

## Fuel Switch

*Prelims: Current Events of National and International Importance*

### Why in news?

Fuel control switches on Boeing 787-8 aircraft have come under scrutiny after Air India plane crash in Ahmedabad, prompting discussions about their design, operation & potential role in aviation incidents.

### Fuel switch

- **Function** - Fuel switch controls are critical in cockpit, by which the fuel supply to the 2 engines is regulated.
- **Primary purpose** - During the aircraft ground operation the switch is used to start or shut down the engines.
  - In the event of an inflight emergency like engine failure or fire, switches are used to manually stop or restart an engine.
- **Switch location** - Placed inside the cockpit, directly below and behind throttle levers between pilots' seats.
  - **Positioned** - where pilots' hands rest easily during critical flight phases.

- **FFR act** - Enacted to recognizing the rights of ST and other forest dwellers over their ancestral lands and community forest resources (CFRs).
- **Act Empowers** - Gram Sabhas (GS) to manage, protect, regenerate, conserve & sustainably use their community forest resources, includes right to formulate their own forest management plans.
- **FRA shifts forest governance** from a top-down, timber-centric approach to a community-led, needs-based model.
- **Community Forest Resources (CFRs)** refer to the common forest land traditionally protected, conserved, and used by a particular community for their sustainable livelihood. These resources are crucial for the well-being and cultural identity of millions of forest-dwelling communities in India.



- **Metal Guard brackets** - Deployed to prevent accidental contact or movement.
- **Spring-locking system** - To move a switch from RUN to CUTOFF it require lifting of switch before sliding, designed to prevent accidents.
- **Operation sequence** - Engine starts by moving switches to RUN mode on ground.
  - During flight - Switches remain in RUN unless an engine fire or severe failure occurs.
  - Switches moved to CUTOFF after landing or during maintenance.
- **Consequences of CUTOFF** - Immediately stops fuel flow to the corresponding

engine, causing it to shut down, lose thrust, and disable engine-driven generators, potentially impacting electrical systems.

- **Emergency use** - In case of fire or critical fault, a red light cue illuminates, signaling the crew to shut down the engine immediately.
  - Moving to CUTOFF instantly stops fuel flow and disables engine generators, impacting the electrical systems
- **Redundant systems** - are powered and wired separately, so one failure doesn't compromise the backup.
  - **Example** - Multiple independent circuits allow safe operation even if one fails.
  - **Power supply** - Redundant generators/ Accelerated Processing Unit (APU)/Ram Air turbine keep critical systems running.
  - **Flight controls** - Multiple computers compare inputs, override faulty data automatically.
- **Reactivation**- If switch accidentally turned off by the pilot, the aircraft's systems try attempt an **automatic engine** relight and reintroduce fuel when switch turns to RUN.
- **Accident causing** - Is highly unlikely due to safeguards, but possible under human stress or miscommunication.
- **Industry practice** - Most airlines, including Air India, comply with existing safety features unless directed otherwise by regulators.

## Reference

[The Hindu| Fuel Switches In Aircrafts](#)

