RNF

FINAL REPORT ON ACCIDENT

Front engine power loss and left main landing gear collapse during landing

M-02307/AIG-11

N442MT
Cessna 337
Private owner
Reykjavik Airport (BIRK)
May 23rd 2007

1 Factual information

Location and time	
Location:	Reykjavik Airport, Iceland (BIRK), RWY 13.
Date:	May 23rd 2007.
Time[1]:	23:15.

Aircraft information	
Type:	Cessna 337.
Registration:	N442MT.
Year of manufacture:	1966.
Serial number:	337-0331.
Certificate of Airworthiness:	Valid.

Other information	
Type of flight:	Ferry flight.
Persons on board:	2.
Injuries:	None.
Nature of damage:	Left main landing gear, propeller and minor fuselage damage.
Short description:	Front engine power loss and left main landing gear collapse during landing.
Owner:	Private.
Operator:	Private.
Weather:	Wind 260/05, Temp 4°C, Visibility +10KM.
Meteorological conditions:	Visual Meteorological Conditions (VMC).
Flight rules:	Instrument Flight Rules (IFR).

Commander		
Age, sex:	22 year old, male.	
License:	Holder of ATPL license issued by CAA in Spain. License was valid.	
Medical certificate:	Valid.	
Ratings:	IR.	
Experience:	Total all types:	528
	Total on type:	19
	Last 90 days:	19
	Last 24 hours:	9
Previous rest period:	Less than five hours.	

[1] All hours in this report are UTC.

1.1 History of flight

On May 22nd 2007 the pilot of N442MT (Cessna 337) and one passenger departed from Reading USA to Goose Bay Canada as a part of a group of three ferry flight aircrafts from USA to Spain (USA-Canada-**Greenland-Iceland**-UK-Spain).

According to the pilot's handheld GPS device, the landing in Goose Bay was on the 23rd at 05:50 UTC. The aircraft was refueled in Goose Bay without the pilot's oversight. The departure from Goose Bay (CYYR) was at 13:14 (Taxi start at 12:34) UTC on the 23rd of May. The landing in Narsarsuaq, Greenland was at 17:36 UTC. The aircraft was refueled in Narsarsuaq (BGBW), also without the pilot's oversight.

According to the pilot's GPS, take-off from BGBW was at 18:35 UTC and the cruising altitude over the Atlantic Ocean was FL 130. During the first hour of flight, both fuel selectors were selected to the MAIN position. At approximately 19:35 the pilot switched the fuel selector for the rear engine to the AUX position and five minutes later he also switched the fuel selector for the front engine to AUX.

A few minutes later, the pilot noticed that the rear engine was running roughly and seconds later the RPM as well as the fuel flow started to drop. The first reaction of the pilot was to set the fuel pumps to the ON position and switch the rear engine fuel selector back to MAIN. According to the pilot, the power and fuel flow went back to normal. The pilot then switched the fuel selector for the front engine also to MAIN.

Prior to descent, or at approximately 22:10, the pilot switched the front engine fuel selector to AUX. The rear engine was still on MAIN. About 30 minutes later the pilot switched the fuel selector for the front engine back to MAIN.

At 2.000 feet the pilot received a clearance from Reykjavik Airport tower to land on runway 01. According to the pilot, he was very high on the approach, so he requested a right 360º turn to lose altitude (see figure 1).

Figure 1, right turn before approaching RWY 01

According to the pilot's GPS the aircraft was at 1.057 feet just before the requested 360° turn and the ground speed was recorded as 106 knots. After the turn the pilot believed that the aircraft was still a bit a high but decided to land. According to the pilot's GPS the aircraft was at 474 feet at the end of the 360°turn and the ground speed was 100 knots. According to the pilot, the landing speed was too high, resulting in a hard landing causing the plane to bounce on the runway and the GPS to stop tracking. The last recorded track on the GPS was at 97 feet [2] and ground speed 68 knots (see figure 1). The pilot decided to go-around. The tower controller cleared the aircraft to turn left for another approach to runway 01.

