



AIRCRAFT ACCIDENT REPORT

(WINGS/2008/03/15/F)

Accident Investigation Bureau

**Report on the Accident Involving
WINGS, Registration 5N – JAH,
Bushi Village, Obalinku.
(Near Bebi Airstrip) Obudu.
15th March, 2008.**

This report was produced by the Accident Investigation Bureau (AIB), Murtala Muhammed Airport, Ikeja, Lagos.

The report is based upon the investigation carried out by Accident Investigation Bureau, in accordance with Annex 13 to the Convention on International Civil Aviation, Nigerian Civil Aviation Act 2006, and Civil Aviation (Investigation of Air Accidents and Incidents) Regulations.

In accordance with Annex 13 to the Convention on International Civil Aviation, it is not the purpose of aircraft accident/serious incident investigations to apportion blame or liability.

Readers are advised that Accident Investigation Bureau investigates for the sole purpose of enhancing aviation safety. Consequently, Accident Investigation Bureau reports are confined to matters of safety significance and should not be used for any other purpose.

As the Bureau believes that safety information is of great value if it is passed on for the use of others, readers are encouraged to copy or reprint for further distribution, acknowledging Accident Investigation Bureau as the source.

Recommendations in this report are addressed to the regulatory Authorities of the state (NCAA). It is for this authority to decide what action is taken.

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GLOSSARY OF ABBREVIATIONS USED IN THIS REPORT

AIB	Accident Investigation Bureau
AAIB	Air Accident Investigation Branch
AMSL	Above Mean Sea Level
AOC	Air Operators Certificate
ASL	Above Sea Level
ATS	Air Traffic Services
BR	Broken
CB	Cumulonimbus
CP	Co-Pilot
CVR	Cockpit Voice Recorder
CRM	Cockpit Resource Management
DA	Decision Altitude
DCT	Direct
DH	Decision Height
DNA	Deoxyribonucleic Acid
DNBB	Bebi Airport

DNMM	Lagos Airport
DSTP	Department of Safety and Technical Policy
ELT	Emergency Locator Transmitter
EGPWS	Enhance Ground Proximity Warning System
ETOPS	Extended Range Operation
FAAN	Federal Airport Authority of Nigeria
FDR	Flight Data Recorder
FL	Flight Level
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
HPA	Hecto Pascal
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Condition
LAG	Lagos VOR
LIPAR	Airway Checkpoint

LUNDO	Airway Checkpoint
MDA	Minima Decision Altitude
MDH	Minima Decision Height
MMA	Murtala Muhammed Airport
MORA	Minimum off Route Altitude
MSA	Minimum Safe Altitude
NAMA	Nigerian Airspace Management Agency
NCAA	Nigerian Civil Aviation Authority
NCARS	Nigeria Civil Aviation Regulations
NDB	Non Directional Beacon
NEMA	National Emergency Management Agency
NIMET	Nigeria Meteorological Agency
NOTAM	Notice to Airmen
PIC	Pilot in Command
RCC	Rescue Control Centre
SAR	Search and Rescue
SD	Several Direction

TWD8300	Wings Aviation Call Sign/ Flight Number
UA609	Airway
UTC	Coordinated Universal Time
VOR	Very High Frequency Omni-directional Radio Range
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions

Aircraft Accident Report No: (WINGS/2008/03/15/F)

Registered owner and operator: Wings Aviation Limited

Aircraft Type and Model: Beech 1900D

Registration: 5N-JAH

Location: Bushi Village, Obalinku. (Near
Bebi Airstrip Obudu)

Date and Time: 15th March, 2008 at
0920:15hrs

*All times in this report are
local time (equivalent to UTC+1)
unless otherwise stated*

Synopsis

The Accident Investigation Bureau (AIB) was notified of the missing aircraft at about 1400 Hrs on 15th March, 2008 whilst the Search and Rescue exercise had commenced. AIB monitored the progress of Search and Rescue and later joined as an observer on the 17th March, 2008. This was to facilitate the process of accident investigation after the wreckage of the missing aircraft would be found or the Search and Rescue officially called off.

On 15th March 2008 about 0920 hours, 5N-JAH, Beech 1900D, operated by Wings Aviation Limited as flight TWD 8300, on a revenue positioning flight, crashed in mountainous terrain at Bushi Village, Obalinku Local Government Area of Cross River State. Instrument Meteorological Conditions prevailed at the time of the accident. The aircraft was on an instrument flight plan. The flight originated at Murtala Muhammed Airport (MMA), Lagos, Lagos State and the destination was Bebi Airstrip (DNBB), Obudu, Cross River State.

According to Air Traffic Service an instrument flight plan was filed with a routing indicating departure from DNMM to Bebi via Lagos VOR, Potgo Intersection, Enugu VOR at an altitude of 25,000 feet AMSL. The estimated departure and arrival times were respectively 0736 and 0921 hrs.

The aircraft departed MMA at 0736 hrs as per the filed flight plan climbing to FL250 (Twenty Five thousand feet) estimating Potgo at 0836 hrs and Bebi at 0921 hrs. It was transferred to Portharcourt Tower at 0845 hrs and released to Enugu Tower at 0856 hrs descending to FL110 (eleven thousand feet). While passing FL160 (sixteen thousand feet) it requested for further descent and was cleared by Enugu Tower to descend to FL050 (five thousand feet).

