness Seminar; Aircraft Icing that was held on November 15, 1995.

A draft of the meeting minutes was circulated and reviewed by the participants. All comments and amendments were included and the final document is attached.

Though no formal schedule was determined, the committee tentatively agreed to a future meeting to review the test results from the tanker and subsequent aircraft test data. The future meeting would further amend this document to include the results of the tests.

  
Mark W. Lowell  
Embraer Aircraft Corporation

*2:00:00*

**TO: All EMB-120 Operators, FAA, NTSB, RAA, Embraer**

**From: Mark Lowell, Instructor Supervisor**

**RE: Meeting Minutes; EMB-120 Flight Crew Awareness Seminar; Aircraft Icing**

During the November 7th Washington D.C. operators meeting, it was recommended that EMB-120 operators meet with Embraer to discuss aircraft icing issues specific to the aircraft. As a result, a Flight Crew Awareness Seminar was convened at 9:30 AM on Tuesday November 15th in Ft. Lauderdale, Florida.

The attendees were as follows:

Ken Mayfield, Mesa Airgroup  
William Dudley, Atlantic Southeast Airlines  
Dan Ence, Skywest Airlines  
Robert Melcher, Comair Airlines  
Wayne Wolke, Comair Airlines  
Rick St. Onge, Comair Airlines  
Chuck Bundesen, Miami Flight Service  
Langhorn Bond, Embraer  
Manuel Monteiro, Embraer  
Mark Lowell, Embraer

Representatives from Great Lakes Aviation and Continental Express were unable to attend due to schedule conflicts but will be kept fully informed of meeting issues and recommendations.

The purpose of the seminar was.

To discuss operation of the EMB-120 in icing conditions.

To generate recommendations for a flight crew awareness program to be implemented by EMB-120 operators

To recommend changes or additions to aircraft publications regarding operations in icing conditions.

To identify any specific test points to be incorporated in the icing tanker tests to be conducted in the near future



In preparation for the seminar, the following list of discussion topics was distributed to the EMB-120 operators. This same list of topics was used during the seminar as an outline to structure the discussions.

**Aircraft Characteristics:**

- Aircraft flight characteristics in icing
- Ice recognition and monitoring
- Aircraft buffet characteristics in icing conditions / recognition of impending stall
- Autopilot characteristics in icing conditions
- Stall warning system characteristics
- Discussion of known icing incidents

**Aircraft Procedures:**

- Autopilot modes of operation/procedures
- Holding in icing conditions
- Operation of deice/anti-ice systems
- Deicing systems failures and tests
- Approach and landing in icing conditions with and without deice system failures
- Deice system maintenance

**FAA / ATC Topics:**

- Identification of icing conditions in weather reports and forecasts
- New FAA weather report formats
- Operations criteria based on known icing conditions
- Ground deicing and dispatch procedures in icing conditions
- Escape procedures for severe icing encounters
- ATC information and cooperation regarding icing conditions

During the initial portions of the seminar, Embraer brought the members up to date on the testing conducted with the artificial ice shapes and the current plans for inflight tanker tests

Discussions took place regarding all aspects of the listed topics. In addition, the MIA FSS specialist explained the types of reports and forecasts that would contain freezing rain or drizzle and explained the new weather reporting system to be implemented in July of next year

As a result of these discussions, the following conclusions and recommendations were agreed to by the committee.

### **Conclusions and Recommendations:**

With regard to aircraft characteristics, the operators indicated that their in-service experience has revealed no specific or unique problems associated with the operation of the EMB-120 in icing conditions. The aircraft has operated world wide for ten years with no reported icing related incidents attributed to the airframe when the aircraft was operated in accordance with the procedures contained in the approved aircraft flight manual.

Relative to the upcoming tanker tests, the committee recommends that the tests include identification of unique large droplet signatures in the form of visual cues to the crew that are readily visible from the cockpit. These signatures should be filmed or photographed for inclusion in training documents. If possible, also determine the best visual cues available to the crew to identify the first formation of any ice on the aircraft such as wiper blades.

Reference the Configuration Deviation List 57-20-1 Vortex Generators. The committee recommends that the flight test group consider the effects of missing vortex generators relative to ice shapes ahead of the ailerons and determine if testing in this area is warranted.

Reference the wing inspection lights MMEL item 33-47-1 first item, the committee recommends that the first item be amended as follows. Change the repair interval from category C to category B. Change the number required for dispatch from 0 to 1. Insert the word "One" before the word "May" in the accompanying text.

Reference the "icing incidents" cited by the FAA at the November 7th meeting, the committee recognized and discussed elements in these events. Some of these contained an apparent "lack of proper monitoring of ice formation", "probable failure to properly operate the leading edge deicing systems", "probable failure to recognize reduced stall margins with ice on the aircraft", "improper use of autopilot modes", "failure to maintain speed in a turn with the autopilot engaged".

The committee concluded that these elements constituted crew awareness and procedural issues. As such the committee recommends that Embraer produce a document in the form of an Operations Bulletin that addresses operation of the EMB-120 in icing conditions. This document would form the basis for operator crew awareness programs and would be distributed through current communication channels in place within each operators organizational structure.

