Aerospace

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November 27, 2014 (Rev. 1) Bombardier file: A10CE.35A255.19-11-13

Tom Jacky
Group Chairman
National Transportation Safety Board
490 L'Enfant Plaza SW
Washington, DC 20024
United States

Subject: ERA14FA045 Wreckage Examination Field Notes – Lear 35A (S/N 255) XA-USD at Atlanta Air Recovery & Storage Yard Griffin, Georgia, 22-23 July 2014

Reference: A) ERA14FA045 NTSB Wreckage Examination Field Notes, Section D.4
B) AFM Supplement WI072, FAA Approved 12-10-86
C) Flight Safety International (FSI) Training Syllabus (Initial and Recurrent)
D) Hypothetical Scenarios and Corrective Action Matrix (Quick Reference)

Dear Mr. Jacky,

Bombardier appreciates the opportunity to provide additional comments with regard to discussions on hypothetical failures scenarios that may introduce an uncommanded thrust reverser deployment during flight (Ref.: A). During certification, it was considered that none of the failure modes would compromise the safety of the passengers or flight crew and the aircraft would continue safe flight.

The before takeoff system check out procedures, as defined in the Lear 35 flight manual (Ref.: B), will significantly reduce the probability of actual in use thrust reverser failures. Bombardier Learjet does not provide training to Operators but initial and recurrent training, including flight simulator for the Lear 35, is available from a third party training provider such as Flight Safety International (FSI) and is considered part of the operational safety of the aircraft. Bombardier is advised that training for a Lear 35 aircraft equipped with AERONCA type thrust reversers was available at the FSI's learning centers in Atlanta, Georgia and Tucson, Arizona since approximately 1983. Bombardier has attached an example

of the training syllabus from FSI (Ref.: C).The additional comments provided below addresses Reference A and is for a Lear 35 aircraft equipped with AERONCA thrust reversers (TR) configured post AMK 81-6 [Introduction of Door Position Indicator (DPI) switches to the TR logic] and assumes two qualified pilots trained to recognize and manage potential in-flight or on ground thrust reverser abnormal conditions:

1. Extract from ERA14FA045 Wreckage Examination Field Notes, section D.4. "Discussion of Thrust Reverser In-Flight Deployment Scenarios" (Ref.: A)

The previously-encountered scenario (by Learjet): Unknown condition(s) cause mechanical degrading, for unknown reasons, to the blocker door mechanism. This allows the reverser blocker door edge interference with the outer fan duct aft edge; the blocker door pushes or otherwise damages the outer fan duct. The duct damage prevents the blocker door from completely retracting to the stowed and locked position to extinguish the flight deck UNLOCK lamp. During the next (or subsequent) flight, aerodynamic forces push the reverser aft and potentially partially deploy.

However, the expectation is that, when the flightcrew properly performs the mandatory preflight inspection of the aft engine area, the damage (as described above) to the outer duct fan would be obvious or observable to the eye.

Bombardier comments:

An anomaly on either thrust reverser system after landing where the thrust reverser is completely stowed but the blocker door edge interferes with the outer fan duct aft edge and prevents the blocker door from completely stowing is indicated to the flight crew by:

1. Pre-Flight Inspection:
   a) AFM Procedure: The AFM has a procedure requires a visual inspection of the thrust reverser system be carried out by the pilot at the pre-flight inspection walk around and also to ensure that the blocker doors are completely stowed (see Ref.: B, page 5).
   b) Training: Training is available to the pilot (see Ref. C).

2. Taxi:
   a) AFM Procedure: During taxi, the thrust reversers and its associated warning system is checked by cycling and if the blocker doors are not properly stowed, a flashing UNLOCK light is annunciated. In this condition, flight is prohibited and maintenance is required prior to the next flight (Ref.: B, page 3, 5)
   b) Training: Training is available to the pilot (see Ref.: C).

2. Extract from "ERA14FA045 Wreckage Examination Field Notes, section D.4. "Discussion of Thrust Reverser In-Flight Deployment Scenarios" (Ref.: A)

An erroneous electrical system signal that causes the thrust reverser to unlock. However, given the "fail safe" design of the electrical system, such a failure scenario would most likely need the erroneous signal to be downstream of the latching mechanism.

Bombardier comments:

An anomaly on either thrust reverser system where an erroneous electrical system causes the complete or partial deployment of one thrust reverser in flight is indicated to the flight crew by:

1. Takeoff Below V_1 Speed:	a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 7). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3). b) Training: Training is available to the pilot (see Ref.: C).
2. Takeoff Above V_1 Speed:	a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 7). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3). b) Training: Training is available to the pilot (see Ref.: C).
3. In-Flight:	a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 8). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3). b) Training: Training is available to the pilot (see Ref.: C).

3. Extract from "ERA14FA045 Wreckage Examination Field Notes, section D.4. "Discussion of Thrust Reverser In-Flight Deployment Scenarios" (Ref.: A)

A large, external force to pull the thrust reverser blocker door racks away from the locked latches.

Bombardier comments:

An anomaly on either thrust reverser system where an external force pulls the thrust reverser blocker door racks away from the locked latches in flight is indicated to the flight crew by:

1. Takeoff Below V_1 Speed:
   a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 7). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3).
   b) Training: Training is available to the pilot (see Ref.: C).

2. Takeoff Above V_1 Speed:
   a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 7). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3).
   b) Training: Training is available to the pilot (see Ref.: C).

3. In-Flight:
   a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 8). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3).
   b) Training: Training is available to the pilot (see Ref.: C).

4. Extract from "ERA14FA045 Wreckage Examination Field Notes, section D.4. "Discussion of Thrust Reverser In-Flight Deployment Scenarios" (Ref.: A)

Foreign object debris (FOD) that does not enter the engine, but goes through the engine bypass section and then hits the blocker doors, which causes the doors to unlock and move aft.

Bombardier comments:

An anomaly where foreign object debris (FOD) goes through the engine bypass section and then hits the blocker doors, which causes the doors to unlock and move aft during flight is indicated to the flight crew by:

1. Takeoff Below V_1 Speed:
   a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or

completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 7). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3).

b) Training: Training is available to the pilot (see Ref.: C).

2. `Takeoff Above V_1 Speed:

a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 7). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3).

b) Training: Training is available to the pilot (see Ref.: C).

3. In-Flight:

a) AFM Procedure: The fault detection logic will cause the UNLOCK light to annunciate regardless if the TR is partially or completely deployed. The AFM has a procedure for this scenario (see Ref.: B, page 8). The UNLOCK light for each respective TR is located on the glare shield directly in front of each pilot (See Ref.: B, page 3).

b) Training: Training is available to the pilot (see Ref.: C).

[redacted]

Jimmy Avgoustis
Sr. Air Safety Investigator / Party Coordinator
Bombardier – Learjet

Reference A

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

Wreckage Examination Field Notes

DRAFT - August 25, 2014

A. ACCIDENT ERA14FA045

Location:	Atlantic Ocean, near Fort Lauderdale, Florida
Date:	November 19, 2013
Time:	1956 Eastern Standard Time
Aircraft:	Learjet 35, XA-USD

B. GROUP

The following members attended this group activity:

Chairman:	Tom Jacky National Transportation Safety Board Washington, D.C.
Member:	Darrel Welch Bombardier Seminole, Florida
Member:	Garry Spears Bombardier Wichita, Kansas
Member:	Fred Ford Bombardier Wichita, Kansas
Member:	Kirc Harris Bombardier Wichita, Kansas
Member:	Jay Eller Honeywell Phoenix, Arizona

C. SUMMARY

On November 19, 2013, at 1956 eastern standard time, a Learjet 35, Mexican registration XA-USD, operated by Aero JL SA de CV, was destroyed when it collided with the Atlantic Ocean after takeoff from Fort Lauderdale/Hollywood International Airport (FLL), Fort Lauderdale, Florida. The commercial pilot and a physician on board were lost and presumed fatally injured. The copilot and a flight nurse were fatally injured. Night visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the positioning flight from FLL to Cozumel, Mexico.

The airplane had just completed an air ambulance flight for Air Evac International from San Jose, Costa Rica to FLL, and was repositioning back to its base in Cozumel, Mexico.

The group met at the Atlanta Air Salvage facility in Griffin, Georgia on July 23, 2014 to examine and document portions of the recovered wreckage. The examination included the thrust reversers, flight deck instrumentation, and wreckage recovered since the initial examination at Atlanta Air Salvage in January, 2014.

For the thrust reversers, the impact damage and immersion in water prevented checks of electrical continuity, pneumatic continuity, and mechanical continuity. For all the examined wreckage, including the thrust reversers, all fracture surfaces examined indicated overstress or overload.

D. DETAILS OF INVESTIGATION

The examined components were documented as follows:

1. Re-Examination of Thrust Reversers

The left and right thrust reversers, previously examined during the January 2014 examination, were removed from secured storage at Atlanta Air Salvage. The components were laid out in the Atlanta Air Salvage warehouse for examination by the group members.

