Air Accident Investigation Central Directorate

Final Accident Report

Accident involving

Registration of aircraft: ST-TYB

Type of aircraft: AN-28

Location: Sarif-Umra
180 km west of
Elfasher

On 06.07.09 at time 0650

UTC

Civil Aviation Authority-Sudan

Air Accident Investigation Central Directora

(AAICD)

Tel: +249155775152

Fax: +249155775150

الهيئة العامة للطيران المدنى–السودان

الإدارة المركزية للتحقيق في حوادث الطائرات

تلفون : **00249155775152**

فاكس : **00249155775150**

Date: - 00.00.2010

Ref:-CAA/ACC/ST-TYB, AN-28

1. A/C Operator:	Eldinder Aviation
2. Aircraft Manufacturer:	Antonov
3. Aircraft Type:	AN-28
4. Aircraft Registration:	ST-TYB
5. Aircraft Nationality:	Sudanese
6. Date and Time of Accident :	06.07.09 at time 0650 UTC
7. Location:	Sarif-Umra 180 km west of Elfasher N °13 29.527 E °023 16.794

Synopsis:-

The accident was notified to the AAICD by the administration of international airports.

Investigations conducted by a board formed by the DGCAA.

Authority releasing the report: DGCAA

ST-TYB , AN-28 proceeded as filed from Elfasher to Sarif-Umra, upon landing destination, the aircraft encountered an unexpected weather phenomena led to the sudden crash of the aircraft. Crew was safe and the aircraft was extremely damaged.

- All times in this report are in UTC
- Local time (UTC +3 HRS).
- The sole objectives of this investigation and this final report is the prevention of accidents and incidents and not to apportion blame or liability and that is in accordance with annex 13 to the convention of International Civil Aviation.

1- *Factual Information:-*

1.1 *History of the flight*:

The flight progress strip at Elfasher aerodrome control tower illustrate that on the 6th of July 2009 – ST-TYB, AN-28 departed Elfasher at time 0601 UTC, estimated time to arrive destination Sarif-Umra was 0650 UTC, persons on board were two (crew only), intended flight level was 085 (VFR) re-cleared later FL 105, fuel endurance was 0330hrs, load on board as indicated on the cargo manifest was 1511

k.gm (food stuff) destined for the UNAMID forces. Aircraft centre of gravity was organized. Calculated actual take off weight was 6335 k.gm and the actual landing weight was 6035 k.gm as reported by the pilot.

The aircraft proceeded normally to destination at FL 105, when it reached the airfield, the pilot stated that, they started descend gradually at a speed of 250 km/h willing to check the strip serviceability and to specify the direction of landing from the located wind sock.

They detected that, the strip was clear, dry and the wind was favourable to the direction of 23 (strip 23/05). As the crew established a speed of 210km/h at an altitude of 60meters on final approach, they saw a dust devil storm on their right crossing the air strip, to avoid this phenomena, they decided to go around for another approach.

Eye witnesses confirmed the occurrence of the storm at the time the aircraft commenced the final approach. The crew reported that, they started a right turn and applied full power to gain height, but they felt that there was no response from the engines and the aircraft was influenced by a wind shear and began to sink.

The crew managed to control the aircraft, but in few minutes its altitude decreased rapidly. At time 0650 UTC the aircraft impacted with the ground and rolled, there after struck a small rock and bounced, finally the aircraft impacted the ground by the left main gear and nose, and stopped at a distance of 1850meters from the beginning of strip 05 coordinates N 13 29.527 —— E 023 16.794.

Crews (2) were safe and the aircraft sustained substantial damage.

1.2 Injuries to Persons:

Injuries	Crew	Passengers	Others
Fatal	None	None	None
Serious	None	None	None
Minor / None	2	None	None

1.3 Damage to aircraft:-

Major parts sustained serious damages, excluding the engines. Some parts detached due to impact and friction with the ground.

1.4 Other damages:-

No other damages occurred, the aircraft crashed at a flat sandy area covered with scattered bushes and small rocks.

