REPUBLIC OF SOUTH SUDAN

REPUBLIC OF SOUTH SUDAN
MINISTRY OF TRANSPORT

AIRCRAFT ACCIDENT INCIDENT INVESTIGATIONS DEPARTMENT

REPORT TITLE:

Final Report of Antonov-26B, EX-126 Accident in Juba-South Sudan

List of contents

Factual information.

GLOSSARY OF ABREVIATIONS:

ACCID:……Accident.
INCID……Incident.
OPS:……Operations.
RSS:……Republic of South Sudan.
SSCAA:……South Sudan Civil Aviation Authority.
AOC:……Aircraft Operator Certificate.
C of A:……Certificate of Airworthiness.
C of R:……Certificate of Registration.
CVR:……Cockpit Voice Recorder.
FDR:……Flight Data Recorder.
NAV:……Navigation.
DEST:……Destination.
UHF:……Ultra High Frequency.
VHF:……Very High Frequency.
ICAO:……International Civil Aviation Organization.
NM:……Nautical Mile.
SS: …… South Sudan.
ATC: ……Air Traffic Control.
AAIID: …… Aircraft Accident Incident Investigation Department.
DME:……Distance Measuring Equipment.
VOR: …… Very High Frequency Omni Directional Range.
SWA……South West Aviation.
ADREP……Accident/incident data reporting system.
AIG……Accident Investigation and Prevention.
IIC……Investigator –in-charge.
SARPs……Standards and Recommended Practices
SDCPS……Safety data collection and processing. systems
USOAP……Universal Safety Oversight Audit Programmer.

1. Factual Information.

Introduction.

The International Civil Aviation Organization (ICAO) is an international organization that governs and regulates the standard of Civil Aviation Annexes.
Since the Republic of South Sudan is a member of the ICAO, we are required to conduct aircraft investigations according to ICAO Annex 13 of Chicago Convention, which deals with Regulation of Aircraft Accident, and Incident Investigation.

In accordance with Annex 13, chapter 3, paragraph 3.1 provisions, the purpose of this investigation is to prevent occurrence of accident in the future.

The investigation shall have independence and unrestricted authority over its conduct.

Annex 13 Chapter 5; paragraph 5.4.1 also indicates that the investigation proceeding is not to apportion any blame or liability. If any criminal or administrative liability, it shall be separate and handled by a different committee after the final report completed.

ABOUT THE AAIID

AAIID is aircraft accident incident investigation department within South Sudan Ministry of Transport and is attached to South Sudan Civil Aviation Authority. Its purpose is to investigate the crash of any civil aircraft in the Republic of South Sudan.
AAIIDs function is to improve safety and public confidence in the aviation industry's safety data recording, analysis and research, fostering safety awareness, knowledge and action.

The AAIID preforms its functions in accordance with provisions of Chapter 3 paragraphs 3.1 of the International Civil Aviation Organization (ICAO), Annex 13 to the Chicago Convention of 1944.

Purpose of Safety Investigations

The object of a safety investigation is to identify and reduce safety-related risk. An AAIID investigation determines and communicates the factors related to the air transport safety matter being investigated.

It is not a function of the AAIID to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the AAIID endeavors to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation.

For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential of the safety.

Figure: 1 Picture of AN-26B: Registration EX-126 before the Accident.

Figure 2: After the Crash of An-26B (EX-126)

REPUBLIC OF SOUTH SUDAN
MINISTRY OF TRANSPORT

AIRCRAFT ACCIDENT INVESTIGATIONS DEPARTMENT

Data: 22.08.2020

AIRCRAFT ACCIDENT NOTIFICATION

- Status……..Preliminary.
- Location of the Accident…….Juba, South Sudan
- Type of A/C ……..An-26B
- Date & time of Accident…….22th 08/2020. at 05:41 UTC, 08:41 Local Time.
- Number of Passengers…….6
- Fatalities……..9
- Injuries……..1
- Number of Crew……3
- Company name……..South West Aviation
- Manufacturer……..Antonov Design Bureau
- Year of manufacturer……..1981
- A/C registration No and date……EX-126.
- A/C serial number……..MSN 11508
- Engine type……Ivchenko AI-24
- Point of departure……..Juba Airport International.
- Point of intended landing…….Aweil Airstrip
- Nature of A/C damages……..Beyond Repair
- Phase of A/C during Accident……..During Takeoff

Narrative.

At about 08:41 on Saturday, 22nd August 2020, an accident occurred shortly after takeoff from Juba International Airport. It was an Antonov An-26B **cargo aircraft** Registration EX-126 belonging to South West Aviation Company. It was flying with cargo belonging to Opportunity Bank. Which was scheduled for Aweil and then proceeding to Wau.

The aircraft was meant to take cargo and also **6 passengers** boarded from Juba International Airport on 22th August 2020. This was about 08:41 local time.
Just after takeoff from Juba International Airport and taking a low angle of climb, witnesses on the ground saw it nosedive and less than 2 minute it crashed in Kemiru residential area, northwest of Juba International Airport about 8 km from takeoff.

The Honorable Minister of Transport formed a committee to investigate the circumstances, which led to this terrible accident.

1.1 History of Flight:

The aircraft is of a type-Antonov (An-26B) with Registration number EX-126 from Kyrgyzstan according to its registration documents. Skyway Air Company owns the aircraft.

The aircraft started loading its cargo the day before the accident on date 21.08.2020. The contents of the cargo include some food items, 4 motorbikes. One motorbikes weight was 113kg.
Also car tires, dry batteries, spare parts for small cars, of which the total weight on the evening was 4,224kg according to the loadmaster.

The morning of the flight, the aircraft was topped with more fuel and laden with bags of cash bills, about 16 bags. The weight of bags was not known. This cash belongs to Opportunity Bank. The amount loaded was **SSP157, 644,960** in local currency according to cash shipment clearance form from the bank.

South West Aviation Co. Ltd. chartered the aircraft to their client - Opportunity Bank to Aweil (HSAW) and Wau (HSWW) and then returns back to Juba International Airport according to the flight plan.

The Captain of the An-26 request departure clearance from the ATC and they were given clearance to use runway 31 for departure. The aircraft then took off at 05:37Z, which is 08:37am local time.

Their departure was successful from Rwy31 heading to Aweil, and after 3 minutes at 05:40Z, 08:40 local time the air traffic controller checked if the departure distance out of Juba was clear so that he could clear another aircraft on lineup for take off. He, the ATC called the crew three times but there was no response. The time was now 05:42Z 08:42am local time that the ATC tried to checked them gain even without any response.

By that time there were low clouds (stratus) heading from East to West. At 05:59z 08:59 am the ATC advised a departed aircraft (5H-MIK), a Caravan C208B to go and checked up a smoke billowing at 6miles they see from the airport tower, and the Caravan Captain truly confirmed that it was indeed a wreckage of an An-26B EX-126 crashed.

The Flight Data Recorder (FDR) was recovered on the 26th August 2020 by a joint team comprising of Aircraft Accident Investigators (AIG), Civil Aviation Authority (CAA), National Security (SS-NSS), Military Intelligence (MI), South Sudan Police Service (SSPS) and an Engineer from **AAIID** who went to the crash site for assessment.
The Black Box was recovered in good condition. It was taken for analysis in Ukraine- the country of registry. The National Bureau for Incidents and Accidents Investigation of Civil Aircraft (NBAAI) the conduct and analyze the device in their laboratory.

1.2 Injuries to Persons.

INJURIES	CREW	PASSENGERS	OTHERS
FATAL	3	6	
SERIOUS	0	1	
MINOR/NONE	0	0	
TOTAL	3	6	

1.3 Damage to Aircraft

- **Fuselage**

When the investigation team, visited the crash site, there was visible total damage and charred remains of the passengers by the continuous inferno of fire to the aircraft fuselage where the cargo Section and the crew were seating. The whole fuselage was compressed due to severe impact to the ground. The cockpit section were scattered and in pieces. The cockpit was compressed and burnt and the vertical stabilizer, horizontal stabilizer, and rudder, elevator were overturned showing serious damage. The LH, and RH wing of aircraft where separate from main fuselage and totally burnt and destroy.