An additional Learjet 35 thrust reverser, owned by Atlanta Air Salvage and not related to the accident or accident airplane, was provided to the group as a demonstration model.

Finally, the items removed from the wreckage, examined at the NTSB Materials Laboratory in Washington D.C. in February, 2014, and subsequently returned to Atlanta Air Salvage, were removed from secured storage, removed from their shipping box, and made available to the group.

The group held a discussion of the data recovered from the Digital Electronic Engine Control (DEEC) units. The Honeywell group member indicated that the thrust reverser deployment parameter is calculated and not directly measured.

Left Hand Thrust Reverser

Based on the found position of the blocker door, still attached to the reverser, the left hand thrust reverser was noted in a deployed (but not fully deployed) position.

The aft-half of the outer fan duct was missing. The area of the outer fan duct where the blocker doors slide behind the duct was missing from all around the perimeter of the duct.

Each blocker door has 2 long linkages connected in the approximate center of the door. Each of the 4 linkages on the left thrust reverser was identified. Three of the 4 linkages were noted as bent. The one straight linkage was found disconnected from the (upper?) blocker door.

The rotating flexi-cables each have a "hump" or bend in them; they are not straight. The bend is visible in both the outer, braided metallic sheaths and the inner cables.

The group discussed the found position of the pneumatic latches (see previous field notes); the DPI switches that illuminate the "unlock" flight deck lamp. The inner pneumatic latch on the left thrust reverser was broken, the outer latch was touching, but on top of the retaining lever, in a "partial unlock" position.

Right Hand Thrust Reverser

In general, the examination of the reverser confirmed the observations from the previous examination. The thrust reverser was connected to the engine as the entire structure was laid on the floor inverted; looking at the engine exhaust forward, the outboard side of the engine was on the left-hand side.

The outer skin of the powerplant nacelle exhibited crushing similar to hydraulic deformation.

Looking inside the exhaust of the right engine, the outer fan duct (outer seal assembly part number: 45-1200-71; closure fairing part number: 45-12574-12 {outboard}, {-16 inboard}) was deformed in 2 areas at the aft edge of the duct. A V-shaped bend was noted at the ~5 o'clock position (as viewed as the engine lay inverted on the floor). Since the engine was placed on the floor inverted, the actual position of the V-shaped bend is about 10:30 or 11 o'clock position. Another inward (towards the center of the duct) deformation of the duct was noted at about the 3:30 – 4:30 o'clock position. The outer thrust reverser structure was also deformed in the same area and manner at this position.

The panel with access for the inboard side thrust reverser latches (right-hand side, as viewed) was already removed. The latches were noted as separated (not touching each other). The beam; the locking lever was noted not in the beam detent.

Attempts to remove the outboard side latch access panel were unsuccessful. Atlanta Air Salvage was tasked to remove the panel, take photographs of the latches, and forward to the NTSB via email.

Based on the as-found position of the blocker doors, the right-hand thrust reverser appeared to be in a stowed position. The blocker doors were stowed with portion of the door behind the outer

fan duct assembly. Where accessible, by either visual examination or by touch, the rubber seal on the outer circumference of the outer fan duct was identified. The rubber seal appeared intact.

The Atlanta Air Salvage exemplar thrust reverser was used to demonstrate the movement of the pneumatic latches during the unlock/deploy and the stow/lock operations; the group took videos of the movements. The thrust reverser was operated by rotating the rotational cables with electric drills. In addition, with the thrust reverser deployed and the pneumatic latch held by the other latch, the 2 latch arms could be manually separated by hand (finger); the consensus of the group was that it took "some effort" to separate. Bombardier indicated that, if one of the 2 latches is not in the "locked" configuration, the "unlock" light in the flight deck would remain illuminated.

2. Examination of Wreckage Recovered Since January 2014 Examination

The wreckage recovered and moved to Atlanta Air Salvage since the January 2014 examination was examined by the group. In general, all of these pieces of wreckage were coated with dried and/or organic materials indicative of immersion in salt water.

The examined pieces were identified from the airplane's elevator, aileron, fuel system, and skin. No additional airplane powerplant or thrust reverser system components were noted. Two items were determined to be medical devices and not part of the airplane.

Both ailerons were identified in the recovered wreckage. The left aileron was fractured longitudinally (forward-aft) but the trim tab and balance weight were still attached. The trim tab was faired with the adjacent aileron structure. Both ailerons show crushing or impact damage.

Pieces of the wingtip fuel tank were identified by the coating noted on the inside of the pieces.

A piece of the right hand elevator was identified.

A segment of the outboard, right wing was identified. About 4 feet of wing segment was identified. The outer, wing tip tank portion of the segment was missing.

The emergency access hatch was identified. One latch was noted in the closed position and the other latch in the open position.

3. Examination of Flight Deck Instrumentation

The flight deck instrumentation, reviewed during the first wreckage examination effort, was re-examined to identify the DEEC computer flight deck light indicator on the forward panel. The recovered panels did not include the DEEC computer light.

[redacted]

At the conclusion of the examination, Atlanta Air Salvage returned all the wreckage to secured storage.

E. Requests to Parties and Possible Future Activities

1. Bombardier to identify a document for Failure Modes and Effects Analysis (FMEA) for the thrust reverser STC or risk analysis or safety study to determine the STC on the thrust reverser is 10^{-9}.

2. Atlanta Air Salvage to remove panel on outboard side of right thrust reverser, take photographs of the pneumatic reverser lock latches, and email to NTSB **(completed).**

3. Bombardier to confirm the color of the DEEC computer light and the thrust reverser "unlock" light.

Tom Jacky
Aerospace Engineer

Reference B

AERONCA THRUST REVERSERS

AFMS: W1072

Models: 35/36
35A/36A
(See Notes)

When Aeronca Thrust Reversers are installed on Gates Learjet 35A/36A serial numbers 35-439 & subsequent, 36-051 & subsequent, and prior 35/36 and 35A/36A aircraft incorporating AMK 81-6, this supplement must be inserted in the SUPPLEMENTS section of the applicable FAA Approved Airplane Flight Manual.

NOTE

- This AFM Supplement supersedes and replaces Aeronca Thrust Reverser AFM Supplements AFMS: W1005 (for 35A/36A aircraft) and AFMS: W1006 (for 35/36 aircraft). The information formerly in the superseded supplements has been included, with revision, in this supplement. This AFM supplement must be used when the Blocker Door Position Indicator is installed.
- This AFM Supplement does not supersede Aeronca Thrust Reverser AFM Supplements dated 3-26-81. AFM Supplements dated 3-26-81 are applicable to 35/36 and 35A/36A aircraft without the Blocker Door Position Indicator.

The information contained herein supplements the information in the applicable basic Airplane Flight Manual. For limitations, operating procedures, and performance information not contained in this supplement, consult the applicable basic Airplane Flight Manual.

Other Gates Learjet publications and documents referenced in this Supplement are as follows:

AMK 79-2 — Rewiring of Bleed Air System on Models 35/36 Equipped with Thrust Reversers.

AMK 81-6 — Installation of Thrust Reverser Blocker Door Position Indicator.

FAA APPROVED [redacted] DATE 12/10/86

for MANAGER, WICHITA AIRCRAFT CERTIFICATION OFFICE
FAA CENTRAL REGION
WICHITA, KANSAS

LIST OF EFFECTIVE PAGES

Use this page to determine the current status of the Aeronca Thrust Reverser Supplement. Pages affected by the current revision are indicated by an asterisk (*) immediately preceding the page number.

Dates of issue for Original and Changed pages are:

Original .....O..... 10 Dec 1986
Change ..... 1..... 13 Oct 1987

Page	Change	Aircraft Affected
Title	O	All
*LOEP	1	All
TOC	O	All
1	O	All
2	O	All
* 3	1	All
4	O	All
* 5	1	All
6	O	All
7	O	All
8	O	All
* 9	1	All
10	O	All
11	O	All
12	O	All
13	O	All
14	O	35/36 with Century III wing & 35A/36A
14.1	O	35/36 without Century III wing
15	O	35/36 with Century III wing & 35A/36A
15.1	O	35/36 without Century III wing

Only those pages applicable to your aircraft need be retained in this Supplement.

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

FAA APPROVED [redacted] DATE 10/13/87

for MANAGER, WICHITA AIRCRAFT CERTIFICATION OFFICE
FAA CENTRAL REGION
WICHITA, KANSAS

TABLE OF CONTENTS

*Only those tables applicable to your aircraft need be retained in this Supplement.