1.5 Personnel information:-

	Pilot in Command	*First Officer*

Name & Nationality	Barionv Serchei Moldavia	Brlevich Vlidislav Kazakhstanis
Date of birth	15.4.1960	12.01.1969
License type and number	ATPL No.0360	CPL No. 00125
Total flying experience	10144	5500
Total hrs on type	1269	950
Total last 3 months	100:37	200
Total last 28 days	97:07	100
Total last 7 days	18:07	18:07
Last route check	20.05.2009	01.02.2009
Date of medical	07.05.2010	22.08.2009
I/R validation	26.06.2010	22.08.2009

1.6 Aircraft Information:-

- Certificate of registration No. SPL/0136/2.

- Certificate of airworthiness No. AWP/COA/0190/2007 valid until 31.08.2009.
- Prolongation date 18.04.2009.
- Maximum take off and landing weight 6500 k.gm.
- Type of fuel used AVAGAS.

Type and Registration of A/C	AN-28 , ST-TYB
Date of Manufacture & Serial .No.	18.04.1989 S/N IAE 006-02
Total flying hours since new	2180:41 cycles 2113
Engines type and serial number	TBD-10 B 1) 281983051 2) 281983052
Time between overhaul (TBO)	1) 2500H 2) 2500H 3200 cycle 3750 cycle
Time since new (TSN)	1) 2217:44 H 2) 2129:40 H
Remaining hours	1) 82:16 H 2) 370:40 H
Monthly flying	1) 00:40 H 2) 00:40 H
Propellers type and serial number	AB-24 AH 1) J061041 2) J38004
Time since new (TSN)	1) 2217:44 H 2) 2129:40 H
Time since overhaul (TSO)	1) 760:34 2) 760:34
Monthly Flying	1) 00:40 H 2) 00:40 H
Location of Accident	N 13 29.527 E 023 16.794
Phase of flight	Going around

1.7 Meteorological Information:-

- Weather received by the aircraft before departure was:

Elfasher Meteorological report at time 0600 UTC surface wind 180/03 CAVOK temp. 17 dew point 18 QNH 1010.

- No forecasted weather obtained by the aircraft before departure or along the flight path.
- No observed or forecasted weather available at destination.
- Khartoum meteorological office monitored on the satellite screen at Sarif-Umra area, the presence of low clouds associated with CB clouds and also noticed the change in wind direction and speed (south east / middle).

1.8 Aids to Navigation:-

No navigation facilities installed at the strip.

1.9 Communication:-

The aircraft was equipped with serviceable VHF and HF, but no means of communications available at destination. .

1.10 Aerodrome Information:-

The surface of the air strip is a compacted gravel, length 1500meters and strip orientation (23/05).

1.11 Flight Recorders:-

FDR (flight data recorder):

Type BUR-12-A, MLP-23-1

S/N 0420216

Its condition on recovery was satisfactory.

CVR (Cockpit voice recorder)

Aircraft was not equipped with this device

Result of decoding and analysis of the FDR readout:-

The readout revealed the following :-

- FDR First operation was on 29.04.2002.
- The recorded data on the 12 tracks unsatisfactory (doesn't reflect the real aircraft behavior) due to FDAU failure.
- Total duration of the recorded data was 30hrs 25mins, including 29hrs of data on aircraft S/N 29787 and 1 hr 25mins of data on aircraft S/N 24143 (stop ST-TYB S/N IAE 006-02).
- Last recorded data was on the 5th of May 2002 after which the tape was torn and the FDR stopped recording.

Conclusion:-

The FDR was in a satisfactory condition, but doesn't contain any information on the accident, due to the tape was torn, in addition it was inoperative approximately since the 5th of May 2002.

1.12 Wreckage and impact information:-

- Aircraft first impact with the ground at 1600 meters from the beginning of the air strip (05).
- At 152 meters from the first impact the aircraft struck with a rock of 0.5meters height.
- At 51meters from the rock the left landing gear and the left wing strut detached from the aircraft.
- At 251meters from the first impact the aircraft stopped.
- Finally the aircraft settled on the damaged nose and on the right wing. The left wing was broken, the left wing propeller blades penetrated the fuselage behind the pilot seat, the nose landing gear collapsed, the right wing tip damaged, the right wing propeller blades bent and damaged, and the tail unit (cargo compartment) was not influenced.

