



when both engines stopped simultaneously. He tried to restart them but failed. He then force-landed at Nangungu in Moduli in an open field about 38.1 nm and radial 277\* from Kilimanjaro International Airport. There was another traffic taking off from Arusha, which heard 5H-UNT and relayed this position to Arusha Control Tower.

The forced landing in uneven ground resulted in the collapse of left main gear after it contacted a boulder. The left wing consequently contacted the ground. At this time the aircraft had rolled for sometime along its path hence had a reduction of its speed. The aircraft suffered damage only on the left wing and the left engine propeller, which was slightly bent at its tip.

The passengers deplaned safely and no one was injured. Beside damage to the left wing, left engine propeller and the collapsed main gear, the aircraft cabin and the cockpit were intact.

No passenger could be located for interview, as by the time the Inspector arrived at the accident site all had left the country.

### **Damage to the aircraft**

The aircraft main fuselage received almost no damage except at the port wing root. The left wing had contacted the ground and bent close to the wing root. Some wrinkling marks could be seen on wing top. The nose gear was intact with no visible signs of any damage. One of left engine propeller had a bent close to its tip and the propeller hub had a slight damage. The aircraft came to rest perpendicular to its direction of travel with left wing tip being its pivotal point resting on ground. The damage to the fuselage was seen to be minimum as the aircraft had run for some distance on the ground before the left main gear collapsed, thus attaining a slow speed.

The inside of the cockpit and the cabin were intact with no visible damage. Physical inspection of the wing fuel tanks indicated that all main and tip tanks were completely empty. Samples of fuel were collected from the fuel drains of all four tanks for inspection. The samples of fuel taken showed that fuel was clean and had no sediments or dirty. Positions of fuel selector valves showed that both engines were on starboard main fuel tank, indicating that both engines were using fuel

from the starboard main tank at the time of engines failure. Fuel pump switches in the cockpit were on port main tank for port engine and starboard switch was on starboard tip tank for starboard engine. This contradicts with the pilot's version that he had been using both wing tip tanks just before the engines failure and also the position of fuel selector valves indicated otherwise.

Inspections of the aircraft tech log showed that it was not properly completed even for many previous flights. No fuel quantity uplifts had been recorded. Navy logs were also not properly filled. Columns were mixed and data entry not satisfactory.

## **Analysis**

The aircraft had been flying about 9 short sectors. No record of refueling has been indicated in the tech log or the nav logs presented. The positions of fuel selector valves indicated that both engines were being fed from the starboard fuel tank and that there was no fuel in all the tanks. Fuel pump switches were very inconsistent with normal practice of having the fuel pump switches ON for the fuel tank in use. It is considered that the action of changing aircraft attitude when fuel in tanks is low can cause fuel starvation to the engines. The action of changing from cruise attitude to a descend could, as expected have starved the engines from fuel. Both engines stopped simultaneously indicating that both were being fed from the same tank. This could be proved from the position of the fuel selector valves both being on starboard main tank.

The pilot executed a perfect emergence landing with minimum damage to the aircraft and passengers. This was in a way contributed by the physical condition of the area where the aircraft was landed. The rescue was swift as well due to the fact the area of emergency landing was inside the military area, and clear very close to roads and a village.

## **Conclusions**

1. The aircraft had been properly maintained by Tanzanian Air Services Ltd.

The aircraft had been sub chartered from a company which did not have an AOC.

2. The pilot did not have Tanzanian licence to fly the Tanzanian registered aircraft in Tanzania.
3. The weather was very clear and is not a factor to this accident.
4. During start of the descend into Arusha, both engines stopped simultaneously.
5. Carburetor icing should be ruled out, as it could not have affected both engines simultaneously.
6. Due to the nature of the failure, there is very great possibility that the aircraft had run short of fuel. Though the normal endurance of this aircraft could be more than 6 hours with wing tip tanks, the short sectors and many take offs involved have compromised the endurance of the aircraft in this particular situation, where only 5.5 hrs had been flown. It was not practically possible for the villagers to have siphoned fuel from all the four tanks completely. At least one tank could have been skipped and hence have some fuel remained.

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7 The pilot had been flying commercially without valid licence while processing his licence as shown by his logbook. He was unfortunately misled to believe that he could continue to fly during the processing of his licence.

The company employing him allowed an unlicensed pilot to fly company aircraft commercially without ascertaining that the pilot was holding a valid licence.

The amount of hours in his logbook showed that the pilot had a total of 640 flying hours, which is below the recommended minimum amount of hours set by AIC 60/2000 for foreign pilots to be employed in this country. The company did not follow this recommendation. Companies must follow recommended practices of the country they operate.

## **Safety Recommendations**

1. It is recommended that the pilot undergoes route training under company training pilot and be checked before resuming commercial operations as PIC. The training

should include fuel planning and proper completion of techlog and navlogs.

2. Fuel uplifts must be shown in the techlog and the subsequent fuel remaining after each sector recorded before each takeoff. (This is a standard requirement which was not followed)

Further investigations to be carried on to identify Airwave Limited.