

WAMASC Newsletter



November 2020

The Gimli Glider



FAI Sporting licence



should any individual have anything at all they would like to contribute, share or add to this newsletter, please feel free to contact the [editor](#) through the [Club Secretary](#) via ✉ secretary@wamasc.com.au – enjoy

The 156 Tonne Gimli Glider

For those of us who have never heard the term '**dead-stick**' one would have to ask – where have you been? In Aeromodelling we simulate a **dead-stick landing** as part of our assessment for wings proficiency when we are first tested to gain our wings. A **dead-stick landing** is a type of **forced landing** when an aircraft has lost all of its propulsive power and is forced to land. '**Stick**' does not refer to the flight control(s), which in most aircraft are either fully or partially functional without engine power – it refers to the traditional wooden propeller type aircraft which without power would just be a dead stick, hence the term.

When a pilot performs an emergency landing of an aircraft that has some, or all, of its propulsive power still available, that procedure is known as a **precautionary landing**.

Another aviation term that may occasionally be heard is a '**PAN**'. **PAN** simply means 'possible assistance needed' – it is an international standard urgency signal used to declare that that an urgent situation exists, but for the time being, does not pose an immediate danger. This is referred to as a state of "urgency" which is very distinctly different from a **mayday** call (**distress signal**), which means that there is imminent danger.

To clarify the difference between the two: radioing "**pan-pan**" informs potential rescuers (including emergency services and other craft in the area) that an urgent problem exists, whereas "**mayday**" calls on those services to drop all other activities and immediately begin a **rescue**.

Here is a remarkable true story that has quite rightly found its way into the record books of aviation. It is, without doubt, the best **dead-stick landing** ever recorded.

On the western side of Manitoba's Lake Winnipeg lies an old Royal



Canadian Air Force Station. That Station situated at Gimli is a tiny dot on the map, eclipsed by its larger neighbour, Winnipeg.

37 years ago, on the 23rd of July 1983, Captain **Bob PEARSON** and his First Officer **Maurice QUINTAL** were piloting Flight 143, a Boeing 767, from Montreal to Edmonton via Ottawa.



Post climbing to its cruising altitude of 41,000' with a light load of only 61 passengers and 5 Crew members onboard everything seemed straight forward for the first hour of flight. However just after 2000Hr local time the cockpit instrumentation indicated a low fuel pressure warning in the port (left) fuel pump. At first it was thought to be fuel pump failure until seconds later the starboard (right) fuel pump also showed a loss of pressure in the right main fuel tank – it could mean only one thing. No fuel. PEARSON quickly ordered a diversion to Winnipeg Airport 120 Nautical

Miles away. The port engine was the first to flame out and at precisely 2021Hr with their altitude now at 28,500' with 65 Nautical Miles still to traverse to Winnipeg so did the starboard.

Flight 143 was now a glider with most of its instrument panels blank and dark, devoid of the power normally generated to those systems from the engine(s). Captain PEARSON was now flying blind with just a magnetic compass, artificial horizon indicator and an air speed indicator still functioning. The **RAT (Ram Air Turbine)**,

sometimes referred too as a 'rotary air turbine' automatically dropped out into the airflow due to power loss and started to generate auxiliary power for hydraulic control of the aircraft. This allows some manipulation of the ailerons, elevator, and rudder – there is, of course, no means of operating speed-brakes or any other aerodynamic braking systems, flaps, undercarriage or using reverse thrust on landing. Realising that he did not have sufficient height to make the glide into Winnipeg, Captain PEARSON's First Officer QUINTAL suddenly



over-rode his Captain and changed heading to **Gimli**, now only 12 Nautical Miles away. **Gimli** was not listed in Air Canadas Manuals but, fortuitously, QUINTAL had been stationed there as a young pilot serving in the **Canadian Airforce**. That now, decommissioned Station (Base) was their best bet and hope. It still had two 6'800' long runway's and they both should be deserted.

As the aircraft descended without power both pilots used all of their skills to keep the aircraft on track. Having only one chance to land there could be no mistakes – there could be no missed approach. Unfortunately, the aircraft was coming in too fast and was going to overrun the runway. PEARSON took a gamble that the aircraft would respond in the same manner a smaller aircraft would and executed a sideslip manoeuvre to wash off speed.

This manoeuvre required exceptional piloting skills – the indicated airspeed would not display correctly during this sideslip due to the asymmetric condition of the aircraft with its pitot probes being presented at different angles into the airstream, one side shielded by the fuselage the other not. It came down to PEARSON's judgement and experience as a glider pilot (it seems that those passengers on board Flight 143 were in very capable hands on that day having an experienced glider pilot and a person who knew the local surroundings).

During that nerve-wracking decent, QUINTAL tried using a back-up system to lower and lock the undercarriage. The MLG (Main Landing Gear) deployed and locked manually with its over-centre lock(s) safely locking into place – the nosewheel however, refused to play the game and only deployed to the half way position. This once again was a God send as it eventually saved lives on touch-down. The reason why was that Gimli had become a local drag strip for racing enthusiasts. Unbeknown to the crew of Flight 143 they were present and doing their thing, drag racing, as that Boeing 767 Glider touched down scattering all and sundry in panic.