SECTION I – LIMITATIONS

- Operational procedures in this Supplement are mandatory.
- Thrust reverser system use is limited to ground operations on paved surfaces and attempts to deploy shall not be made in flight.
- Thrust reversers must not be used to back up the aircraft.
- Thrust reverser circuit breakers must not be intentionally pulled while in flight except as specified in Emergency and/or Abnormal Procedures.
- Do not deploy drag chute while using reverse thrust.
- Maximum reverse thrust usable at 60 KIAS or above is limited to Fan Speed (N_1) equal to takeoff power setting. At 60 KIAS smoothly and deliberately return the Thrust Reverser Levers to the Reverse Idle/Deploy position.
- *On aircraft 35-001 thru 35-153 and 36-001 thru 36-038 when P/N 2101142-1 fuel computers are installed,* the minimum Turbine Speed (N_2) above 40,000 feet is 86% rpm. *Otherwise,* Turbine Speed (N_2) will be limited by the fuel computer (Turbine Speed [N_2] may be slightly less than 86%).

SECTION II – NORMAL PROCEDURES

GENERAL

DEPLOY

In order to deploy thrust reversers, the following prerequisite conditions must be satisfied:

- T/R POSN IND, T/R EMER STOW and T/R CONT circuit breakers — In.
- Aircraft on the ground (squat switches in ground mode).
- NORM-EMER STOW switch — NORM.
  Both main Thrust Levers — IDLE.

When the above conditions are satisfied and both Thrust Reverser Levers are pulled to the Reverse Idle/Deploy position, the UNLOCK lights will illuminate and remain illuminated while the reversers are translating. When a reverser reaches the fully deployed position, the corresponding UNLOCK light will go out and the DEPLOY light will illuminate. When both thrust reversers are fully deployed, the throttle lock will release.

In order to increase reverse thrust above approximately 55% to 60% Fan Speed (N_1), both thrust reversers must be fully deployed. One-engine reverse thrust is permitted; however, due to the throttle lock, the reverse thrust available will be limited as noted.

NORMAL STOW

After a normal deployment and use of reverse thrust, normal stow is accomplished by first returning the Thrust Reverser Levers to the Reverse Idle/Deploy position and then pushing the Thrust Reverser Levers to the Stow position. When stow is commanded, the DEPLOY lights will go out and the UNLOCK lights will illuminate. The UNLOCK light will remain illuminated while the corresponding reverser is translating. When the reverser is fully stowed, the UNLOCK light will go out.

EMER STOW

EMER STOW is selected by setting the NORM-EMER STOW switch to EMER STOW. When EMER STOW is selected the EMER STOW light will illuminate and remain illuminated as long as the NORM-EMER STOW switch is in the EMER STOW position. With the reversers fully deployed (DEPLOY lights illuminated), the light sequence during the emergency stow cycle will be the same as the normal stow cycle.

UNLOCK LIGHTS

Steady illumination of an UNLOCK light indicates that the corresponding thrust reverser is not in the fully stowed or fully deployed position.

CAUTION

Attempting to recycle the thrust reversers after a stow to extinguish the UNLOCK light may damage the thrust reverser if the blocker doors are not properly stowed.

A flashing UNLOCK light after stow indicates that the corresponding thrust reverser has not properly stowed and damage to the system has occurred.

WARNING

In the event of a flashing UNLOCK light after stow, shut down engine and repair thrust reverser before takeoff. Do not recycle thrust reversers.

DEPLOY LIGHTS

Illumination of a DEPLOY light indicates that the corresponding thrust reverser is fully deployed.

NOTE

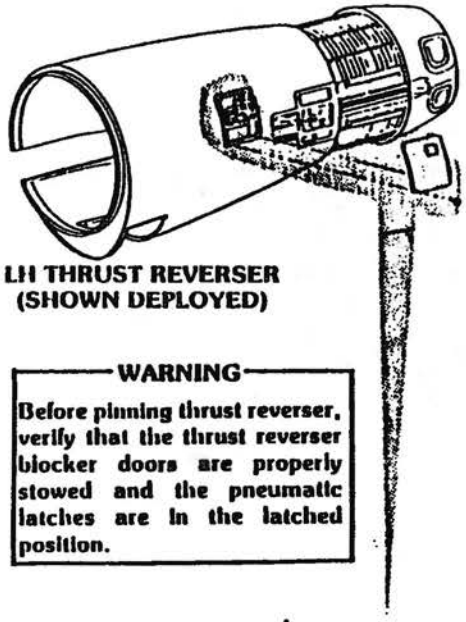
Should an UNLOCK light remain illuminated after the corresponding DEPLOY light illuminates, the cause is a blocker door position indicating system malfunction. Reverse thrust operation is permitted. Repair or pin affected thrust reverser prior to next takeoff.

BLEED VALVE LIGHTS

Illumination of a BLEED VALVE light indicates that the circuit which protects against an uncommanded stow of the corresponding thrust reverser has been actuated. The BLEED VALVE light illuminates when the corresponding thrust reverser is deployed and reverse thrust is increased above approximately 55% Fan Speed (N_1). The BLEED VALVE light will remain illuminated until a stow command to the corresponding thrust reverser is initiated.

EMER STOW LIGHT

Illumination of the EMER STOW light indicates that EMER STOW has been selected. The EMER STOW light will remain illuminated as long as the NORM-EMER STOW switch is in the EMER STOW position.



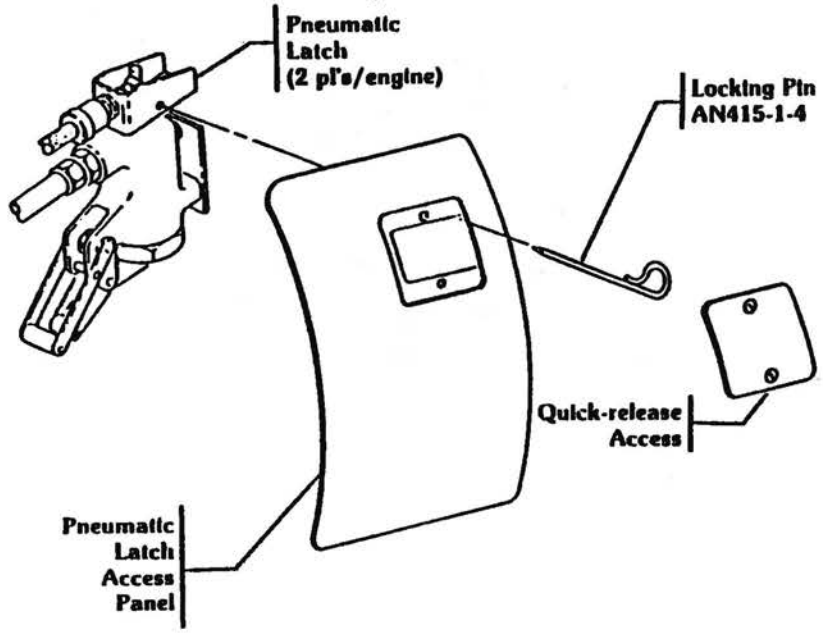
LH THRUST REVERSER
(SHOWN DEPLOYED)

WARNING

Before pinning thrust reverser, verify that the thrust reverser blocker doors are properly stowed and the pneumatic latches are in the latched position.

TO PIN THRUST REVERSERS:

1. Slow thrust reversers.
2. Pull circuit breakers.
   - •T/R POSN IND
   - •T/R EMER STOW
   - •T/R CONT
3. Remove access panels. Panels are above latches on inboard and outboard side of each engine. Remove entire panel or quick-release access.
4. Insert locking pins through latches.
5. Reinstall access panels.
6. Install "THRUST REVERSERS INOPERATIVE" placard on glareshield or control panel.



Thrust Reverser Pinning Provisions
Figure 1

EXTERIOR INSPECTION

►Both Thrust Reversers — Check condition and that upper and lower blocker doors are completely stowed.

TAXI — Thrust Reverser Operational Check

Should the thrust reversers fail any portion of the following check, both thrust reversers must be pinned or the malfunction corrected before flight.

WARNING If an UNLOCK light flashes at any time during the following check, shut down engine and repair thrust reverser before takeoff. Do not recycle thrust reversers in an attempt to extinguish UNLOCK light.

NOTE It is recommended that the aircraft be headed into the wind during static thrust reverser ground operational check. Keep thrust reverser deployed time to a minimum to prevent possible engine reingestion of exhaust gases.

1. T/R POSN IND, T/R EMER STOW, and T/R CONT Circuit Breakers — In.
2. Thrust Reverser Position Indicator Lights — Out.
3. NORM-EMER STOW Switch — NORM.
4. Thrust Levers — IDLE.
5. Thrust Reverser Levers — Pull both levers to Reverse Idle/Deploy position. Check for proper light sequence and that throttle lock releases when DEPLOY lights illuminate.
6. NORM-EMER STOW Switch — EMER STOW. Check for proper light sequence and that EMER STOW light illuminates.
7. Thrust Reverser Levers — Push to stow position.
8. NORM-EMER STOW Switch — NORM. EMER STOW light shall go out.
9. Thrust Reverser Levers — Pull to Reverse Idle/Deploy position. Check for proper light sequence.
10. Thrust Reverser Levers — Push to stow position. Check for proper light sequence.
11. BLEED VALVE Lights — Out.

