



FEDERATION OF INDIAN PILOTS

FIP/DGAAIB/26 – 04

March 12, 2026

To,

Shri GVG Yugandhar

Director General (DG)

Aircraft Accident Investigation Bureau (AAIB)

Udaan Bhawan, Sri Aurobindo Marg,

Safdarjung Airport,

New Delhi – 110003

REQUEST FOR SIMULATOR CORRELATION WITH RAT IMAGERY AND DFDR TIMELINE (AI 171, CRASH) AND INCORPORATION IN FINAL REPORT

Dear Sir,

1. Reference is drawn to the subject and the trailing e-mail.
2. It is submitted that four sequential photographic frames (attached as Annexures 1), obtained from the CCTV/security camera located at Ahmedabad Airport, depict a small dark object (highlighted with a black arrow) appearing and progressively increasing in size on the aircraft underbelly at the location corresponding to the Ram Air Turbine (RAT) door. The sequence from Frame 1 to Frame 4 appears consistent with RAT door opening and/or RAT deployment **while the aircraft is rolling on the runway.**
3. It is requested that the above visual sequence be formally correlated with the DFDR timeline recorded in the Preliminary Report, namely:
 - 08:08:33 UTC — Aircraft crossed V1 (153 KIAS)
 - 08:08:35 UTC — VR achieved (155 KIAS)
 - 08:08:39 UTC — Air/ground sensors transitioned to AIR mode (lift-off)
 - About 08:08:42 UTC — First fuel cut-off switch transitioned RUN → CUTOFF
 - 08:08:43 UTC — Second fuel cut-off switch transitioned RUN → CUTOFF
 - About 08:08:47 UTC — RAT hydraulic pump began supplying hydraulic power
4. It is further requested that a flight simulator reconstruction be conducted with time-synchronised overlay of the photographic sequence (Annexures 1–4) under the following scenarios:
 - (a) Electrical failure leading to automatic RAT deployment;
 - (b) Manual selection of fuel control switches to CUTOFF by the flight crew.



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5. The purpose of the above exercise is to ascertain whether the root cause relates to a technical failure or to deliberate pilot action.

6. In the interest of completeness, procedural fairness, and accurate technical determination, it is requested that the Final AAIB Report be released **only after the above flight simulator-based evaluation is completed and formally recorded in the Report.**

Warm Regards,

CAPT C.S. RANDHAWA,
PRESIDENT, FIP

Encls : As Stated

Copy To:

- 1) Hon'ble Minister of Civil Aviation
- 2) Secretary Ministry of Civil Aviation,
- 3) Director General Civil Aviation



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**Boeing 787
Electrical System Familiarization**

RAT System Operation

- Captain or First Officer can deploy RAT manually by pressing RAM AIR TURBINE switch on hydraulic panel.
- RAT deployed automatically if electrical or hydraulic power lost:
 - ◆ For loss of electrical power, each Bus Power Control Unit (BPCU) signals RAT deployment from Common Computing System (CCS) about 10 seconds after either continuous loss of 235 VAC on both the Main (L1) and Backup buses **OR**
 - ◆ Continuous loss of 235 VAC on the backup bus and Left Auto Transformer Unit Contactor (LATUC) is open.
- CCS will place RAT auto deploy command on Common Data Network (CDN) for use by hydraulics system auto deploy function.
- 200 ms (milliseconds) after signal from BPCU, hydraulic controllers will command the RAT to deploy.
- Battery bus provides +28 VDC of 4 amps for 3 – 5 seconds to power RAT solenoid.
- Deploy command causes up lock mechanism to release RAT.
- Spring loaded deployment actuator forces RAT to extend into air stream.
 - ◆ Snubbing action of deployment actuator dampens deployment as RAT nears full deployment
 - ◆ Actuator down lock engages
- Turbine index plunger is automatically pulled out as RAT nears fully deployed position (max 72.5 degrees) and unlocks turbine blades – air stream causes turbine assembly to rotate and begins providing electrical and hydraulic power.



RAT System Operation – Deployment Logic

- Manual deploy will energize both solenoids - one solenoid is hard wired to main battery bus, and the other solenoid is hard wired to the APU battery bus.
 - ◆ Auto deploy will energize both, but through different sources.
- Each BPCU independently requests RAT deployment 15 seconds after either continuous loss of 235 Vac on both the L1 and Backup buses OR continuous loss of 235 Vac on the backup bus and the LATUC is open. (Or failures to close of both C1 TRU Isolation Relay and BB Isolation Relay).
- RAT auto deploy inhibited when not in the air mode.
 - ◆ Transition to air mode occurs 1.0 +/- 0.1 seconds after any airspeed parameter is greater than 80 kts OR any VFSG speed is greater than 10,500 RPM. Airspeed determined from all 3 corrected airspeed parameters delivered via CDN.
 - VFSG speed determined from each GCU.
- RPDU provides +28 VDC (4 amps for seconds minimum, 5 seconds max) to power RAT solenoid when commanded.
- If deployed for other than electrical system requirements, system prevents RAT generator powering backup bus while normal AC power from R2 235 VAC bus is available.
- Hydraulics controllers command RAT deploy within 200 ms of receiving request from BPCU.



Messenger

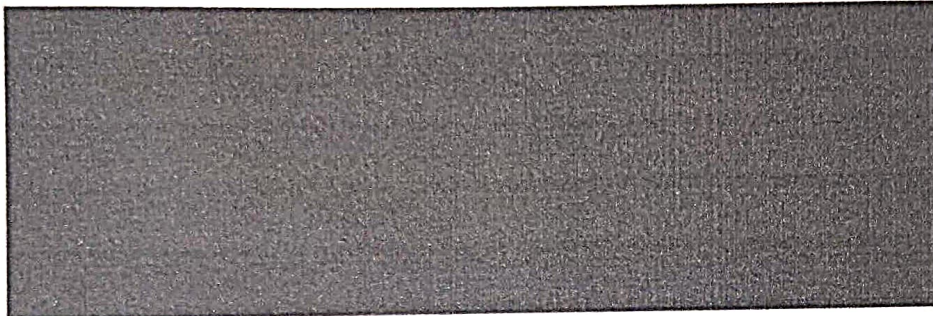
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(8) RAM AIR TURBINE – EXTENSION – FUNCTIONAL DESCRIPTION

Teaching Points

1. The RAT deploys automatically when signals are received
 - HYDIF
 - BPCU
2. A list of conditions which cause automatic deployment : student notes
3. Manually
 - Pressing the guarded RAM AIR TURBINE switch on the
4. The RAT blades will not turn until after it is deployed
 - Prevents blade contact with RAT compartment or door
5. Hydraulic power available in 6 seconds
6. Electrical power available in 10 seconds

Student Notes

Description

The RAT is deployed into the airstream by a spring-loaded actuator. It can be deployed manually by a flight deck switch or automatically when the HYDIF or the BPCU. The signal for RAT deployment is sent to the RAT. Only one of the two solenoids is necessary to deploy the RAT. When the RAT is commanded, the solenoids release a set of locking pawls in the compartment, allowing the spring to extend and force the turbine into the airstream, preventing accidental automatic deployment on the ground. The RAT is mechanically linked to the RAT door, which is driven open by RAT deployment.

The RAT deploys and supplies hydraulic power in 6 seconds.

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