- **Power plant.**

Both engines were completely destroyed especially the left engine was total burnt with propellers 1,2,3,4 separated from reduction gearboxes of LH gearbox. The right engine also destroyed and propellers still attached to engine on RH.

- **Landing gears.**

The right side of main landing gear was separated from the fuselage on two positions, with the RH landing gear located about 25m from the aircraft wreckage but the LH landing gear was still attached to the left engine, while the nose landing gear was totally destroyed by fire.

- **Fuel Tanks:**

The fuel tanks of both main tanks and internal tanks were damaged, as fuel leakage was visible on the ground indicating that the fuel system has sustained a major damage and fire broke out on it and totally consumed by fire.

1.4 Other damages.

There were damages to a local agricultural farm on the ground during the aircraft crash as it continued destroying some fruit trees and vegetables in the area. However, there was an environmental Contamination of fuel, hydraulics, engine oils and other toxic materials deposited on the farmland by the aircraft continuous spillage of these contaminants and fragments.

1.5 Personal information.

1.5.1. Pilot in Command (PIC).

Age	62 Years 15/03/1958
Nationality	Tajikistan
Qualification	ATPL-0213-TJ
Republic of Tajikistan Licence #	0213
A/C Type rating	An-24/An-26/An-32
Weather Minimum	N/A
Total flight hours	N/A - lost with pilot logbook
Flight Hours on Type	N/A -lost with pilot logbook
Flight Hours as PIC	N/A- lost with pilot logbook

The pilot in commands license was not attached with medical validation PIC license it still valid until 31.03.2021.

1.5.2 Co-Pilot (Co-P).

Age	30 Years, Born in 16/09/1990
Nationality	Tajikistani
Qualification	CPL 00375
Republic of Tajikistan Licence #	00375
A/C Type rating	N/A
Weather Minimum	N/A
Total flight hours	N/A- lost with pilot logbook
Flight Hours on Type	N/A- lost with pilot logbook
Flight Hours as PIC	N/A- lost with pilot logbook

The co-pilot license was not attached with medical validation and type rating was not indicated license of co-pilot is valid until 02/11/2020.

1.5.3 Flight Engineer.

Age	59 years Born in 05/12/1961
Nationality	Ukrainian
Qualification	Flight Engineer
Ukraine Licence #	N/A
Type of aircraft rating	N/A
Additional license	N/A

The flight engineer license was lost in the accident site and the committee did not found the copy from civil aviation authority.

1.5.4 Ground Engineer.

Age	38 years. Born on 15/05/1982
Nationality	Ukrainian
Qualification	Aircraft Maintenance Engineer
Ukraine Licence #	AML 001531
Type of aircraft rating	An-26
Additional license	N/A

The holder of this license is authorized to exercise the privileges of the license, date of expiry 02/02/2020.

1.5.4 Ground Engineer.

Age	42 years. Born on 05/11/1978
Nationality	Ukrainian
Qualification	AME (Avionic)
Ukraine Licence #	AML 003103
Type of aircraft rating	An-26, An-25, An-32
Additional license	N/A

The holder of this license is authorized to exercise the privileges of the license, date of expiry 12/01/2022.

1.6. Aircraft Information.

The **Antonov An-26B** is a twin-engine turboprop short-to medium-range military transport aircraft by the Soviet design bureau and was called *OKB Antonov today is call Antonov ASTC, Ukraine Aeronautical scientific-technical complex*

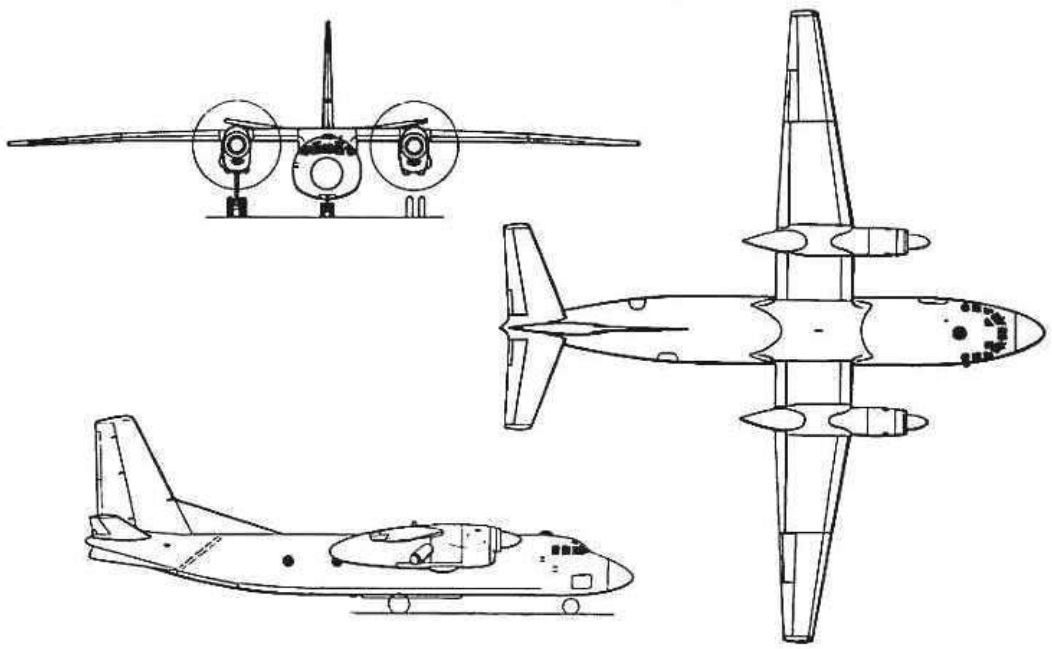

Figure 3: Aircraft General View and Specifications

General characteristics

- **Crew:** Five (Two pilots, one radio operator, one flight engineer, one navigator)
- **Length:** 23.8 m (78 ft. 1 in)
- **Wingspan:** 29.3 m (96 ft. 2 in)
- **Height:** 8.58 m (28 ft. 2 in)
- **Empty weight:** 15,020 kg (33,113 lb.)
- **Max takeoff weight:** 24,000 kg (52,911 lb.)
- **Power plant:** 2 × Progress AI-24VT Turboprop engines, 2,103 kW (2,820 hp) each
- **Power plant:** 1 × Tumansky Ru-19-A300 Turbojet booster / APU, 7.85 kN (1,760 lbf) thrust
- **Propellers:** 4-bladed Constant speed metal bladed propellers

Performance

- **Cruise speed:** 440 km/h (270 mph, 240 kn)
- **Range:** 2,500 km (1,600 mi, 1,300 nmi) with maximum fuel
- **Range with max payload:** 1,100 km (680 mi)
- **Service ceiling:** 7,500 m (24,600 ft.)
- **Rate of climb:** 8 m/s (1,600 ft./min)

After successful operations of the An-24T tactical transport in austere locations, interest in a version with a retractable cargo ramp increased. Initial studies for the retractable ramp were carried out as part of the projected An-40 medium transport.

When given the go-ahead for the An-26 in March 1968, the Antonov OKB adapted the ramp design of the An-40 to the An-24 fuselage, resulting in the An-26. Particular attention was given to the military mission, and the majority of early An-26 production was delivered to

Using the majority of the An-24 airframe, with its high-set cantilevered wings, twin turboprops and stalky main undercarriage, the An-26 included military equipment, such as tip-up paratroop canvas seats, an overhead traveling hoist, bulged observation windows and parachute static line attachment cables.

1.6.1 Aircraft Logbooks

The aircraft maintenance Technical logbooks are always kept in the cockpit where the crew are sitting, but tech log was destroyed and burnt during the crash, and have not been found. Some of the maintenance sheets were collected from Skyway Air Offices.

1.6.2. Aircraft Licenses:

All aircraft licenses mentioned below belong to An-26B from the country of origin.