APPROACH

1. Thrust Reverser Position Indicator Lights — Check, out.
2. TEST Button — Depress. Both BLEED VALVE lights shall illuminate, and both UNLOCK lights shall flash (after approximately two seconds).

AFTER LANDING

1. With nose wheel on runway, pull both Thrust Reverser Levers to Reverse Idle/Deploy position.
2. When DEPLOY lights illuminate, smoothly pull Thrust Reverse. Levers to desired reverse thrust.

When landing on snow covered runways, apply reverse thrust with caution as visibility may be impaired.

- If UNLOCK lights do not go out when DEPLOY lights illuminate, reverse thrust operation is permitted. Repair or pin affected thrust reverser prior to next takeoff.
- In the event of an assymmetrical thrust condition, directional control can be maintained by using rudder, brakes, nose wheel steering, as well as reverse thrust manipulation.

3. At 60 KIAS, smoothly and deliberately return the Thrust Reverser Levers to the Reverse Idle/Deploy position.

If full reverse power is maintained below 60 KIAS, reingestion of exhaust gases in the engine may occur.

4. At approximately reverse idle Fan Speed (N_1), Thrust Reverser Levers — Stow position.

If thrust reverser does not stow properly, do not attempt to re-cycle thrust reverser. Refer to FAILURE TO STOW AFTER LANDING procedure in Abnormal Procedures.

Main thrust levers cannot be moved to the fuel CUT-OFF position until thrust reverser levers are returned to the stow position.

5. Thrust Reverser Position Lights — Out.

Do not advance power above IDLE until the DEPLOY and UNLOCK lights are out.

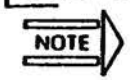
SECTION III – EMERGENCY PROCEDURES

INADVERTENT DEPLOYMENT DURING TAKEOFF

An inadvertent thrust reverser deployment during takeoff will be indicated by illumination of the affected thrust reverser UNLOCK and/or DEPLOY lights.

BELOW V_1 SPEED

1. Perform ABORTED TAKEOFF procedure, Section III of basic AFM.



Directional control will be improved with both thrust reversers deployed.

ABOVE V_1 SPEED

1. Rudder and Ailerons — As required for directional control.
2. Affected Engine Thrust Lever — IDLE.
3. NORM-EMER STOW Switch — EMER STOW.
4. Accelerate to V_R.

Directional control is improved if the nose wheel is kept on the runway until V_R.

5. Rotate at V_R; climb at V_2.
6. GEAR-UP, when positive rate of climb is established.
7. When clear of obstacles, accelerate to V_2 + 30 and retract flaps.
8. If UNLOCK or DEPLOY lights do not go out, Thrust Lever (affected engine) — CUTOFF.

Lateral control is improved with tip tanks empty. If time permits, it is recommended that tip tank fuel be jettisoned.

9. FUEL JTSN Switch — ON (lights on); Off prior to touchdown. Time to reduce aircraft weight from maximum takeoff weight to maximum landing weight is approximately 40 minutes. Time to jettison fuel from tip tanks is approximately 5 minutes.
10. Refer to ENGINE SHUTDOWN IN FLIGHT procedure, Section III of basic AFM.

SECTION IV – ABNORMAL PROCEDURES

INADVERTENT DEPLOYMENT IN FLIGHT

An inadvertent thrust reverser deployment in flight will be indicated by il lumination of the affected thrust reverser UNLOCK and/or DEPLOY lights.

1. Maintain directional control with rudder and aileron.
2. Affected Engine Thrust Lever – IDLE.
3. Airspeed – Below 200 KIAS.
4. NORM-EMER STOW Switch – EMER STOW.
5. Affected Engine BLEED AIR Switch – OFF.

If UNLOCK or DEPLOY lights do not go out:

6. Shut down affected engine. Refer to ENGINE SHUTDOWN IN FLIGHT procedure, Section III of basic AFM.
7. Fly a single-engine approach and landing per the SINGLE-ENGINE LANDING procedure, Section IV of basic AFM.

UNLOCK LIGHT IN FLIGHT (Thrust Reversers Not Deployed)

1. Affected Engine Thrust Lever – IDLE.
2. Airspeed – Below 200 KIAS.
3. NORM-EMER STOW Switch – EMER STOW.
4. Affected Engine BLEED AIR Switch – OFF.

- If UNLOCK light goes out:
  a. NORM-EMER STOW Switch – NORMAL.
  b. Affected Engine BLEED AIR Switch – On.
  c. Affected Engine Thrust Lever – As required.

- If UNLOCK light does not go out:
  a. NORM-EMER STOW Switch – EMER STOW.
  b. Affected Engine BLEED AIR Switch – On.
  c. Affected Engine Thrust Lever – As required.
  d. *On aircraft 35-002 thru 35-232 and aircraft 36-002 thru 36-044 not incorporating AMK 79-2* – Avoid icing conditions. If icing conditions are encountered, T/R POSN IND circuit breaker (pilot's ess bus) – Pull.

UNLOCK LIGHT AFTER NORMAL DEPLOY

If, during a landing, the UNLOCK lights do not go out when the DEPLOY lights illuminate, reverse thrust operation is permitted. Repair or pin affected thrust reverser prior to next takeoff.

FAILURE TO STOW AFTER LANDING

A failure to stow after a normal landing will be indicated by illumination of the affected thrust reverser UNLOCK and/or DEPLOY lights.

If DEPLOY and BLEED VALVE lights remain illuminated:

1. NORM-EMER STOW Switch — EMER STOW.
2. If Reverser does not stow, shut down affected engine.

If DEPLOY light remains illuminated:

1. Affected Engine Main Thrust Lever — Check, IDLE.
2. NORM-EMER STOW Switch — EMER STOW.

If UNLOCK light remains illuminated:

1. Shut down affected engine.

CAUTION

Do not attempt to recycle the thrust reverser. The respective blocker doors may not be properly stowed. The thrust reverser must be repaired or pinned prior to takeoff.

NOTE

If the UNLOCK light is illuminated steady, recycling the thrust reverser to extinguish the light may damage the thrust reverser if the blocker doors are not properly stowed. If the UNLOCK light is flashing, damage has occurred.

SECTION V – PERFORMANCE

The performance of this airplane equipped with Aeronca Thrust Reversers is the equivalent to the performance shown in the basic FAA Approved Airplane Flight Manual. However, the power setting charts in this Supplement are to be used in lieu of the power setting charts in the basic Airplane Flight Manual.

NOTE

This AFM Supplement contains Maximum Continuous Thrust tables for 35A/36A aircraft and 35/36 aircraft with the Century III wing and Maximum Continuous Thrust tables for 35/36 aircraft with the standard wing. Only those tables applicable to your aircraft need be retained in this Supplement.