1.13 Medical and Pathological Information:-

1) No physical or disability factor influenced the crew performance during flight.

2) The crew was subjected to a medical check after the aircraft crash. Doctor report conclusion as follows:-

- A 49 years old man and a 40 years old man both with minor injury after accident.

1.14 Fire:-

No sign of fire occurrence either during flight or after impact.

1.15 Survival Aspect:-

The Pilot in command and the Co-pilot evacuated the aircraft safely through the aircraft windows.

1.16 Tests and research:-

No lab tests or research performed to the aircraft parts.

1.17 Organization and management information:-

Eldinder aviation has a valid AOC and qualified crew according to the laid down standards adopted by the regulatory body.

Eldinder aviation has an approved maintenance schedule with AZZA aircraft maintenance centre for routine maintenance schedule.

FDR was mounted by the aircraft operator on several aircraft (S/N 29787- S/N 24143 and S/N IAE 006-02) this behavior constitute a clear violation to the laws and air navigation regulations.

2- Analysis:-

Surrounding evidences clarify that the aircraft performance was not impaired either within departure stages or during flight, once more the aircraft weight doesn't exceed the required minima and aircraft balance was properly achieved. Crew capabilities and formalities doesn't violate the procedures and regulations stated in the air law and those contained in the air navigation regulations documents. As stated by the crew, that the aircraft faced an adverse weather conditions while commencing the final approach and after missed approach. So it is very important to focus on the factors that may constitute a potential hazard to the safe operation of the aircraft, such as en-route weather conditions and weather information at destination point. No weather forecast information obtained from Khartoum meteorological office before departure, although the season was a rainy season and weather deterioration was expected at any time especially in July. More over the strip serviceability must seriously be considered, crew should endeavour to obtain the serviceability of the air strip by any means of communication before departure to enable them to build an ideal plan and to avoid in advance the un-necessary maneuvers at destination.

Khartoum meteorological office confirmed the presence of CB clouds among the low clouds as observed by the satellite, those low clouds could possibly increase the surface wind speed and produce an up and down drafts. Eye witnesses and local authorities at Sarif-Umra strip confirmed the existence of storm (devil dust storm) at the time the aircraft approaches the air field, so it was apparent that the aircraft faced an unstable climate (dust storm, wind shear, and down draft) those phenomenon impeded the aircraft engines to generate the required thrust for supporting the aircraft to stay in the air, As a result the aircraft lost height and then crashed.

The expected useful data to be analyzed from the FDR readout was not extracted, for the FDR was inoperative since the 5th of May 2002 and no

calibration executed to the FDR since along time, plus the operator managed to mount the FDR from one aircraft to another.

3- *Conclusion:-*

3.1 Findings:-

- The crew was rated and entitled to fly the aircraft.
- The aircraft was insured and maintained according to the approved maintenance schedule.
- FDR installation and calibration maintained in a very reckless manner.
- En-route weather forecast information wasn't obtained by the company.
- The air strip was not equipped with communication and navigation facilities.
- No meteorological information resources available at Sarif-Umra.
- No dangerous goods on board the aircraft.

3.2 Causes:-

The unexpected weather phenomena at destination, and environmental conditions, wind shear and CB down drafts caused the accident.

4- *Safety Recommendation:-*

- All flying crew should obtain weather forecast information before departure form Khartoum meteorological office.
- All flying crew should obtain before departure and by any means the information regarding the serviceability of strips destined for, especially during rainy seasons.
- All operators should stick to the rules governing the installation and calibration of the FDRs and should bear in mind that it is a no-go item.

Abdel Muhsin Ibn Idris
Investigator in charge


ST-TYB
SUPREME


ST-TYB
SUPREME
8 15:26


ST-TYB
8 15:27


8 15:28


8 15:42


8 15:32


СКОРОСТЬ
TEST
RANGE
FSR
8 15:46


АГ
FSR
МЕТРЫ
ТЕСТ
8 15:48


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