[2] Elevation of BIRK is 45 feet

The pilot selected the gear up. At 100-200 feet above ground the front engine stopped running. According to the pilot, his first reaction was to set the fuel pump to ON and switch the fuel selector for the front engine to AUX.

The pilot turned the aircraft on left crosswind and prepared the front engine for an engine-out operation (feather, mixture off). At this point the fuel flow for the rear engine started to drop. When the aircraft was on final for runway 01, for the second time, the tower notified the pilot that the gear was still in the up-position. The pilot decided to go-around again.

The pilot and the passenger started manual extension of the landing gear by using the emergency hand pump. The pilot did not believe that he had enough engine power for another approach to runway 01 and decided to land on runway 13.

During the landing roll on runway 13 the left main landing gear collapsed and the aircraft went off the runway, over a grassy area and came to a rest on runway 01 (see figure 2). The pilot and the passenger were not injured.

Figure 2, the aircraft where it came to a rest

2 Analysis and conclusions

Due to lack of information, it was not possible to determine the aircrafts fuel quantity prior to the fuelling at BGBW airport in Greenland. Based on information from the Canadian Authorities, the Aircraft was fueled at CYYR (Goose Bay/Canada), most probably with fuel from an automobile gas station. The Airport Authorities in BGBW (Narsarsuaq/Greenland), stated that N442MT was fuelled with 272 liters of Avgas, 100LL to the MAIN tanks before departure.

At field investigation, the fuel selector's of N442MT where in following positions (see figure 3):

Front engine in OFF position
Rear engine in AUX right

Figure 4 fuel selectors

By draining the fuel from the tanks, the result was as follows:

Left MAIN	0,4 ltr.	(Blue colored fuel)
Left AUX	36 ltr.	(Blue colored fuel)
Right MAIN	16 ltr.	(Blue colored fuel)
Right AUX	1.5 ltr.	(Yellow colored fuel)

According to the fuel system schematic (see figure 4), the front engine receives fuel from left AUX tank as well as right or left MAIN tanks. During the investigation, it was not possible to determine which MAIN tanks were selected during the flight.
After refueling the aircraft, both engines worked normally.