1. Certificate of Registration#0350 from The Republic of Kyrgyzstan. Date of issue 14/08/2006
2. Air Operators Certificate Number #39 date of issue 28/10/2015 Expiry date 28/10/2016
3. Aircraft Radio Equipment Authorization Number #0350 date of issue 01/08/2011
4. Aircraft Noise Certificate Number # 0350 date of issue 14/08/2006
5. South Sudan Air Operators Permit #0945 date of issue 29/04/2020 expiry date 14/11/2020

6. Certificate of Insurance #3764IA date of issue 21/01/2020 period of Insurance till 20/01/2021
7. Certificate of Airworthiness number 0350 date of issue 04/03/2015 expiry date 30/04/2016

1.6.3 Weight and balance

Empty weight	15,020kg (33,113 lb.).
M.T.O weight	24,000 kg (52,911 lb.).
M.L.W weight	24,000 kg.
Crewmembers weight Crew bags	3x84+15 = 297 kg.
Passenger's 7x 85kg	588 kg.
Fuel	4,905 liters.
Payload (cargo)	5,728 kg.
Total weight……	26,538 kg.

Some of the items were not weighed but the committee went for a research to the said of opportunity bank and came with positive results.

The Cargo manifest was reviewed and did not show the weight and balance (empty kg. section). There was a slight discrepancy and insufficient information, which made it difficult to accurately determine the actual weight and balance for that specific flight.

1.6.4. Type of fuel.

The fuel aircraft was used is jet A1 from African petroleum company limited (APCL) Certificate number 041790. It was sampled and checked by fuel depot technicians in the morning before the aircraft departure and it was found to be aviation fuel quality requirement and 4,905 liters loaded the morning of the accident.

The report comments laboratories that the parameters are within the aviation fuel quality requirement for jointly operated systems (AFQRJOS). See the Attachment below.

1.6.5 Radio.

Ground to ground and ground to air operations were perfect during their radio operation and aeronautical telecommunication at the day of accident was and radio communication complied with the requirements of airport operation.
Aircraft instrumentation and radio equipment of the An-26 can operate it in simple and intricate meteorological conditions, during day and night.

1.7 Meteorological information.

The Meteorological report shows that weather conditions for Juba was as follow:

1. Wind direction: NE, E & SE
2. Wind speed: (02-05) Knots
3. Surface Visibility:> 10KM (clear)
4. Clouds: A few scattered clouds.
5. Atmospheric temperature (26-27) degree centigrade
6. Atmospheric pressure: 1013.6- 1014.5 Hpa

Terminal aerodrome forecast TAF also indicates that rainfall was expected in the afternoon and during nighttime.

TAF HSSJ 220600Z 2207/2313 16004KT 9999 FEW040 SCT140 BECMG 2212/2215 VRB03KT 9999 SCT040 BKN140 PROB30 TEMPO 2215/2221 18006G16KT 4000 TSRA FEW040CB BKN090=

1.8. Navigation Aids.

Juba International Airport is equipped with navigation aids in compliance with the list of equipment's. The detailed information is given in the Aeronautical Information Publication (AIP) of South Sudan and there were no failures or anomalies, which occurred at the time of accident, while all the systems were serviceable. There was no switching to the standby power supply.

The condition of the radio navigation to air operation and the Aeronautical telecommunication at the moment of the incident complied with the operation and maintenance documentation requirement, airworthiness requirement to aerodrome operation. The aids were functioning as designed with the magnetic heading for Takeoff 001° E (01/06) the following radio aids to navigation ensured the operation of ATC

Country	South Sudan
ICAO ID	HSSJ
Time	UTC+3
Latitude	4.872006 04° 52' 19.22" N
Longitude	31.601117 031° 36' 04.02" E
Elevation	1513 feet 461 meters
Magnetic Variation	001° E (01/06)
Operating Agency	South Sudan Civil Aviation Authority
Operating Hours	SUNRISE TO SUNSET (SR-SS)

Communications	
APP/TWR	118.4

Runways				
ID (Click for details.)	Dimensions	Surface	PCN	ILS
13/31	7874 x 148 feet 2400 x 45 meters	ASPHALT	-	NO

Nav-aids						
Type	ID	Name	Channel	Freq.	Distance From Field	Bearing From Nav-aid
VOR-DME	JUB	JUBA	080X	113.3	1.6 NM	132.3

Remarks	
CSTMS/IMG	Avbl.
OPR HOURS	Opr SR-SS.

1.9 Communication.

Ground to Air Communication is used at Juba International Airport between pilots and air traffic control.

The crew also uses emergency frequency 123.4 or TCAS system and air-to-air communications when flying in the area.

1.10. Airport Information.

Juba International airport is equipped with necessary facilities to support domestic and international flights.

- DME
- GNSS
- VHF
- UHF
- VOR.

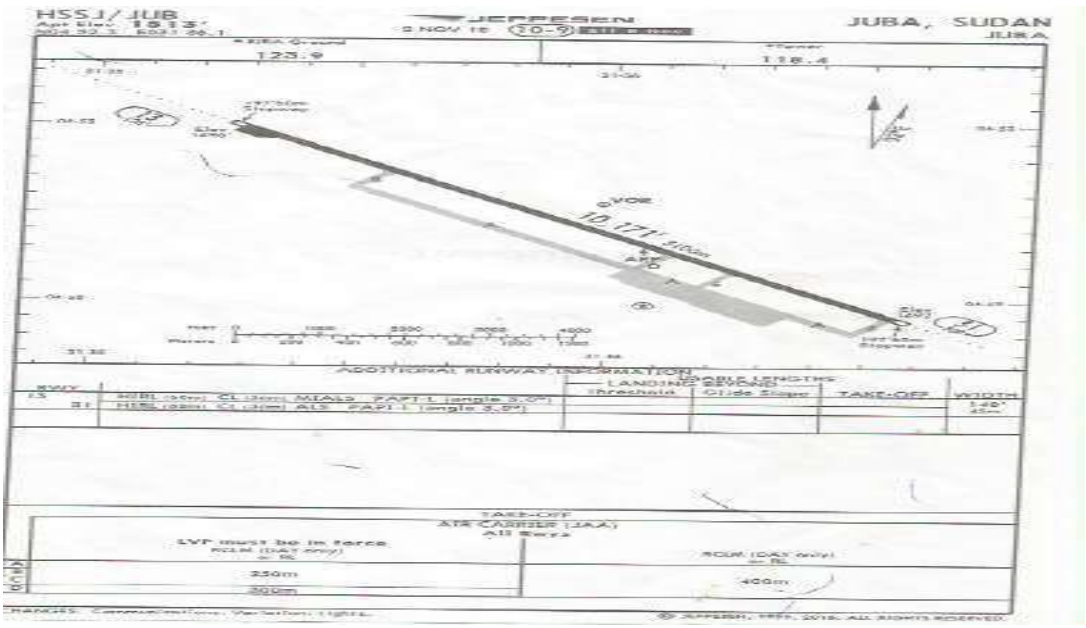

Figure 4: Runway Information at the Juba International Airport.

