

FUEL MANAGEMENT

WHY THIS MATTERS

Fuel starvation and fuel exhaustion remain among the most preventable causes of engine failures. This recent event with one of our Aquilas is a clear reminder that:

"It's possible to have fuel on board and still suffer fuel starvation" — Flying on Empty

THE INCIDENT — WHAT HAPPENED

- **Flight type:** Local training, multiple touch-and-gos.
- **During take-off:** Engine lost power on the climb-out.
- **Pilot-in-Command's actions:** Immediately lowered the nose, selected LDG-flaps, declared emergency and landed safely on the remaining runway length.
- **Outcome:** No injuries or damage.

Investigation Findings:

- Right-fuel tank **empty**, left-fuel tank **full**.
- Fuel selector set to **right-tank** at the time of event.
- During refuelling, the **left-tank was filled to 100%** instead of adding fuel to the right-tank as intended.
- Delay at fuel station + distractions → No final fuel check of both tank levels before departure.
- Pre-flight fuel status was based on the assumption that the right-tank contained adequate fuel.
- The aircraft operates with Mogas, UL94, and occasionally AVGas, increasing complexity of obtaining accurate fuel quantity readings from the gauges.

KEY LESSONS

- **Cross-check both tanks after refuelling**, no matter who fuels or how busy the situation is.
- **Dipstick vs Fuel Indicators** — use the dipstick for actual levels; fuel indicators are secondary.
- **Protect checklist discipline** — manage distractions to avoid missed steps.
- **Know your fuel system** — be certain which tank is feeding and when to switch.

FUEL MANAGEMENT STRATEGIES

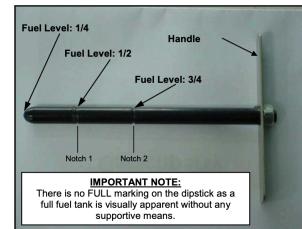
Before Flight

- **Be present** during refuelling: confirm fuel grade, which tank to fill and the correct amount to be added.
- **Use the dipstick** to measure after refuelling and write down on your kneeboard: litres + endurance for each tank (left & right).
- **Remember:** full-tanks in an Aquila may breach W&B limits with two people and baggage.

During Flight

- Use a timer (aircraft or personal) to remind you to switch tanks at regular intervals.
- As recommended in the Aquila AFM, fuel levels in both tanks should be kept approximately equal.
- Be familiar with the correct tank-switching procedure.
- Monitor fuel indicators, but base decisions on dipstick data.

Required Fuel



The Dipstick — your first line of defense against fuel starvation and fuel exhaustion

- Plan to land with **no less than 1 hr usable fuel in each tank**.

FUEL SYSTEM QUICK REFERENCE — AQUILA

- 2 wing fuel tanks: **54.8 L usable fuel each:**
 - $\frac{1}{4}$ tank≈9 L; $\frac{1}{2}$ tank≈24 L; $\frac{3}{4}$ tank≈39 L
- Fuel flow (typical): ≈20 L/hr
- Fuel selector: LEFT - RIGHT. Confirm and Select **fullest tank before the takeoff** ✓
- Bear in mind that fuel indicators are measuring systems that never work without error and must be accepted as not safe; **always verify fuel quantities with dipstick**.
- Note: The dipstick measures total fuel quantity (usable + unusable)

PRACTICAL TIPS

- ✓ Treat fuel verification like a pre 'Before Starting Engine' control check —**non-negotiable!**
- ✓ **Never** rely solely on what you think is in the tank.
- ✓ If there is a delay or distraction during re-fuelling → **start over** with a fresh fuel checks before flight.
- ✓ Keep a habit of pointing at the selector and **saying aloud**: "Switching from [Left/Right], [X] litres, [X] hh:mm endurance" and switch as required.

FINAL THOUGHTS

When small deviations from Standard Operating Procedures (SOP) become routine because "nothing bad happened last time". Over time, these habits can align with other factors and cause incidents. Be alert! Fuel starvation is almost always a chain of small misses, not one big mistake. Break the chain early — **verify, monitor, and manage your fuel**.

Fly smart. Land with fuel to spare.

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Further reading:

- *Aquila Aviation AFM* — Section 7 System Description, 7.10 Fuel System 7.10.4 Fuel Level Indication
- *AOPA Fuel Management* — [[link here](#)]