Fortunately, the front nosewheel did indeed collapse just after touch-down with the friction created between the nose of the aircraft and tarmac acting as a brake pulling up Flight 143 to a quicker stop just metres away from



many bewildered onlookers. The aircraft had glided for a staggering **seventeen minutes** and etched itself into aviation history.

But while the crew of Flight 143 were praised for their skills and bravery under pressure, a vital question still remained.

How did an aircraft as advanced as a Boeing 767 with all of its cutting-edge avionic technology, run out of fuel?

The reason for this occurrence (accident) is an all too familiar one in aviation. Systemic problems with Air Canada's training and procedures, had led to a series of uncorrected errors by ground and flight crew with not all cross checking for safety.

In short Flight 143 had been brought down by a man-made metric/imperial measurement calculation mix-up. A simple error that had caused it to run out of FUEL.

Now we should note that all aircraft will have, and do, fly, with some form of **unserviceability(s)**, at all times. If it is not critical to that aircrafts flight; that is, it will not affect the operation of said aircraft during flight – it may be carried forward and repaired at a later time and date.

This is referred too as a **CFU** (Carried Forward Unserviceability).

That said the faux pas that led to Fight 143 running out of fuel was a comedy of errors with the **Fuel Quantity Information System Computer** (FQISC) on Flight 143 malfunctioning prior to flight (during turnaround and re-fuelling) forcing the **ground crew** in Montreal to load the fuel manually using calculations involving the **specific gravity** of jet fuel.

This was due to the failure of a simple inductor coil – a wire had not been 'tinned' correctly hence had not adhered to its cold solder joint which conversely caused problematic and erroneous indicator gauge readings due to poor current flow. A fact that was diagnosed during re-fuelling and switch check(s) via a **BIT** (Built In Test) or **BITE** (Built In Test Examination) on the ground prior to take-off.

As the FQISC was found **unserviceable** its **circuit breaker** was pulled and the decision to load the fuel manually was made. Unfortunately, the weight calculation factor used was **imperial** (1.77 pounds/litre), when it should have been **metric** (0.8 kg/litre) which was required for the new Boeing 767.

It is also worth noting that the Boeing 767 used for Flight 143 was the first metric plane to ever fly in Canada, which caused this miscalculation in fuel.

The aircraft only ever had half the fuel it required to reach Edmonton.

While the above is a great story of piloting it shows a couple things that stand out in the mind of the average **Aeromodeller**.

Firstly, if you find your aircraft suddenly devoid of power and '**dead stick**' – don't panic. Call out in a loud, clear, and audible voice so that all those in your immediate vicinity are aware that you have a problem.

The call of dead stick is an alert notification for those around you to respond instantly by giving you absolute landing clearance priority – they should get out of your way.

Secondly, don't give in – you can save your aircraft. Keep its nose up with gentle manipulation of the elevator; at all times maintaining a gentle descending glide slope, this will keep airspeed constant and sufficient for lift.

Should you need more airspeed – dive your aircraft. Conversely you may wash off speed by raising the nose.

Thirdly, yes it will eventually happen to you – you will have and are going to have a dead stick during your Aeromodelling career. Just remember that you don't have to land back on the runway. The object of the exercise is to land safely and save your aircraft if possible.

Height is of course a factor. Your engine being the heart of your aircraft. Without its propulsive force your aircraft becomes a glider – it cannot climb. You may have to react very quickly, or you may have sufficient elevation for a relaxing glide return home to base. That ones in the lap of the God's.

The simple fact is that no one can predict where or when a mechanical fault or failure will occur. Hopefully, it will be one where you remain and still have some control of your aircraft.

It is nice and fortuitous when your problem occurs on the ground as apposed to in the air prior to flight. Just be prepared and aware that things do happen and that running out of fuel does not mean 'running out of fuel' necessarily. Fuel blockages, Bad fuel, failed fuel pump(s), pressure, lines, and fuel feed problems etc. are just some of the factors one will encounter.

The main offender in the Aeromodelling world is however, forgetting to set your timer and overstaying your welcome time in the air. We have all done it.



FAI Sporting Licence

With respect to the end of the financial years membership renewal at WAMASC please be aware that there have been some changes in the way your **FAI Sporting Licence** is now re-issued to you through the AWA (Aeromodellers of Western Australia).

The previous action of posting said licence to an individual has ceased – this is a cost saving exercise that has been put in place by the AWA.

All licence(s) are now to be picked up from the Club by individual members. To date we hold a booklet containing a myriad of licences that have not been picked up by members.

Should you be missing your licence please see a committee member for issue. Your licence should be on you at all times as it is a requirement to prove rating endorsement(s) if and when asked.

Should you not have the correct and appropriate rating – please do not fly until you do



SAFE FLYING

“Flying has torn apart the relationship of space and time: it uses our old clock but with new yardsticks”

Charles A. Lindbergh