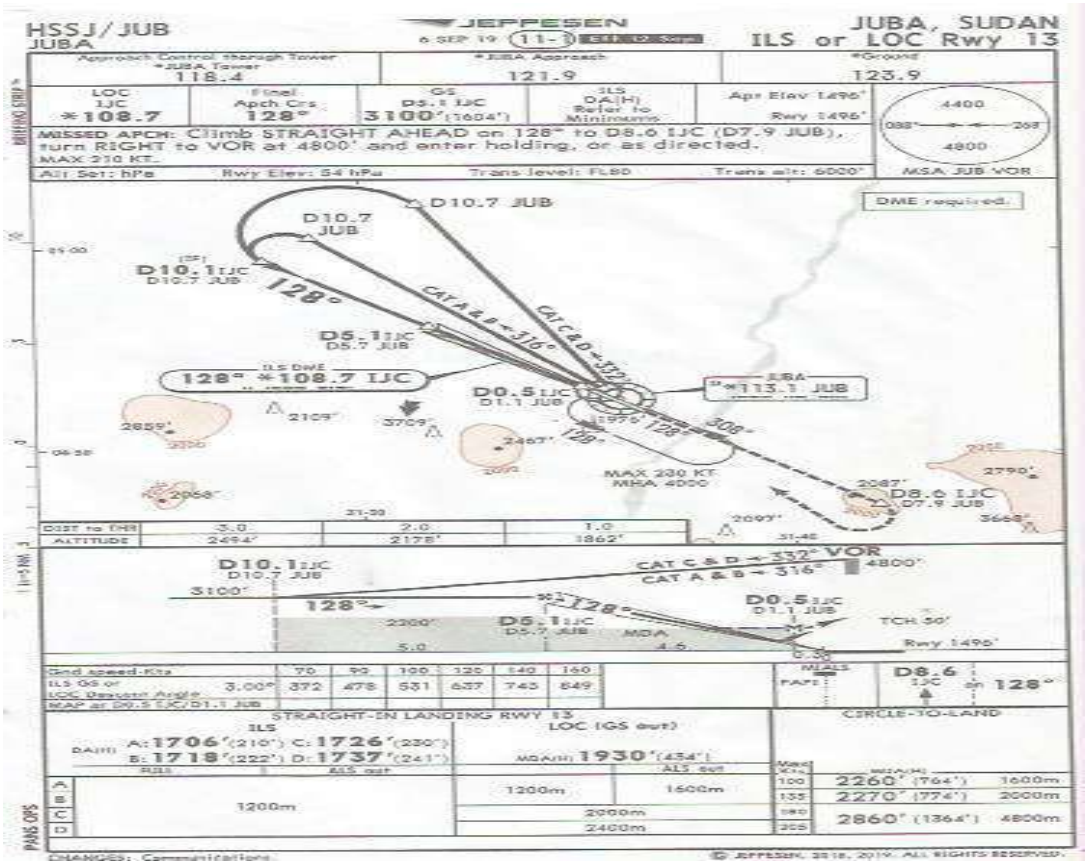

Figure 5: ILS or LOC RWY 13

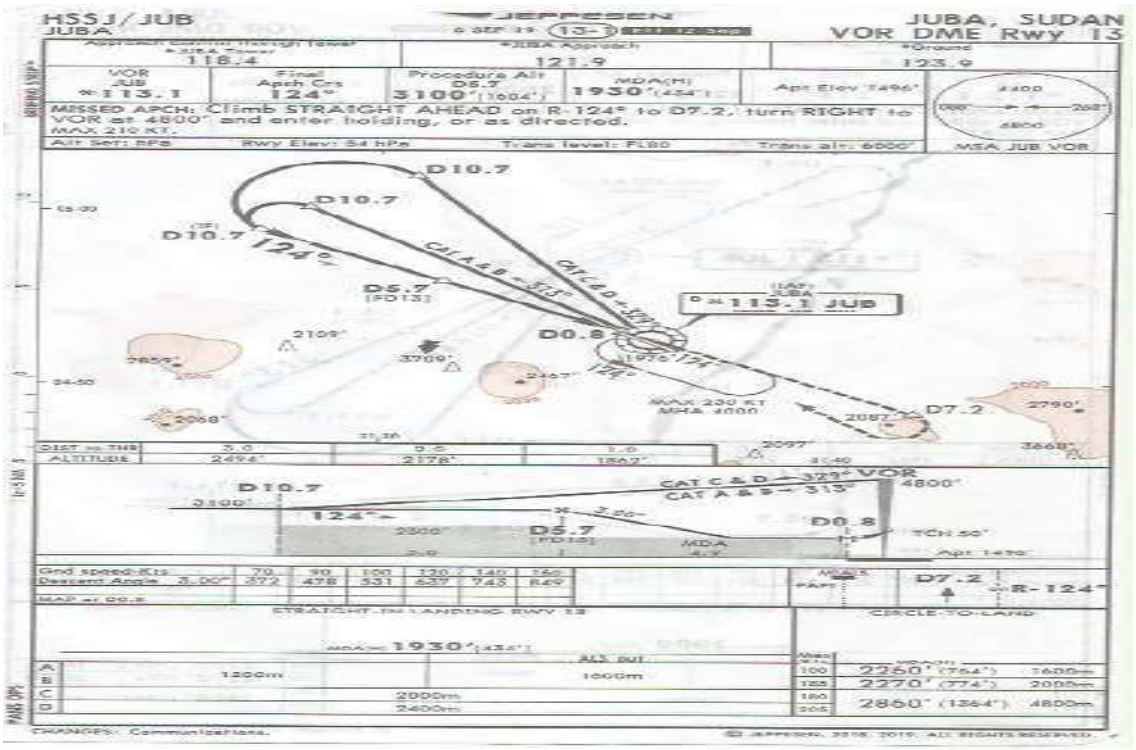

Figure 6: VOR DME RWY 13

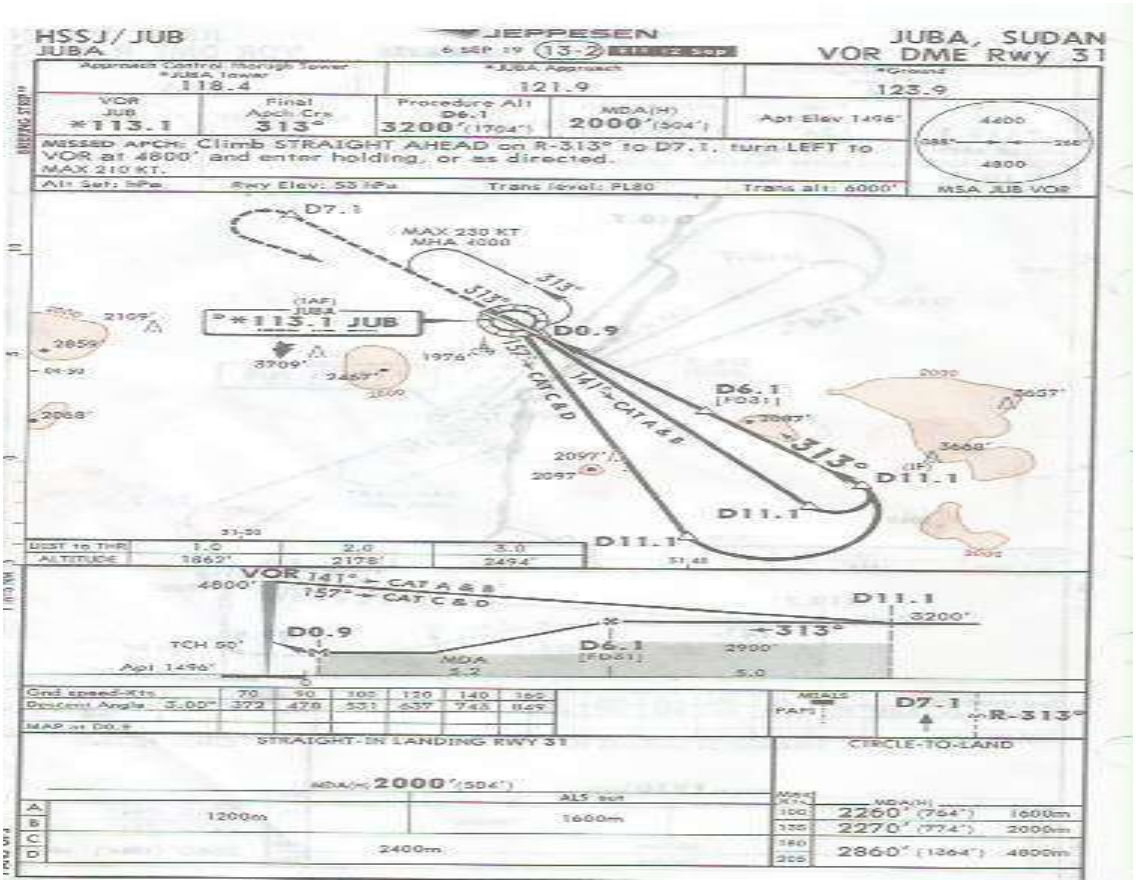

Figure 7: VOR DME RWY 31

1. 11 Flight Recorders.