EFFECTIVITY

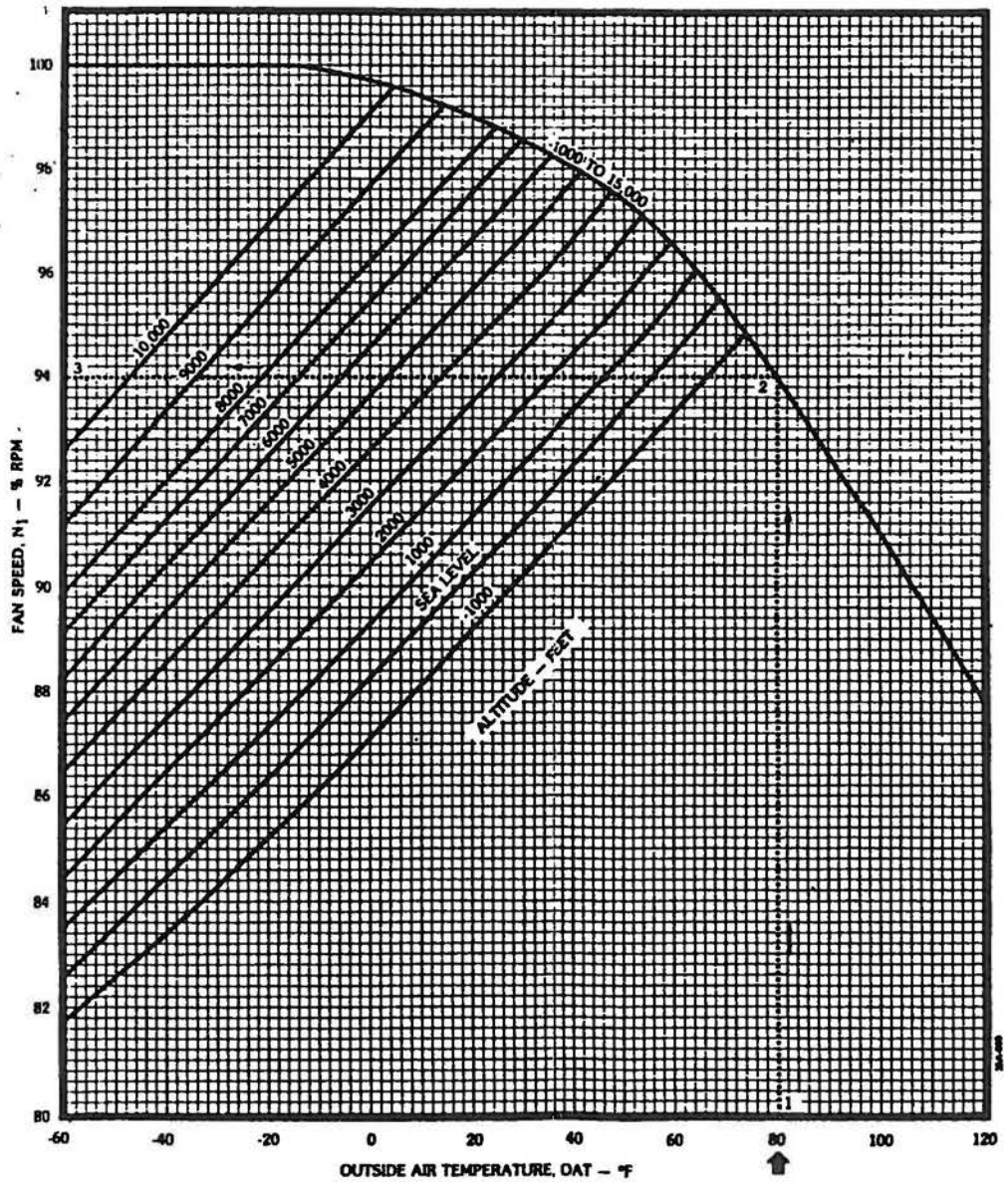
All

TAKEOFF POWER SETTING
ANTI-ICE – OFF

AERONCA THRUST REVERSER NOZZLE

EXAMPLE:

. Temperature ..... 80°F
2. Altitude ..... 6000 FT
3. Takeoff Power Setting ..... 94.0% N_1



EFFECTIVITY
All

TAKEOFF POWER SETTING
NACELLE HEAT ONLY
AERONCA THRUST REVERSER NOZZLE

EXAMPLE:

1. Temperature ..... (minus) -10°F
2. Altitude ..... 5000 FT
3. Takeoff Power Setting ..... 92.4% N_1

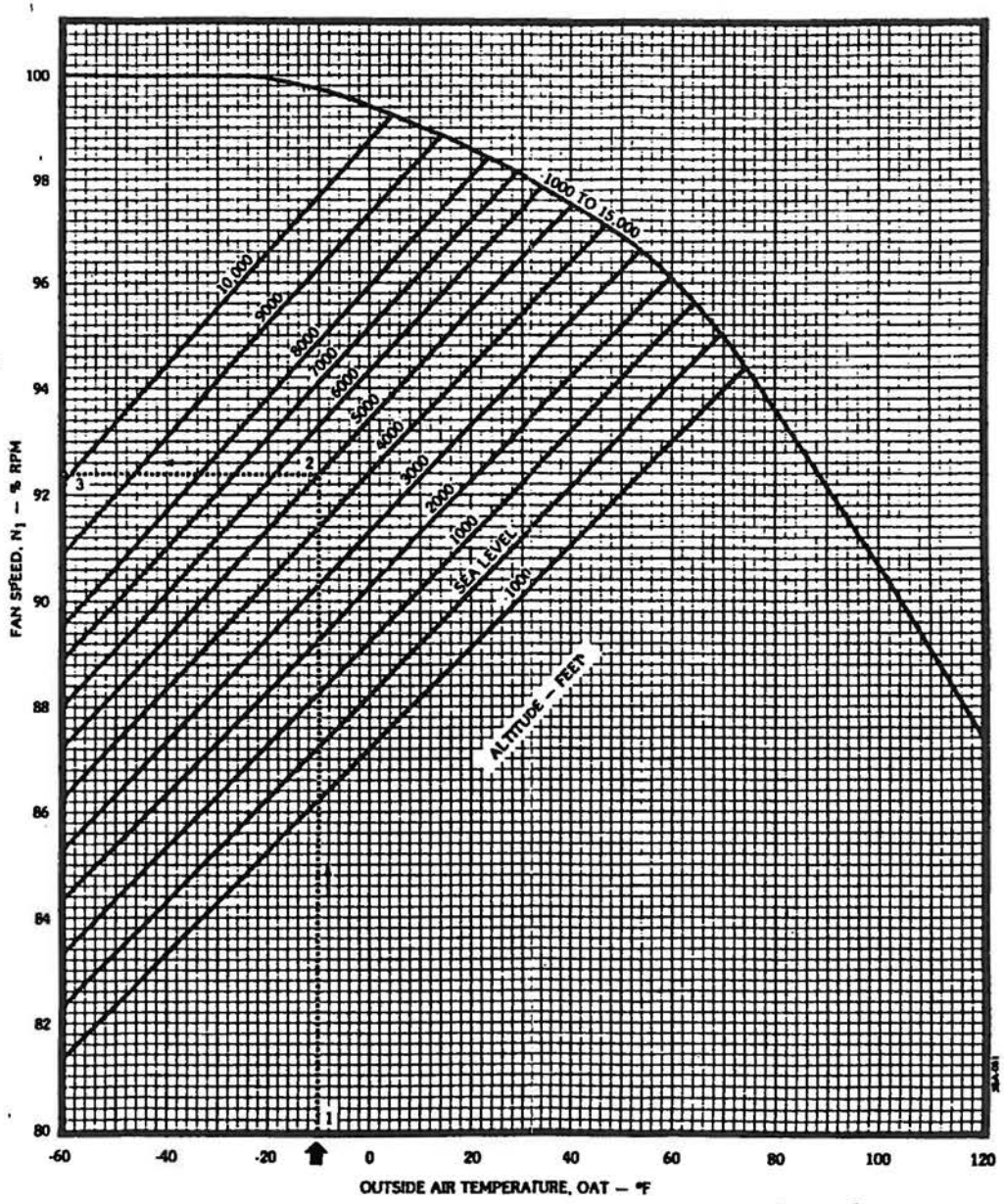


figure 3

EFFECTIVITY
All

TAKEOFF POWER SETTING
FULL ANTI-ICE
AERONCA THRUST REVERSER NOZZLE

EXAMPLE:
1. Temperature . . . . . (minus) -10°F
2. Altitude . . . . . 5000 FT
3. Takeoff Power Setting . . . . . 89.4% N_1