The Operations Bulletin would contain information pertaining to:

- Identification of various ice types and unique signatures applicable to the EMB-120  
(data from the tanker tests to be included)
- decreased stall margins with ice on the aircraft
- specific temperature ranges and conditions conducive to ice formation
- recommendations for autopilot mode usage
- recommended speeds for all phases of flight in icing conditions
- recommendations for proper monitoring of ice formation
- recommendations for proper operation and testing of the deice systems
- stall warning system operation relative to operations in ice

In light of the fact that the FAA seems predisposed to place restrictions on flight operations in areas of SLD (Super cooled Large Droplets), the committee recommends that the FAA publish clear and unequivocal guidance as to what constitutes SLD conditions, freezing rain, and freezing drizzle, how these conditions can be clearly identified and distinguished by flight crews in flight and on the ground, and how SLD conditions will be identified in hourly reports, terminal and area forecasts, sigmets and other reports.

The committee also recommends that dispatch criteria for such conditions be clearly defined without ignoring that the aircraft currently meets all certification requirements for flight in icing conditions. Specifically, what criteria will the flight crews use to recognize that conditions exceed the current certification limits. In addition, the FAA should also publish clear and concise information detailing atmospheric conditions conducive to SLD formation such as temperature ranges and layer thickness and recommended procedures to leave SLD conditions based on this information.

In discussions of ice recognition at night, the committee agreed that recognition of clear ice conditions was the most difficult. The committee recommended that Embraer investigate low cost visual aids possibly in the form of high contrast markings that would aid in the identification clear ice and gauge the thickness of ice formation

Discussions took place relative to the adequacy of the ice related information, procedures, and tests contained in the aircraft flight manual. While the committee agreed the information in its current form is adequate, the committee recommends that a statement reading "Caution: Avoid prolonged operation in areas of freezing rain or drizzle" be added to page 4-39 of the flight manual. In addition, the committee recommended that notes regarding airspeed increases in icing conditions be added to the applicable abnormal procedures sections related to abnormal flap conditions for landing.

Discussion took place regarding the revision 39 amendment to the "Daily Checks" section of the flight manual which specifies 80% Nh for the functional check of the deice systems. This engine speed range is likely to impinge on the propeller speed range that causes the highest blade stress environment in quartering tailwind conditions. In addition, propeller thrust produced in the 80% Nh range could be potentially hazardous if this test is conducted on slippery surfaces such as ice or hard packed snow. The committee recommends that Embraer review the amended procedure in light of the aforementioned.

Discussion took place regarding the need for unusual attitude recovery training to be part of the operators simulator programs. Some operators have already implemented such plans. Unknown to the committee at the time was the September 20th Operations Bulletin, OB 120-002/95 entitled "UNUSUAL FLIGHT ATTITUDE - RECOGNITION AND RECOVERY". This document should be helpful in operator development of unusual attitude recovery simulator programs.

Agreed to by the committee,

EMB-120 Flight Crew Awareness Seminar; Aircraft Icing  
Ft. Lauderdale, Florida  
November 14, 1995

NATIONAL TRANSPORTATION SAFETY BOARD  
Office of Aviation Safety

Subject: Accident/Incident Investigation Support Request  
To: Federal Aviation Administration, Manager, Recommendation and Quality Assurance Division, AAI-200  
From: NTSB, Name & Office R.G. Rodriguez AS-10  
Request Number 98-017 Date 2/4/98

DETAILED DESCRIPTION OF SUPPORT REQUESTED

Request briefing on procedures/coordination between ACO & Ft Stds. in certification and continuing activity of foreign aircraft. This should provide insight into Embraer EMB-120, the Operations Bulletin issued by them in Apr/96, and incorporation of material into operating industry.

R.G. Rodriguez [REDACTED]  
NTSB CONTACT/TELEPHONE

[REDACTED]  
SUPERVISOR'S/MIC'S SIGNATURE

----- FOR FEDERAL AVIATION ADMINISTRATION USE -----

Date Received \_\_\_\_\_ AAI-200 Log Number \_\_\_\_\_

To: \_\_\_\_\_ Date forwarded: \_\_\_\_\_

From: Manager, Recommendation Quality Assurance Division, AAI-200

The above request has been received from the NTSB: Your support in providing the data not later than 10 working days or as soon as possible is appreciated. Please refer any questions on this matter to Ms. Theresa Payne at [REDACTED]

Date returned to AAI-200 \_\_\_\_\_

Received by \_\_\_\_\_ on \_\_\_\_\_ 199 \_\_\_\_\_

**Rodriguez Richard**

---

**From:** Bob Henley [REDACTED]  
**Sent:** Friday, February 27, 1998 10:12 AM  
**To:** Rodriguez Richard  
**Subject:** RE: NTSB INFO REQUEST 98-020

Rod:

The Aircraft Certification Service (AIR) and the Flight Standards Service (AFS) do not believe that a briefing concerning procedures/coordination between AIR and the AFS Aircraft Evaluation Groups (AEG) would be productive. They believe they have already responded to NTSB questions concerning AIR/AEG interface in their October 1, 1997, response to an August 20, 1997, NTSB information request on the same subject.

BH