Laboratory Test and Read-out Report
Of the works performed during decoding of the information Registered by the FDR & the CVR installed on the aircraft An-26B EX-126
After the fatal accident near Juba International Airport which occurred on
22.08.2020

On the day of 23.11.2020 the South Sudan members of the investigation Committee delivered the mentioned black box (FDR) & (CVR) in a paper envelope to the laboratory of the National Bureau of Accidents and Incidents Investigation with Civil Aircraft (Hereinafter – NBAAI).
For decoding, the data storage device was provided in a form of magnetic tip

(FDR) and metal wire (CVR), which was installed onboard AN-26B EX-126 aircraft.

Figure 8: FDR & CVR

During the visual examination of the recording device, there was no damage found to the magnetic tip (FDR) and metal wire (CVR). Therefore, after the inspection a decision was made to readout the recording contained on the magnetic tip (FDR) and on the metal wire (CVR).

Figure 9: Read out Processing Machine

The technician started readout of the information in (FDR) and (CVR) to computer for the processing and it was done successfully. Subsequently, the readout of the information recorded on the (FDR) and (CVR) was carried out successfully.

In order to determine the quantitative values, it is necessary to obtain the parameter list and calibration characteristics for this specific flight recorders,

And the calibration chart of that An-26B EX-126, which was the last updated or maintenance of black box done in **2009** according to the calibration chart which was receive from the operator south west aviation.

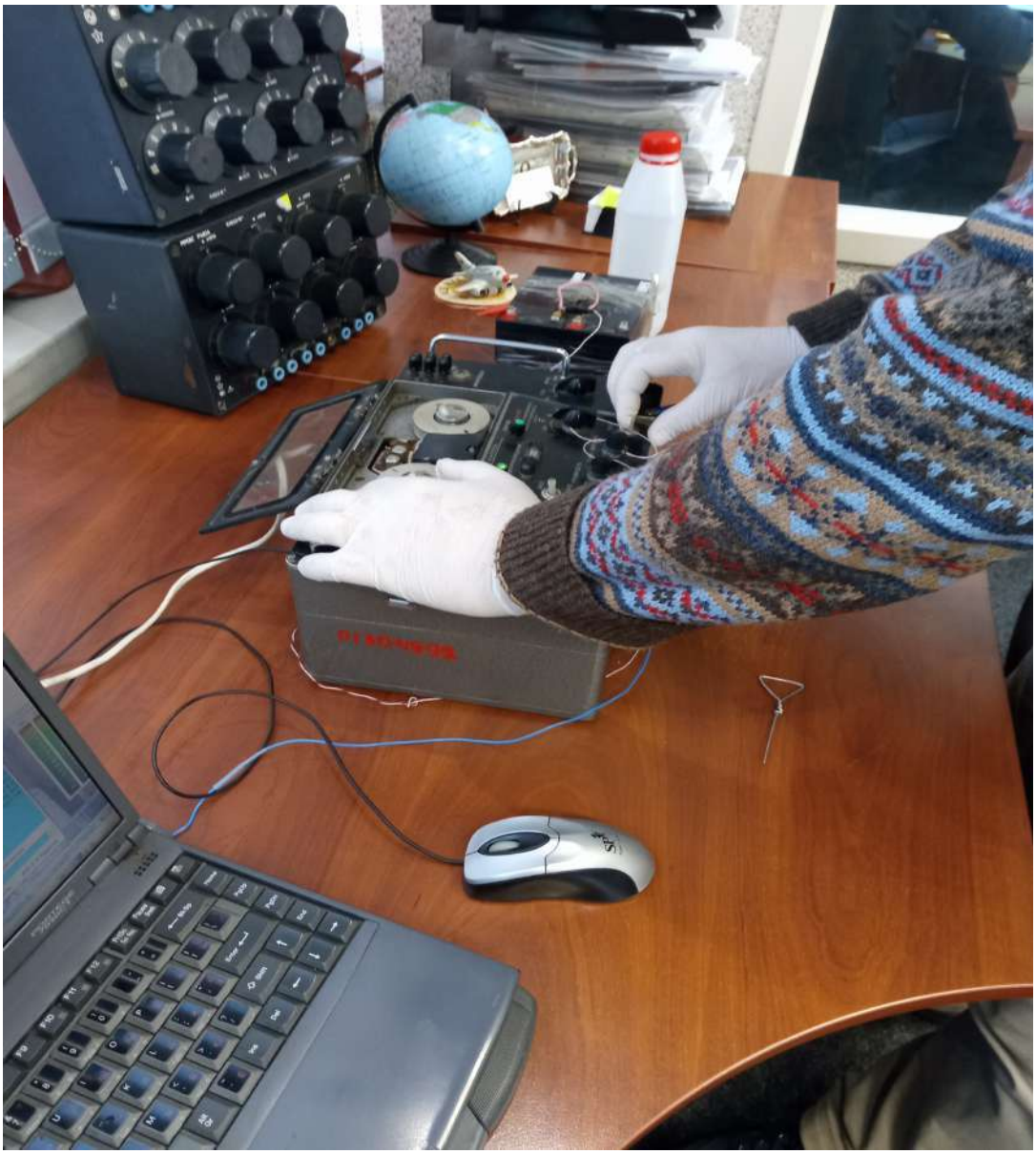

Figure 10: Read out Processing Machine

As a result of analysis performed by the laboratory experts, it was found that the accident data was missing on the (FDR) because by the time of the accident, the (FDR) did not record due to lack of maintenance and update as a result of the analysis, experts investigators at Laboratory have concluded that the lack of flight data information in FDR does not provide a chance to determine the cause
Of the accident by this flight data recorders. It is not known at the time if flight recorders were operational at the time of accident or it was not functioning at that time.
The photos and videos of data information will be added to annex in the final report.

Therefore, a decision was taken to finalize the work performed at the laboratory of the National Bureau of Accidents and Incidents Investigation, with Civil Aircraft (hereinafter – NBAAI) and return the (FDR) & (CVR) to the South Sudan Investigation Committee.

On behalf of Investigation Committee: On behalf of the NBAAI:

