EMBI20 RECURRENT GROUND

1996 CLASS SCHEDULE - CINCINNATI

DAY TWO

Introduction / Review — 0.3 Hrs

A review of any topical questions from Day One. An Overview of Day Two.

Scenario One: "Grand Rapids" — 1.5 Hrs

A comprehensive hypothetical trip from Grand Rapids to Cincinnati. Cold WX Operations. All aspects of the line flight will be reviewed. The Scenario will involve group activities as crewmembers. Knowledge of systems, FAR's, Ops Specs, Ops Manual, and general operating requirements will be addressed.

Current FAR 135 and forthcoming FAR 121 Rules will be discussed.

ATC Procedures / Navigation Topics / Airport Procedures — 1.0 Hrs

Approach procedures (ILS/ NP Approach / Circle Approach). Specific Airport Operations. LAHSO, Low visibility Taxi, Airport Markings.

Components and Systems — 1.5 Hrs

In-depth review of the Hydraulic, Landing Gear Systems, Navigation and Communication Equipment, Emergency Equipment and Systems, as well as Aircraft General Descriptions.

Scenario Two: "Naples" — 1.5 Hrs

A comprehensive hypothetical trip from Naples to Orlando. Warm WX operations. All aspects of the line flight will be reviewed. The Scenario will involve group activities as crewmembers. Knowledge of systems, FAR's, Ops Specs, Ops Manual, Severe Weather avoidance, and general operating requirements.

Current FAR 135 and forthcoming FAR 121 Rules will be discussed.

Adverse Weather, Windshear, and Aircraft Upset — 1.0 Hrs

An in-depth review of Takeoff and Landing Windshear and Microburst phenomena. Severe WX Interpretation. Unusual Attitudes and Aircraft Upset discussed.

Trivial Pursuit — 1.2 Hrs

A game of Trivial Pursuit with crewmember teams competing against each other.

Quiz and Review — 1.0 Hrs

A comprehensive quiz.

Components and Systems 1.5 Hrs

In-depth review of the Hydraulic and Landing Gear Systems, Navigation and Communication Equipment, Emergency Equipment and Systems, as well as Aircraft General Descriptions.

NOTE: The Instructor shall use relevant PTM excerpts as practical for a training guide. Have the Airmen follow the presentation in the appropriate handout.

Adverse Weather, Windshear, and Aircraft Upset 1.0 Hrs

An in-depth review of Takeoff and Landing Windshear and Microburst phenomena will be examined. Unusual Attitudes and aircraft Upset discussed. Severe WX interpretation.

NOTE: The Instructor will discuss per the Ops Manual the "tell-tale" signs of Windshear. The "Delta 191 Windshear" tape will be viewed with discussion about the various warnings the crew received during the windshear encounter. Upset shall be discussed as related to Wing Icing, Tail Plane "Stalls" and general upset causative factors (wake turbulence, 757 vortex phenomena, etc). Severe WX interpretations with use of overheads.

Trivial Pursuit 1.2 Hrs

A game of Trivial Pursuit with crewmember teams competing one against the other.

NOTE: The Instructor shall follow the "Rules" of the game. Should the game complete in less than the allotted time, the game may be played twice.

Quiz and Review 1.0 Hrs

A comprehensive quiz.

NOTE: The Instructor shall administer the exam individually and then have the students score their own exams. The Instructor shall record the score, sign the exam, and have the Airmen carry the exam to the simulator as admittance for the SVTP Simulator events.

COMPLETION STANDARDS

At the completion of the RECURRENT GROUND COURSE, each Airman will have demonstrated, through answering questions from the two Scenarios, an understanding of COMAIR's Ops Manual, Ops Specifications, CRM procedures (all crew members) and the aircraft FSM. By oral discussion, the students will satisfactorily cover the use of all emergency equipment, and will actually demonstrate the use of the equipment. The Airman will demonstrate the use of the Emergency Exits on the aircraft andproperprocedures for opening the exits. The Airman will complete the final exam with a score of at least 80%.

This certification does NOT include SLD

No aircraft is certified for flight in SLD!