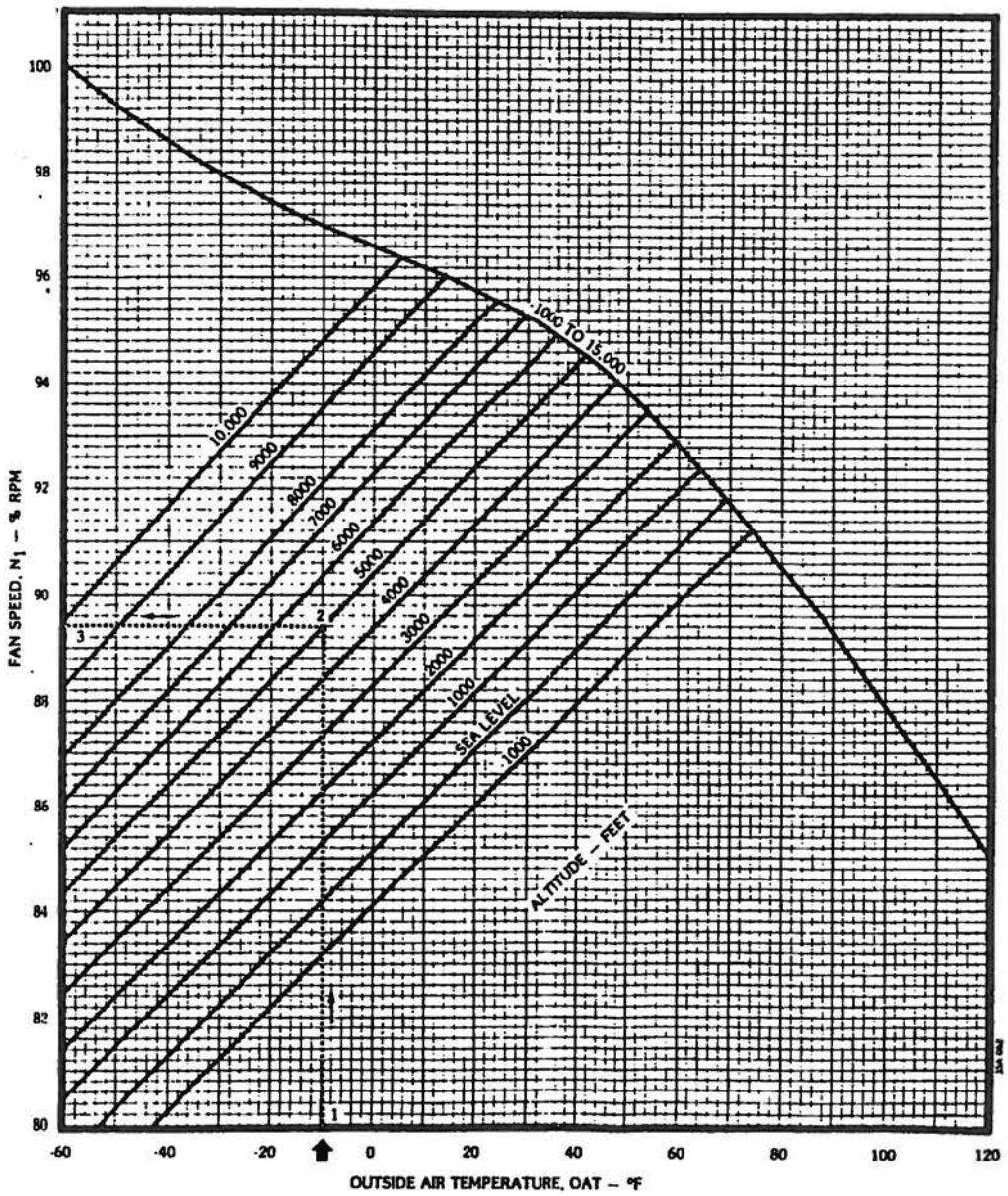


figure 4

EFFECTIVITY

All

PARTIAL POWER TAKEOFF
N_1 SETTING

AERONCA THRUST REVERSER NOZZLE

EXAMPLE:

1. Assumed Temperature . . . . . 82°F
2. Ambient Temperature . . . . . 50°F
3. Reduced Thrust Setting . . . . . 91% N_1

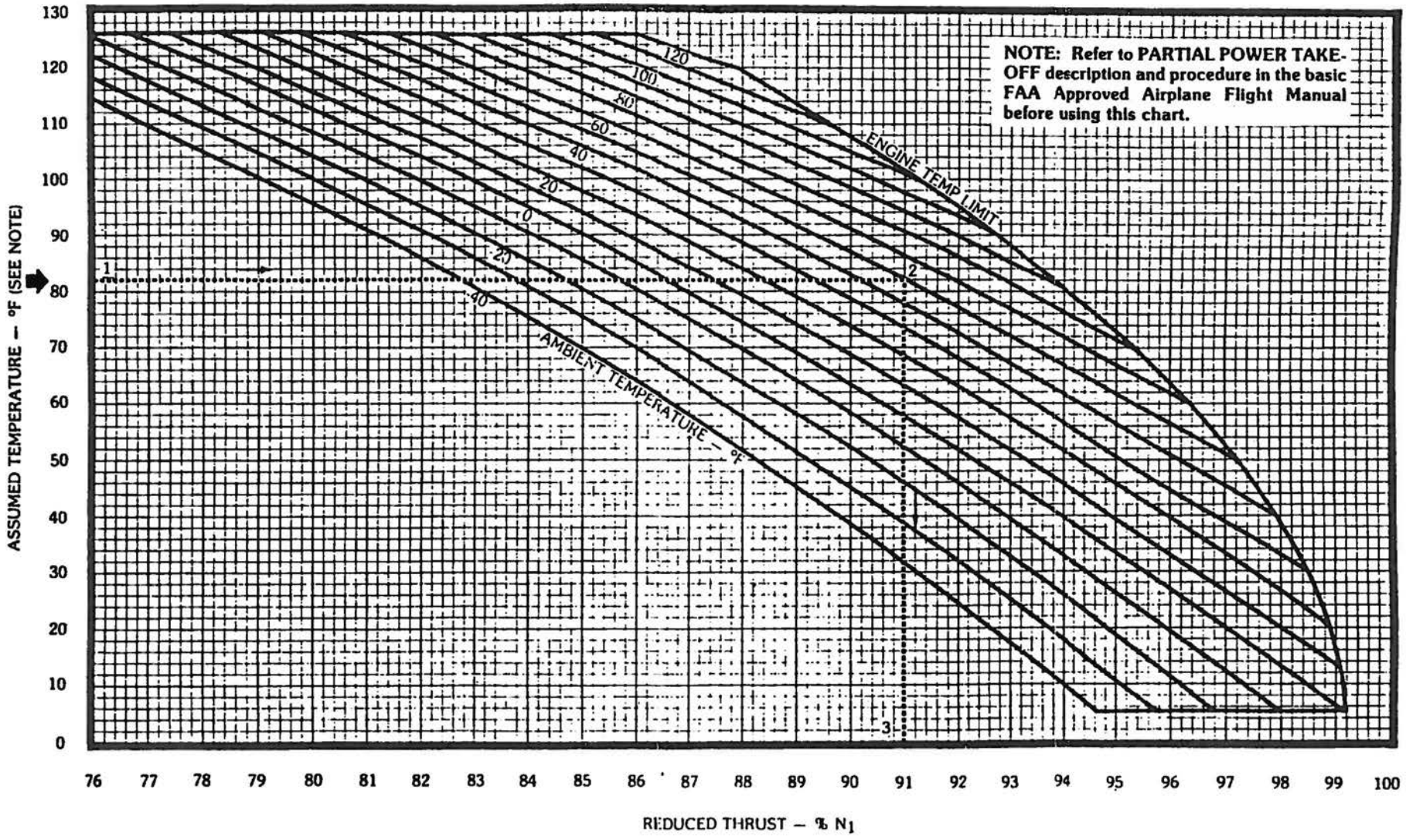


figure 5

MAXIMUM CONTINUOUS THRUST (N_1)
ALL ENGINE

AERONCA THRUST REVERSER NOZZLE

EFFECTIVITY

35/36 with Century III wing and 35A/36A.

ALTITUDE – 1000 FEET

RAM AIR TEMPERATURE – °C	S.L.	5	10	15	20	25	30	35	40	45
45	85.9 82.7	86.4 83.2	86.4 83.7							
40	87.4 84.0	87.7 84.4	87.7 84.9							
35	89.0 85.4	89.3 85.6	89.3 86.2	89.9 86.5						
30	90.5 86.9	90.9 87.0	90.9 87.4	91.3 87.9						
25	92.0 88.3	92.4 88.3	92.4 88.5	92.5 89.0						
20	93.2 89.7	93.4 89.7	93.4 89.7	93.4 90.0	93.6 90.2					
15	92.5 89.5	94.3 90.8	94.3 90.8	94.3 90.9	94.5 91.1	94.5 91.4				
10	91.6 88.7	95.1 91.6	95.1 91.6	95.1 91.6	95.1 91.8	95.1 91.9	95.1 91.9			
5	90.7 87.8	95.1 92.3	95.7 92.3	95.7 92.3	95.5 92.4	95.5 92.4	95.6 92.4	94.7 91.7	92.1 90.1	
0	89.8 87.0	94.2 91.4	96.3 92.9	96.3 92.9	95.9 92.9	95.9 92.9	96.1 92.9	95.4 92.4	93.0 90.9	
-5	88.9 86.1	93.3 90.5	96.7 93.3	96.7 93.3	96.3 93.3	96.3 93.3	96.5 93.3	96.0 92.9	93.0 91.6	91.4 89.7
-10	88.1 85.3	92.4 89.6	96.7 93.6	97.0 93.6	96.8 93.6	96.8 93.6	96.9 93.6	96.5 93.4	94.6 92.3	92.3 90.6
-15	87.2 84.4	91.5 88.7	95.8 92.8	97.4 93.9	97.4 93.9	97.4 93.9	97.2 93.9	96.8 93.8	95.3 92.8	93.2 91.4
-20	86.3 83.6	90.6 87.8	94.8 91.9	97.8 94.3	97.9 94.3	97.9 94.3	97.6 94.3	97.2 94.1	95.8 93.2	93.9 92.0
-25	85.5 82.8	89.7 86.9	93.0 91.0	98.2 94.6	98.8 94.6	98.8 94.6	98.5 94.6	98.0 94.4	96.8 93.6	95.1 92.5
-30	84.6 81.9	88.8 86.0	93.0 90.1	98.2 94.5	98.8 95.0	98.8 95.0	98.5 95.0	98.0 94.6	96.8 93.9	95.2 92.9
-35	83.8 81.1	87.9 85.2	92.8 89.2	97.3 93.8	99.3 95.3	99.3 95.3	99.0 95.3	98.5 94.7	97.3 94.1	95.7 93.2
-40	82.9 80.3	87.0 84.6	91.1 88.3	96.4 93.1	99.7 95.7	99.7 95.7	99.4 95.7	98.9 95.0	97.7 94.4	96.2 93.6