Eng. YUANIS PUALINO
Chairman of Investigation Committee
An-26B EX-126

IGOR V. MISHARIN
Acting Director
NBAAI

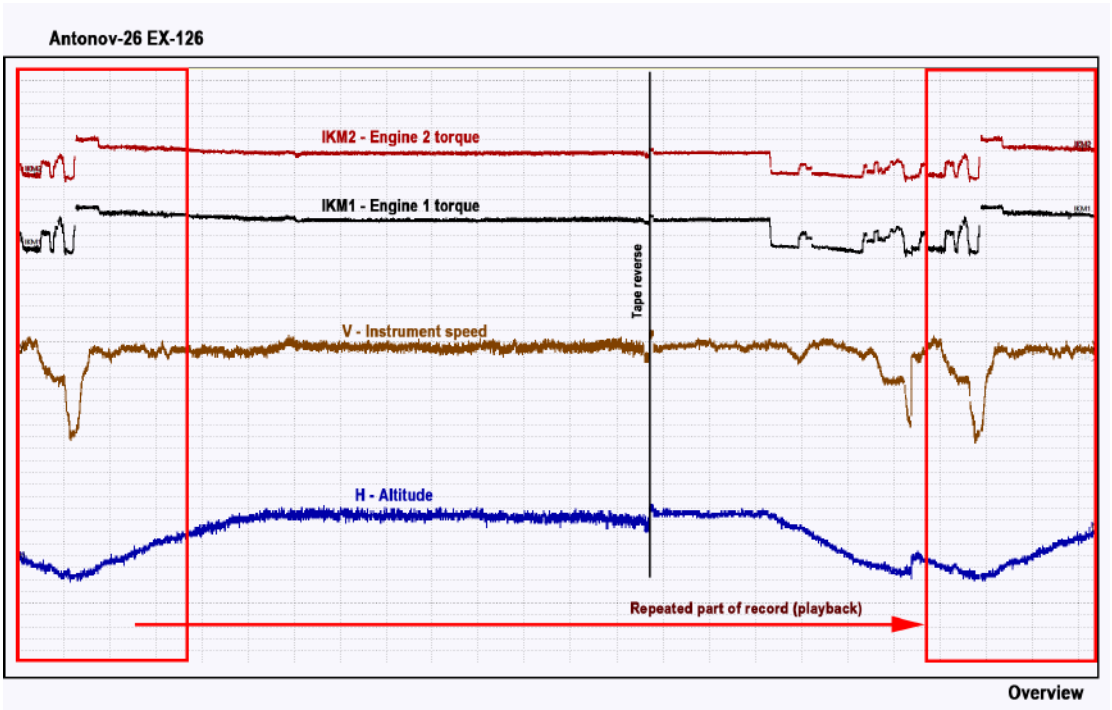

Figure 11: Overview of the Aircraft System

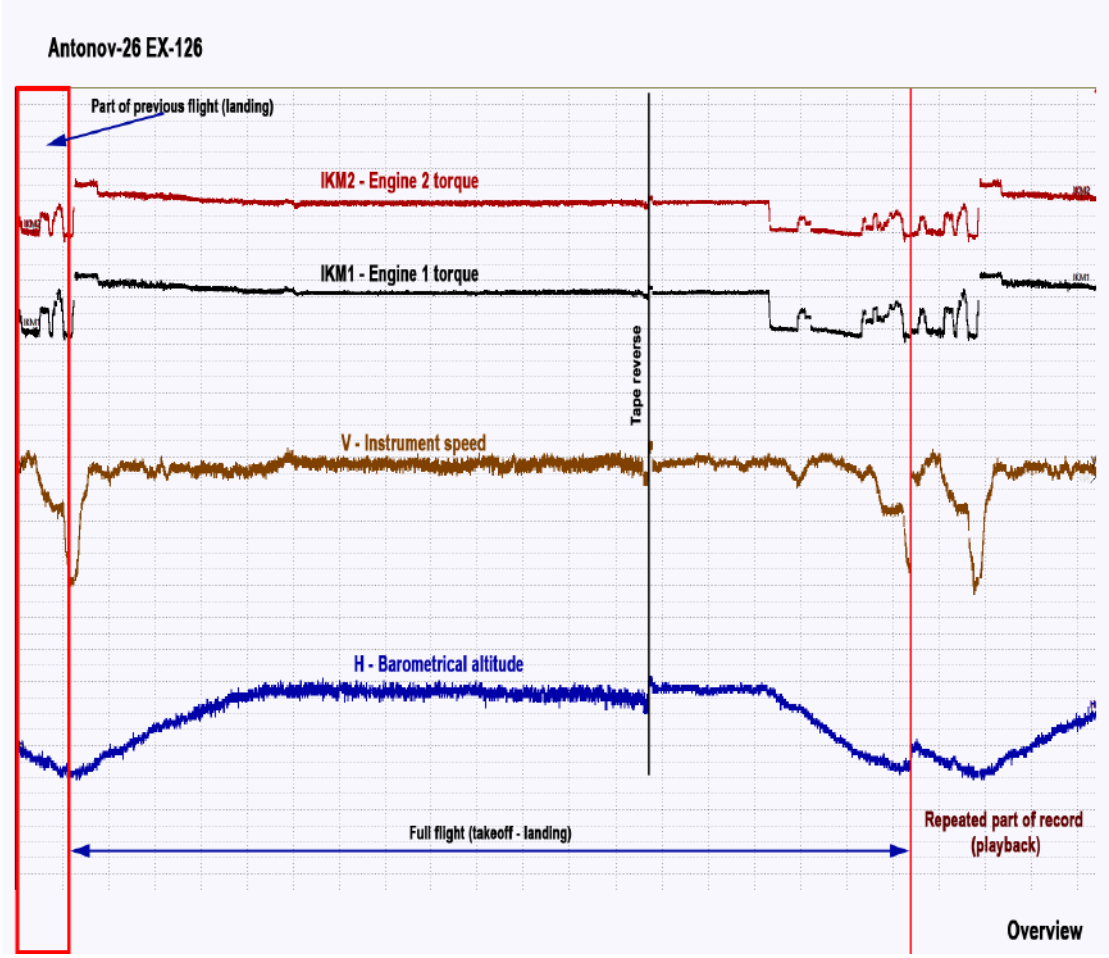

Figure 12: Overview of previous flight as indicated in the Black box recordings.