2.1 American Eagle 4184 was probably operating in an environment containing SLD having a liquid water content as high a 0.7 grams per cubic meter at a temperature near freezing.

- Held with flaps extended and Auto pilot engaged.
- Unaware of the severity of the icing!

FAA testing uses a droplet size of 40 microns (One millionth of a meter) to determine the limit of ice protection.

NOTE: Droplets they were in were probable 10 times the size (400 microns) and creating 100 times the drag

NOTE: Freezing Rain may contain droplets at 4,000 microns and form at 0 degrees C to - 18 degrees C.

Freezing Drizzle Droplets may accumulate aft of the protected aircraft areas and can NOT be shed with boots!

NOTE: Some aircraft surfaces appear to be more adverse to stall angle than others and therefore more prone to Freezing Drizzle or SLD.

2.2 ROLL UPSET Phenomena -

- Ice forms more quickly near the wing tips than root.
- Ice extends along a greater percentage of the Chord Line.

NOTE: In propeller driven aircraft the airplane will continue to fly BUT roll control and stability could be partially or completely lost!

"Tip Stall" is not a traditional stall thus does not give pilots the traditional clues ESPECIALLY WITH THE AUTOPILOT "ON".

Roll Oscillations could be masking the need to reduce the angle of attack.

3.0 TAIL PLANE ICING

- Tail Plane can collect icing more quickly due to a smaller leading edge radius than the wing.
- Tail plane can have icing 3 to 6 times that of the wing.

NOTE: If a pilot waited to inflate the boots with 1/2 in ice on the wigs...you could have well over 1" on the tail.

3.1 Flaps and Tail Plane Icing:

With Flaps Extended - Tail plane icing accumulation effects will be more severe with the flaps extended.

Symptoms -

- Buffeting in the Yoke
- Aircraft "wants" to nose down!
- Reduction of loss of Elevator Effect

NOTE: May require extreme back pressure on yoke to recover from stall.

- Sudden "Nose Down" Pitch

4.0 PREVENTION

Present weather forecasting is not sophisticated enough to identify SLD

4.1 Indicators to Watch for :

- "0 degrees SAT to -18 degrees" SAT
- Ice formation on the deicing boots (especially Irregular or jagged)
- Ice formation on the Prop Spinner further back than normal
- Irregular shaped or granular shaped ice formations around the front window.
- Ice feathering or fingers on areas of the aircraft not usually covered by ice.
- Rain droplets you can "hear" on impact.
- Droplets "splashing or splattering" on impact.

4.2 What to do if these conditions are noted or encountered:

- Hand fly the airplane
- Change altitudes...climbing may be an option!

- If Roll Anomaly noted...Use whatever force it takes to overcome the roll.
- Reduce the angle of attack.
- Add power as necessary BUT be aware that high power may aggravate a tailstall!
- Consider extending FLAPS if speed permits.

NOTE: Do NOT retract flaps if they are already extended!

- Advise ATC (PIREP) and request altitude change.
- (Declare EMERGENCY if necessary!

4.3 With TAIL PLANE ICING

- Use whatever force is necessary to pull the yoke aft.
- If flaps are selected, retract to next LOWER setting increment.

During Landing:

- Fly with the Minimum Landing Flap setting!
- Use an Increased Refspeed (10 KIAS)
- Use Ice Protection to its Fullest Extent.

Determine the "Plan of Action"

SITUATION	RECOVERY
Speed Decreasing	INCREASE POWER
Speed Increasing?	REDUCE POWER
Bank Right?	ROLL LEFT
Bank Left?	ROLL RIGHT
Pitch Down?	SMOOTHLY RAISE THE PITCH
Pitch Up?	ROLL RIGHT OR LEFT 30° THEN PITCH DOWN (AVOID NEGATIVE G's)
Approaching Inverted Flight?	DO NOT RECOVER WITH PITCH! INSTEAD ROLL THE AIRPLANE AROUND TO ERECT FLIGHT

CONCLUSION:

Never, Never practice these maneuvers in the airplane! Only in the Simulator!

All Simulator Training (Initial, Upgrade, Transition) now includes this training.

Time permitting, during SVT Training, explore these Unusual Attitude Recovery techniques.