XX.X ANTI-ICE OFF or NACELLE HEAT ONLY
XX.X FULL ANTI-ICE ON

SPEED SCHEDULE
- 250 KIAS to 32,000 ft
- 0.7 M_I to 45,000 ft

figure 6

MAXIMUM CONTINUOUS THRUST (N_1)
ALL ENGINE

AERONCA THRUST REVERSER NOZZLE

EFFECTIVITY

35/36 without Century III wing

ALTITUDE – 1000 FEET

RAM AIR TEMPERATURE – °C

	S.L.	5	10	15	20	25	30	35	40	45
45	86.1 82.9	86.1 83.1	86.1 83.1							
40	87.5 84.0	87.5 84.3	87.5 84.3							
35	89.0 85.2	89.0 85.6	89.0 85.6	89.0 86.1						
30	90.8 86.5	90.8 87.1	90.8 87.1	90.8 87.5						
25	92.1 87.8	92.1 88.4	92.1 88.4	92.1 88.6						
20	93.3 89.1	93.3 89.5	93.3 89.5	93.3 89.7	93.3 89.7					
15	92.7 89.8	94.2 90.5	94.2 90.5	94.2 90.7	94.2 90.7	94.2 90.7				
10	91.8 88.9	95.0 91.4	95.0 91.4	95.0 91.4	95.0 91.4	95.0 91.4	94.6 91.5			
5	91.0 88.0	95.4 92.2	95.6 92.2	95.6 92.2	95.6 92.2	95.6 92.2	95.3 92.2	94.7 91.7		
0	90.1 87.1	94.5 91.5	96.2 92.8	96.2 92.8	96.2 92.8	96.2 92.8	95.9 92.8	95.4 92.4	93.0 90.9	
-5	89.2 86.3	93.6 90.5	96.6 93.2	96.6 93.2	96.6 93.2	96.6 93.2	96.4 93.2	96.0 93.0	93.9 91.7	91.7 89.8
-10	88.3 85.4	92.7 89.7	96.0 93.4	97.0 93.6	97.0 93.6	97.0 93.6	96.8 93.6	96.4 93.6	94.6 92.3	92.5 90.7
-15	87.5 84.5	91.7 88.8	95.9 93.0	97.4 94.0	97.4 94.0	97.4 94.0	97.2 94.0	96.8 93.8	95.2 92.8	93.3 91.4
-20	86.6 83.7	90.8 87.9	95.0 92.2	97.8 94.2	97.8 94.2	97.8 94.2	97.6 94.2	97.2 94.1	95.8 93.2	93.9 92.0
-25	85.7 82.8	89.9 87.0	94.1 91.2	98.3 94.6	98.3 94.6	98.3 94.6	98.0 94.6	97.6 94.4	96.3 93.6	94.5 92.5
-30	84.8 82.0	89.0 86.2	93.2 90.3	98.4 94.6	98.7 94.9	98.7 94.9	98.4 94.9	98.1 94.7	96.8 93.9	95.2 93.0
-35	83.9 81.1	88.2 85.4	92.2 89.4	97.6 93.9	99.3 95.3	99.3 95.3	99.0 95.3	98.6 95.0	97.4 94.3	95.7 93.4
-40	83.0 80.2	87.2 84.4	91.3 88.5	96.7 93.3	99.8 95.7	99.8 95.7	99.6 95.7	99.1 95.3	97.9 94.7	96.3 93.9

35A-063

XX.X ANTI-ICE OFF or NACELLE HEAT ONLY
XX.X FULL ANTI-ICE ON

SPEED SCHEDULE
- 240 KIAS to 35,000 ft
- 0.7 M_i to 45,000 ft

figure 6.1

MAXIMUM CONTINUOUS THRUST (N_1)
SINGLE ENGINE

AERONCA THRUST REVERSER NOZZLE

EFFECTIVITY

35/36 with Century III wing and 35A/36A.

ALTITUDE – 1000 FEET

RAM AIR TEMPERATURE – °C

	S.L.	5	10	15	20	25	30	35	40	45
45	85.1 82.0	85.1 82.0								
40	86.5 83.4	86.5 83.4	86.5 83.4							
35	88.0 84.7	88.0 84.7	88.0 84.7							
30	89.7 86.0	89.7 86.0	89.7 86.0	89.7 86.5						
25	91.1 87.2	91.1 87.2	91.1 87.2	91.1 87.7						
20	92.4 88.5	92.4 88.5	92.4 88.5	92.4 88.9	92.4 88.9					
15	93.2 89.6	93.5 89.6	93.5 89.6	93.5 89.9	93.5 89.9					
10	92.2 89.0	94.5 90.8	94.5 90.8	94.5 90.9	94.5 90.9	94.2 90.9				
5	91.4 88.2	95.3 91.7	95.3 91.7	95.3 91.7	95.3 91.7	95.0 91.7	94.3 91.3			
0	90.5 87.4	95.1 92.1	95.9 92.4	95.9 92.4	95.9 92.4	95.6 92.4	95.0 92.0	93.5 91.1		
-5	89.6 86.5	94.2 91.2	96.4 93.0	96.1 93.0	95.6 93.0	94.4 93.0	95.6 92.6	94.3 91.7	91.0 90.2	
-10	88.7 85.7	93.3 90.4	96.9 93.4	96.9 93.4	96.9 93.4	96.5 93.4	96.0 93.1	95.1 92.4	92.1 91.3	
-15	87.8 84.9	92.4 89.5	96.6 93.8	97.2 93.8	97.2 93.8	96.8 93.8	96.4 93.5	95.6 92.7	93.1 91.9	90.7 90.4
-20	87.0 84.0	91.5 88.6	95.7 92.9	97.5 94.1	97.5 94.1	97.2 94.1	96.8 93.8	96.1 93.2	94.0 92.5	92.1 91.6
-25	86.1 83.2	90.6 87.8	94.7 92.0	97.0 94.4	97.8 94.4	97.6 94.4	97.3 94.1	96.5 93.6	94.7 93.0	93.1 92.2
-30	85.2 82.4	89.7 86.8	93.8 91.0	98.2 94.7	98.2 94.7	98.1 94.7	97.9 94.5	97.0 94.1	95.3 93.5	93.8 92.6
-35	84.3 81.5	88.8 86.0	92.8 90.1	98.7 95.0	98.7 95.5	98.7 95.5	98.4 95.2	97.6 94.5	96.0 93.8	94.3 93.0
-40	83.4 80.7	87.9 85.3	91.9 89.1	98.1 94.6	99.3 95.5	99.3 95.5	99.0 95.2	98.3 94.9	96.6 94.1	95.0 93.5

35A Ord

XX.X ANTI-ICE OFF or NACELLE HEAT ONLY
XX X FULL ANTI ICE ON

SPEED SCHEDULE
- 210 KIAS to 26,700 ft
- 0.5 M_i to 33,500 ft
- 170 KIAS to 45,000 ft

figure 7

MAXIMUM CONTINUOUS THRUST (N_1)
SINGLE ENGINE

AERONCA THRUST REVERSER NOZZLE

EFFECTIVITY

35/36 without Century III wing

ALTITUDE – 1000 FEET

RAM AIR TEMPERATURE – °C

	S.L.	5	10	15	20	25	30	35	40	45
45	84.5 81.8	84.5 81.8								
40	86.1 83.1	86.1 83.1	86.1 83.1							
35	87.8 84.4	87.8 84.4	87.8 84.4							
30	89.4 85.7	89.4 85.7	89.4 85.7	89.4 86.2						
25	90.9 87.0	90.9 87.0	90.9 87.0	90.9 87.4						
20	92.2 88.1	92.2 88.1	92.2 88.1	92.2 88.5	92.2 88.9					
15	93.1 89.2	93.4 89.2	93.4 89.2	93.4 89.6	93.4 89.9					
10	92.2 89.3	94.4 90.2	94.4 90.2	94.4 90.7	94.4 90.9	94.0 90.5				
5	91.4 88.4	95.2 91.4	95.2 91.4	95.2 91.6	95.2 91.8	94.7 91.8				
0	90.5 87.6	95.4 92.2	95.9 92.2	95.9 92.2	95.9 92.4	95.4 92.4	94.4 91.6			
-5	89.7 86.7	94.6 91.5	96.3 92.8	96.3 92.8	96.3 93.0	95.9 92.7	95.1 92.2	93.5 90.7		
-10	88.8 85.9	93.6 90.6	95.7 91.3	96.7 91.3	96.7 91.4	96.3 91.2	95.7 92.7	94.3 91.5	90.5 89.8	
-15	88.0 85.0	92.7 89.7	96.9 93.7	97.1 93.7	97.1 93.7	96.7 93.6	96.2 93.2	95.0 92.2	91.5 90.7	87.7 87.2
-20	87.1 84.2	91.8 88.8	96.0 93.1	97.4 94.1	97.4 94.1	97.0 93.9	96.5 93.6	95.5 92.8	92.4 91.4	89.0 88.5
-25	86.2 83.3	90.9 87.9	95.0 92.2	97.7 94.4	97.7 94.4	97.4 94.2	96.9 94.0	95.9 93.3	93.3 92.0	90.2 89.7
-30	85.3 82.5	90.0 87.0	94.0 91.3	98.1 94.7	98.1 94.7	97.9 94.5	97.4 94.3	96.4 93.7	94.0 92.5	91.4 90.8
-35	84.5 81.6	89.1 86.2	93.1 90.4	98.6 95.0	98.6 95.0	98.4 94.9	97.9 94.6	96.9 94.0	94.7 93.0	92.2 91.5
-40	83.6 80.8	88.1 85.3	92.2 89.5	99.1 95.4	99.3 95.4	99.0 95.2	98.5 95.0	97.6 94.4	95.4 93.4	93.1 92.0