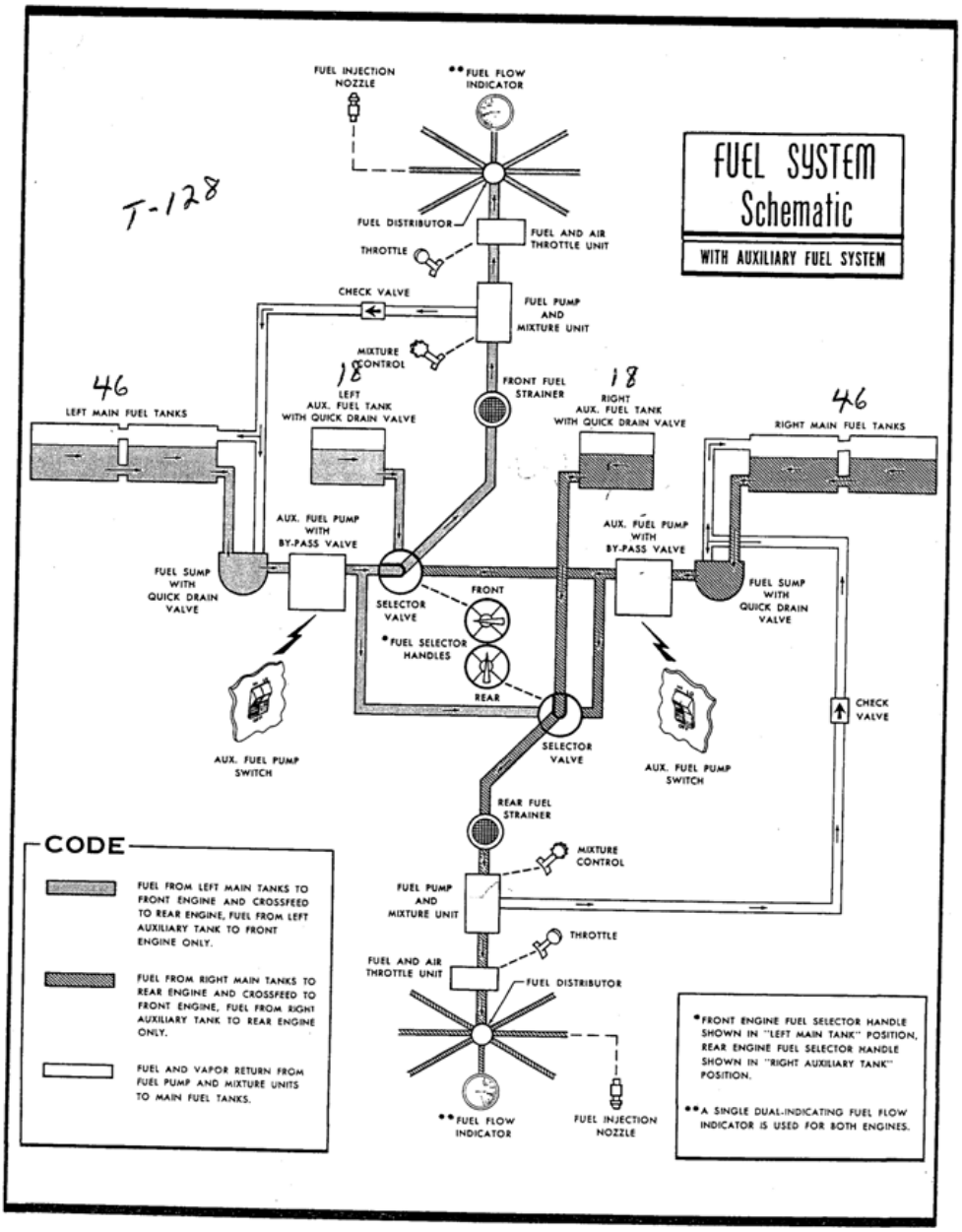

Figure 2-1.

2-2

Figure 5

According to Cessna Owner's manual, System Emergency procedures[3], the landing gear must be extended with the emergency hydraulic hand pump if the front propeller is feathered. As described in chapter 1.1, History of flight, the pilot did feather the front propeller prior to the second attempt to land on RWY 01.

When the aircraft was hoisted from where it came to a rest, the left main gear did lock into down position. By further testing the manual extension system of the landing gear it worked properly by using the handle pump and there were no signs of leakage.
It took investigators approximately 1 ½ minutes to extend the landing gear by manually pumping the gear down.

The GPS shows that the aircraft was on the ground in Goose Bay for 6 hours and 38 minutes. This includes 30 minutes of taxi before takeoff.
By taking into account time used for preflight preparation, it can be estimated that the actual rest period of the pilot would have been less than 5 hours.

[3] Cessna Owner's manual, System Emergency procedures, page 3-5. Single engine Approach

2.1 Findings as to causes and contributing factors

AAIB-Iceland believes that the front engine stopped running due to fuel starvation.

AAIB-Iceland considers that left main landing gear was not in a locked position during landing, most probably because the pilot or his passenger failed to manually extend the gear until all wheels where in locked position.

AAIB-Iceland believes that the pilot's fatigue was a contributing factor in relation to his fuel mismanagement, his decision making and his way of maneuvering during the approaches and landings.

2.2 Findings as to risk

The pilot did not oversee the refueling of the aircraft himself while in Greenland and he did not ensure that he had sufficient fuel onboard the aircraft for the flight from Greenland to Iceland.

2.3 Other findings

None

Safety recommendations, information, and action taken

2.4 Safety recommendations

None

2.5 Safety information

None

2.6 Safety action taken

None

Reykjavik, July 28, 2010

Aircraft Accident Investigation Board of Iceland