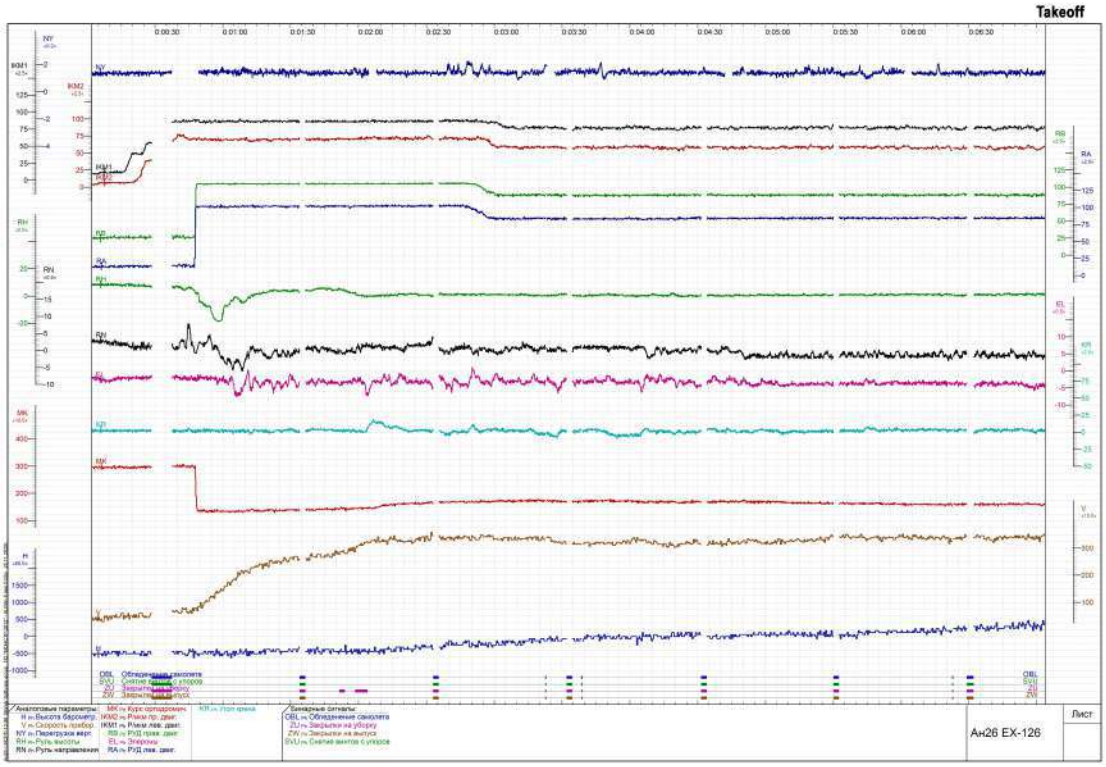

Figure 13: EX-126 Takeoff

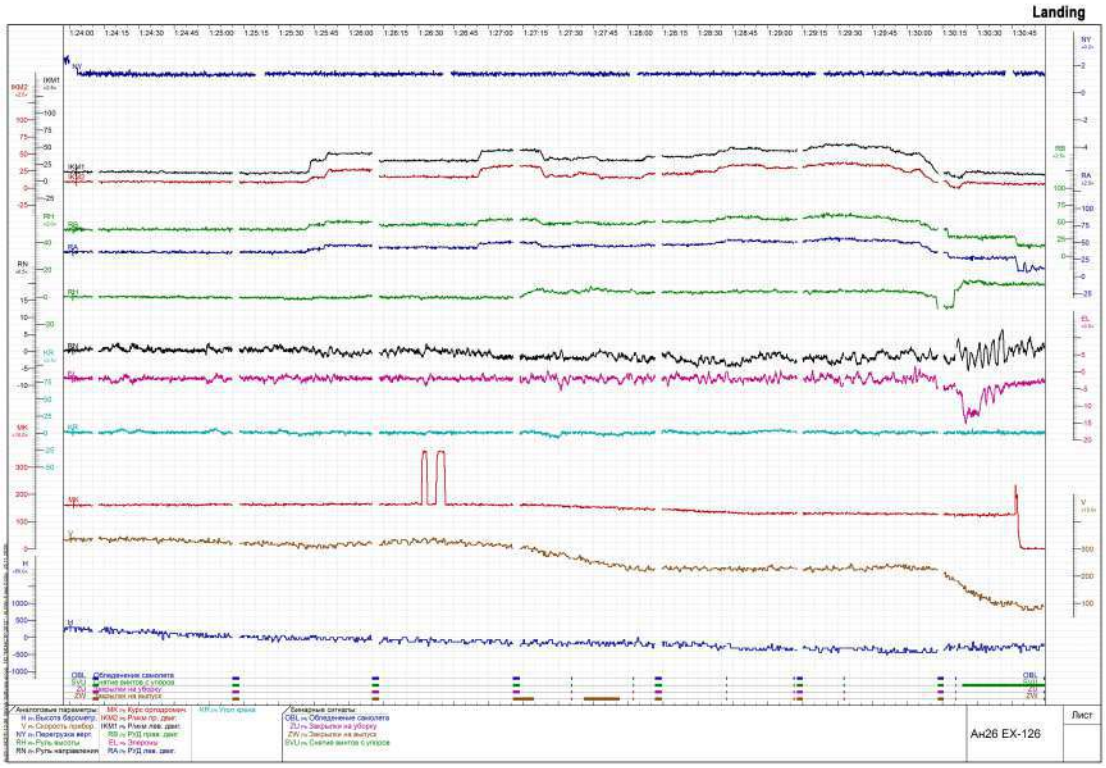

Figure 14: EX-126 Landing

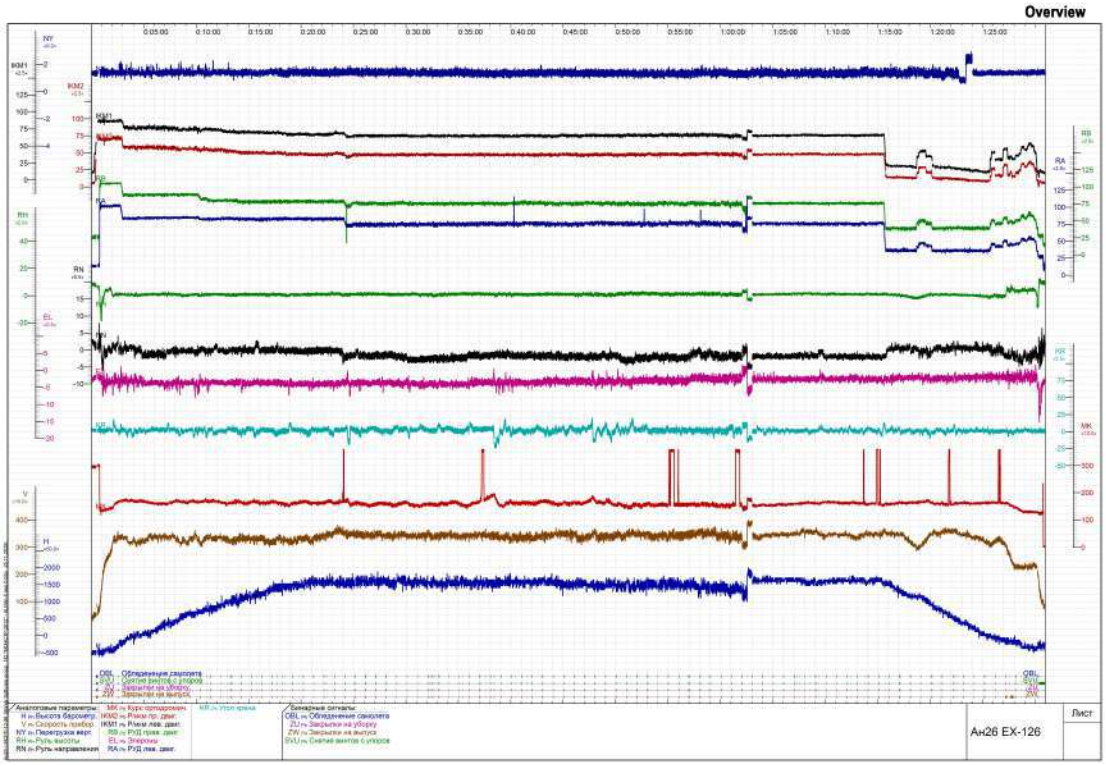

Figure 15: EX-126 Overview

1.12 Wreckage and Impact information.

It was visible from far that a total damage was encountered by the aircraft due to the fire to the aircraft fuselage, where the cargo section and the crew were seating.

The whole fuselage was compressed due to severe impact to the ground. The cockpit section scattered into pieces, and the cockpit was compressed and burnt.

The vertical stabilizer, horizontal stabilizer, rudder and the elevator experienced serious damage.

The wing of aircraft LH, RH were separated from main fuselage and burnt totally. In all, the wreckage was scattered to an area of about 150 sq. meters.

Figure 16: Aircraft An-26B wreckage area distribution, destroyed and totally burnt.

Figure 17: Right Engine totally burnt.

Figure 18: Left Engine Destroyed

The left engine indicated mangled propellers and engine cowling as fire broke out on it and burnt totally.

Figure 19: Cracked length in combustion chamber

1.13 Medical and Pathological report.

At the facility of Juba military mortuary, forensic medical experts on 22.08.2020 received 9 corpses, which were brought by CID/ Police in body bags that were given numbers from **1** to **9.** Identification was made on individual basis, mainly visually and by their relatives since their mangled bodies could not tell any description of the victim but by their clothes. There was no other identification means used.

Body number 1 was for an adult male, the body was preserved not burned or severely damaged therefore he was identified visually by family members, the cause of death was intrathoracic hemorrhage due to mixed blunt and sharp trauma due to plane crash.

Body number 2 was for an adult male the body was totally burned, some parts of his clothes was found and were used to identify the body as belonging to him and was identified by family members. The cause of death was total body burn due to plane crash.
Body number 3 was an adult male whose body was partially burned with his dress, military uniform was intact. An **ID** was found in his pocket, which confirmed he was an NSS member. The cause of death was suffocation due to burning of the plane.

Body number 4 was an adult male. It was body parts, a torso part of upper limbs and lower limbs. The remains were partially burned and the cause of death was thermal and sharp trauma injuries due to plane crash.
Body number 5 it was for an adult male whose body was totally burnt, some of his clothes were preserved – a military uniform. Family members identified him and the cause of death was total body burn due to plane crash

Body number 6 was an adult male whose body was partially burned. His clothes were preserved with recovery of some documents, departure order and a mobile phone. His family members confirmed the phone belongs to him and the cause of death was body burns due to plane crash.

Body number 7 was for an adult male. The body was well-preserved, 184cm in height, his features were preserved, and

therefore he was visually identified as the flight engineer. The cause of death was cerebral damage due to mixed blunt and sharp trauma due to plane crash.

Body number 8 was for an adult male. The body was for co-pilot and it was identified visually. The cause of death was respiratory failure due to hemorrhage as a result of multiple ribs fractures due to plane crash.

Body number 9 was an adult male. The recovered parts, torso parts of lower limbs and upper limbs. The dismembered and partial burning made the identification difficult, but the skin white in color and well built body and by exclusion of the body parts was identified as pilot in command. The cause of death was mixed thermal and sharp trauma due to plane crash.