354-B8

XX.X ANTI-ICE OFF or NACELLE HEAT ONLY
XX.X FULL ANTI ICE ON

SPEED SCHEDULE
- 180 KIAS to 20,000 ft
- 0.4 M_j to 45,000 ft

figure 7.1

Reference C

Aircraft Systems Modules

A. Aircraft General Module
   1. General
      a. Contents of AFM
      b. Training Manuals
      c. Equipment and Furnishings
      d. Emergency Equipment
   2. Structures
   3. Operating Limitations
   4. Instrument Markings
      a. Engines
      b. Miscellaneous Cockpit Instruments
   5. Aircraft Walkaround
      a. Use Appropriate Visual, ACPS, or Available Aircraft

B. Electrical Module
   1. General
      a. System Description
      b. AC Power
      c. DC Power
      d. Annunciators
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

C. Fuel Module
   1. General
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

D. Powerplant Module
   1. General
      a. Basic Engine Familiarization
      b. Ignition and Start System
      c. Engine Fuel System
      d. Engine Oil System
      e. Synchronizing
      f. ITT/EGT System (As Applicable)
      g. Annunciators
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

E. Fire Protection Module
   1. Engine Fire Detection
      a. General
      b. Operation
   2. Engine Fire Extinguishing
      a. General
      b. Operation
      c. Limitations
      d. Abnormal and Emergency Procedures
   3. Portable Fire Extinguisher
      a. Location
      b. Preflight

F. Hydraulics Module
   1. General
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

G. Thrust Reversers Module (If Applicable)
   1. General
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

H. Landing Gear and Brakes Module
   1. General
      a. Landing Gear
      b. Brakes
      c. Antiskid
      d. Annunciators
      e. Nosewheel Steering
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

I. Flight Controls Module
   1. General
      a. System Description
      b. Controls and Components
      c. Indicators/Indications
      d. Annunciators
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

E. Flight Simulator Module No. 5

1. Takeoff and Departure Phase
   a. Thrust Reverser Malfunction (If Applicable)
2. Inflight Maneuvers
   a. Specific Flight Characteristics— Overspeed Recovery
3. Instrument Procedures
   a. Instrument Approach With Windshear
4. Landings and Approaches to Landings
   a. Landing With a Flight Control Malfunction
5. Normal and Abnormal Procedures
   a. Flight Control System
   b. Environment and Pressurization System
   c. Other Systems (As Determined By Make, Model, or Series of the Aircraft)
6. Emergency Procedures
   a. Rapid Decompression
   b. Emergency Descent (Maximum Rate Descent)
   c. Windshear

NOTE

Flight Simulator Module No. 5 will, as necessary, include a review of the maneuvers and procedures outlined in the ATP Practical Test Standards.

F. Flight Simulator Module No. 6

Line Oriented Simulation Training will facilitate the transition from the fixed package of maneuvers in the Flight Simulator Modules to crew-oriented line flying. Line-Oriented Simulation Training will include two (2) Flight Segments:

SEGMENT 1

This segment will include strictly normal procedures from taxi after engine start at one airport, to arrival at another.

SEGMENT 2

This segment will include training in appropriate abnormal and emergency flight operations.

Aircraft Systems Modules

A. Aircraft General Module
   1. General
      a. Contents of AFM
      b. Training Manuals
      c. Equipment and Furnishings
      d. Emergency Equipment
   2. Structures
   3. Operating Limitations
   4. Instrument Markings
      a. Engines
      b. Miscellaneous Cockpit Instruments
   5. Aircraft Walkaround
      a. Use Appropriate Visual, ACPS, or Available Aircraft

B. Electrical Module
   1. General
      a. System Description
      b. AC Power
      c. DC Power
      d. Annunciators
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

C. Fuel Module
   1. General
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

D. Powerplant Module
   1. General
      a. Basic Engine Familiarization
      b. Ignition and Start System
      c. Engine Fuel System
      d. Engine Oil System
      e. Synchronizing
      f. ITT/EGT System (As Applicable)
      g. Annunciators
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

E. Fire Protection Module
   1. Engine Fire Detection
      a. General
      b. Operation
   2. Engine Fire Extinguishing
      a. General
      b. Operation
      c. Limitations
      d. Abnormal and Emergency Procedures
   3. Portable Fire Extinguisher
      a. Location
      b. Preflight

F. Hydraulics Module
   1. General
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

G. Thrust Reversers Module (If Applicable)
   1. General
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

H. Landing Gear and Brakes Module
   1. General
      a. Landing Gear
      b. Brakes
      c. Antiskid
      d. Annunciators
      e. Nosewheel Steering
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

I. Flight Controls Module
   1. General
      a. System Description
      b. Controls and Components
      c. Indicators/Indications
      d. Annunciators
   2. Operation
   3. Limitations
   4. Abnormal and Emergency Procedures

4. Landings and Approaches to Landings
    a. Approach and Landing With a Powerplant Failure
    b. Crosswind Landings
5. Normal and Abnormal Procedures
    a. Electrical System
    b. Fire Detection and Extinguisher Systems
    c. Powerplant
6. Emergency Procedures
    a. Emergency Evacuation

C. Flight Simulator Module No. 3
1. Takeoff and Departure Phase
    a. Instrument Takeoff
    b. Instrument Departure
    c. Takeoff with Thrust Reverser Malfunction (If Applicable)
2. Inflight Maneuvers
    a. Specific Flight Characteristics— Dutch Roll
    b. Specific Flight Characteristics— Inadvertent Overspeed
3. Instrument Procedures
    a. Circling Approach
4. Landings and Approaches to Landings
    a. Landings From a No Flap or Nonstandard Flap Approach
    b. Landing From a Circling Approach
5. Normal and Abnormal Procedures
    a. Hydraulic Systems
    b. Environmental and Pressurization Systems
    c. Aircraft and Personal Emergency Equipment
    d. Flight Controls
    e. Anti-ice Systems
6. Emergency Procedures
    a. Rapid Decompression
    b. Emergency Descent (Maximum Rate Descent)
    c. Inflight Fire and Smoke Removal
    d. Airframe Icing

D. Flight Simulator Module No. 4
1. Landings and Approach to Landings
    a. Landing with a Flight Control or Thrust Reverser Malfunction (If Applicable)
2. Normal and Abnormal Procedures
    a. Other Systems (As Determined by the Make, Model, or Series of Aircraft)
3. Emergency Procedures
    a. Thrust Reversers Malfunctions (If Applicable)
    b. Other Procedures (As Maybe Required by AFM)
    c. Windshear

Reference D

Reference D

LEAR 35 AERONCA THRUST REVERSER (POST AMK 81-6)
Hypothetical Scenarios and Corrective Action Matrix

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	Pre-Flight	Taxi	Pre V_1	Post V_1	In-Flight	Landing
Phase of Flight						
AFM Check Requirement / Status	Exterior Inspection	Operational Check	TR Stowed / TR Lights Out	TR Stowed / TR Lights Out	TR Stowed / TR Lights Out	TR Deploy / TR Lights On
Hypothetical Scenario	TR Damaged and Not in Stow Position	TR Does Not Stow	Uncommanded TR Deployment	Uncommanded TR Deployment	Uncommanded TR Deployment	TR Not Stowing
Fault Detection and Alerting	Visual Inspection	UNLOCK DEPLOY	UNLOCK DEPLOY	UNLOCK DEPLOY	UNLOCK DEPLOY	UNLOCK DEPLOY
Safety System Design	Repair Before Flight	Fault Detection	• Fault Detection • Uncommand Deploy Protection logic • Auto Stow Protection • Emergency stow	• Fault Detection • Uncommand Deploy Protection logic • Auto Stow Protection • Emergency stow	• Fault Detection • Uncommand Deploy Protection logic • Auto Stow Protection • Emergency stow	Repair Before Flight
AFM / Corrective Action Requirement		AFM Normal Procedures / Repair before flight	AFM Emergency Procedures	AFM Emergency Procedures	AFM Abnormal Procedures	
Training	Training Available	Training Available	Training Available	Training Available	Training Available	Training Available