1.14 Fire.

The fire was very intensive after aircraft hitting the ground. It was still burning 20 minutes when the rescue team arrived to the crash site. There was a small river to cross at the site that led the fire fighters not to access or reach the site of the accident. So the fire consumed everything around the aircraft, crops and trees planted in the field.

1.15 Survival Aspects.

The accident was not survivable. There was Search and Rescue team who arrived at the site of accident. The team comprised of South Sudan Police Service (SSPS), Army (SSPDF), Fire fighter (SSCDF) and local community who took responsibility by rescuing one person who survived the crash.

1.16 Tests and Researches.

There are no test and research facilities in the Republic of South Sudan. Even after the crash, all the aircraft instruments were burnt completely except for the recovery of the flight data recorder (FDR) cockpit voice recorder (CVR), which were found without any

damages. The two gadgets were transferred to the Republic of Ukraine for readout.

1.17 Organization and Management.

The aircraft belongs to Skyway Air limited (SAL) which is based in Kyrgyz Republic

The aircraft was contracted to South West Aviation, which is based in Juba, Republic of South Sudan that is operated as a commercial cargo category air transportation, the South West Aviation is located at Juba International Airport

The South Sudan Civil Aviation Authority Safety Department, which allowed the company to operate commercially here in South Sudan, approved the organization and the aircraft inspection.

1.18 Additional information.

No additional information.

2.0 Analysis.

The investigation committee, which was formed by Honorable Minister of Transport, Republic of South Sudan has thoroughly studied and analyzed all the necessary documents and licenses concerning the aircraft together with the crewmembers. During the accident the committee did not find some aircraft documents, like aircraft logbook, engine logbook, propellers blades logbook.
All these documents were allegedly burnt in the intense inferno.

The instrument panel was not recovered together with most of the aircraft instruments because all the left and right horizontal, vertical side and overhead instrument panels were burnt in the continuous intense heat.

The Department of Flight Safety and Operation of Republic of South Sudan who is responsible for aircraft documents and crew licenses

and medical certificates validation allowed South West Aviation to operate in the Republic of South Sudan as per requirements by International Civil Aviation Organization (ICAO) member states.

3.0 Findings.

From the investigations following several leads and interviews, and analysis, the Investigation committee of An-26B has come up with the following findings:

- **Skyway Air that is based in Kyrgyz Republic owns the aircraft and entered into Republic of South Sudan in 2015.**
- **The crewmembers, which crashed with the Aircraft, arrived in South Sudan on Friday 21st August 2020.**
- **On Saturday, 22nd August 2020, the crewmembers went straight to fly this maiden aircraft.**
- **Due to Corona virus pandemic in the Republic of South Sudan, the crewmembers did not complied with the fourteen days quarantine requirements.**
- **The crewmembers, which flew the aircraft, were not inspected by the SSCAA according to directorate of Flight Safety Department.**
- **The pilot in command has no medical validation attached to his license.**
- **The ground engineer who maintains the aircraft license expired on 2nd February 2020, before the crash.**
- **The cargo manifest did not show the total weight of cargo items in the aircraft.**
- **Load sheet to indicate the takeoff weight of the aircraft including empty weight of the aircraft, weight available onboard was not available.**
- **Tor Aviation operated the aircraft since the aircraft entered South Sudan in 2015 and then they leased it to Raven Air limited and then to Air Juba then to Gateway Export Aviation Co. LTD. Latter on, the aircraft was contracted to South-West Aviation.**
- **South West Company crew did not check the weather briefing at Meteorological Department before their**

departure. This was proved in the sign-in logbook, which had not been signed by the operation manger.

- **The crew and passengers manifest was not available; the operation manager only provided an unofficial handwritten paper without their logo manifest.**
- **The Company did not provide certificate of Release to Service. (Maintenance Schedule).**
- **On the 23rd November1981, Aeroflot operated the aircraft under registration CCCP-16075.**
- **On the 23rd April 1993, the aircraft was operated by company called Burundavia which was headquartered in Almaty Kazakhstan under registration UN-26075.**
- **In 2007 the aircraft was operated by Skyway.**
- **The last documents issued by the CAA of Kyrgyzstan Republic were in 2016, of which copies are attached.**
- **The last maintenance of Calibration chart of block box was done in 2009.**
- **The result of analysis performed by the laboratory experts found that the accident data was missing on the FDR because at the time of the accident, the FDR did not record due to lack of maintenance and update.**
- **The investigation committee found the evidence of fatigue damage in combustion chamber.**

4.0 Conclusion.

The committee for the investigations of South-West Aviation Co. Ltd An-26B aircraft, registration EX-126 has finally concluded that the accident at Juba Central Equatoria State in the Republic of South Sudan has not been determined, however the flight was preformed on the aircraft with no valid Certificate of Airworthiness by the crew of Southwest aviation ltd and the aircraft holding no valid Air operator Certificate.

5.0 Safety Recommendations.

1. To prevent any accident in the near future in South Sudan, Civil Aviation must introduce Safety audit programs to all airlines, which are operating all types of Antonov, including UN aircrafts. As such all types of these aircraft must be grounded until such audit is completed.

2. To engage the audit of international experts from Ukraine and Ukrainian Aeronautical Scientific Technical Complex (ASTC) including experts from International Civil Aviation Organizations (ICAO).

3. All types of Antonov operating in South Sudan must introduce maintenance programs including Corrosion Prevention Control Programs (CPCP).

4. SS-CAA must audit and scrutinize the qualifications and other criteria of eligibility of pilots employed by the aviation companies based in South Sudan.

5. SS-CAA must control weight and balance of aircraft during loading to prevent over weight and securing the cargo with the safety net within the aircraft, (Loadmaster/ Safety inspectors).

6. South Sudan Civil Aviation Authority (SS-CAA) should notify the State of Registry and the State of Operator on the air accident.

7.Ensure that, aircraft originally designed, as cargo planes are not allowed to be remodelled as passenger carriers for use in South Sudan, whatever their make or age.

8. Stopping all security organs in all airports and airstrip to refrain from interfering with work of pilots that use those facilities, such as forcing them to carry passengers regardless of weight restrictions.

9. In order to prevent future possible accidents, it is recommended to establish a service or facility, a (Ground

Monitoring Center (GMC), which will carry out flight data monitoring on every aircraft on a regular basis and transmit it to its base according to the provisions of ICAO Doc 10000.

10. To establish a modern reading facility of Flight Data Recorder (FDR), Cockpit Voice recorder (CVR) and train personnel to reduce the cost of foreign travel and conflicts of interest.

11. All aircrafts aged above 20 yrs. from the date of production must not be allowed to operate in the Republic of South Sudan.

12. All requests for operation must pass through the office current sitting Minister before its approval to operate in the Country.

13. All aircraft accidents investigations occurring in and out of the territory of The Republic of South Sudan including Domestic or Foreign aircraft involving civil passenger or military aircraft of types; Jet, Turbo, Propeller, Helicopter, Gyroplane, Balloon, Drone, gliders and etc. must be funded by the Government, this is to avoid conflicts of interest and preserve the integrity of the investigation. "In accordance to ICAO 5.1.2".
(Delegation of Investigations to a Regional partner State, Country of registration, country of Manufacture, country of design and country of occurrence).

14. All company which operating types of Antonov in the Republic of South Sudan the must introduce certificate of prolongation from the Antonov Manufacture.

15. The new South Sudan Civil Aviation ACT is very shallow and was done in a hurry in 2012. There is a new unified East African Community Civil Aviation ACT, which will be used by the six EAC partner States. It was presented to the Ministry of Justice, but three years now, it has not been passed.

6.0 Annexes.

Aircraft Documents.

1. Certificate of Registration.
2. Air Operators Certificate.
3. Aircraft Radio Equipment Authorization.
4. Aircraft Noise Certificate.
5. Air Operator's Permit form SS-CAA.
6. Certificate of Insurance.
7. Certificate of Airworthiness.
8. A.T.C Flight Plan.
9. Cargo Manifest.
10. Delivery Receipt fuel form African Petroleum Company Limited (APCL).
11. Analysis Report of Jet A-1.
12. Weather Report.
13. FDR & CVR analysis.