The aircraft deviated from the filed flight plan route, and flew through the airway (UA609) direct to Ikrop, instead of Potgo-Enugu and Bebi direct. The inputs into Global positioning system (GPS) gave the crew different distances to Bebi. The crew agreed on a coordinate to input and thereafter were busy trying to locate the airstrip physically. During this process the Ground Proximity Warning System (GPWS), gave signals and sound of “Terrain, terrain....pull up, pull up” several times without any of the pilots following the command. The aircraft flew into the terrain and crashed. The flight crew and passenger were fatally injured. The airplane was destroyed and there was post-crash fire. The FDR shows that the aircraft crashed at about 0920:15 hrs. at an altitude of about 3,400ft. According to the FDR analysis, the aircraft flew for 103.75 minutes before impact.

At 0939 hrs, the Obudu Radio Operator reported to Bebi Airstrip Police Post, Obudu Fire Service, one hour later and Sankwala Police division at 1000 hrs. He further contacted Lagos at 1157 hrs; and finally contacted Director of Skynote at 1213 hrs.

Search and Rescue exercise by NEMA commenced approximately 2 hours later at 1400 hrs. Bristow Helicopters Ltd joined the SAR team later same day.

Search and Rescue operations commenced on Sat 15th March, 2008 and continued till Friday 21st March 2008 within which the following operators joined with their aircraft:

Bristow Helicopters Ltd
Caverton Helicopters,
Aero Contractors Ltd, and
Border Patrol

Accident Investigation Bureau monitored the Rescue effort on the 15th and 16th March 2008 before joining the search team at the Rescue Control Centre (RCC) Calabar on the 17th March, 2008.

The 6-days SAR activity covered more than Eleven Local Government Areas in Cross River, Benue and Enugu States.

The investigation identified the following causal and contributory factors:

Causal Factors:

- I. The flight crew conducted an approach into a VFR airfield in an instrument meteorological condition and did not maintain terrain clearance and minimum safe altitude which lead to Controlled Flight into Terrain.
- II. The crew did not respond promptly to GPWS warning.

Contributory Factors

1. The flight crew was not familiar with the route in a situation of low clouds, poor visibility and mountainous terrain.
2. The Area Controllers did not detect the estimates as passed by the pilot for positions not in the filed flight plan (LIPAR and LUNDO) and omitting ENUGU.
- 3 The erroneous co-location of Bebi airstrip and Obudu on the NAMA Chart confused the crew.

Five safety recommendations have been made.

1.0 Factual Information

1.1 History of Flight:

The aircraft, Beech 1900D with flight number TWD 8300 on a positioning flight, filed an Instrument Flight Rule (IFR) with Air Traffic Services (ATS) at Murtala Muhammed Airport (MMA) Lagos for departure to Bebi airstrip, Obudu on a filed flight plan LAG - UA609 - POTGO - DCT - ENU - DCT - OBUDU. But the actual route flown was LAG - UA609 - POTGO - LIPAR - LUNDO - IKROP - OBUDU.

The aircraft departed MMA at 0736 hrs as per the flight plan, climbed to FL250, estimated MOPAD at 0755 hrs, BEN at 0814hrs, POTGO at 0837hrs, LIPAR at 0844hrs, LUNDO at 0902 hrs and OBUDU destination at 0917hrs. The aircraft was transferred to Port Harcourt at 0845 hrs thereafter the crew requested descent. It was cleared to FL110 but on passing through FL160 requested further descent and was then released to Enugu at 0856 hrs by Port Harcourt. Enugu cleared it to FL050.

The aircraft deviated from the flight plan route, and flew on airway UA609 direct to IKROP from POTGO. The inputs into Global Positioning System (GPS) gave the crew different distances to Bebi. The crew agreed on a coordinate to input and thereafter were busy trying to locate the airstrip physically. During this process the Ground Proximity Warning System (GPWS), warning signals and sound of “Terrain, terrain....pull up” was heard several times without any of the pilot following the command. The aircraft flew into terrain, crashed and was destroyed.

At 0923hrs, the Radio Operator at Bebi called the aircraft to confirm its position, but received no reply. The FDR showed that the aircraft crashed at about 0920:15 hrs at an altitude of about 3,400ft at Bushi Village during the hours of daylight with three fatalities. The aircraft flew for 103.75 minutes before impact.

At 0924 hrs, Bebi Radio Operator called Calabar, to confirm if in contact with 5N-JAH, Calabar replied negative contact.

1.2 Injuries to Persons

Injuries	Crew	Passengers	Others
Fatal	2	1	0
Serious	0	0	0
Minor/None	0	0	

1.3 Damage to Aircraft

The aircraft was substantially destroyed by ground impact and post crash fire.



Burnt fuselage of the Wreckage

1.4 Other damage

Nil.

1.5 Personnel Information

1.5.1 Captain

Nationality:	Nigerian
Age:	60 years
Gender:	Male
License No:	ATPL 2987
Aircraft rating:	Beech 1900D, 2000; B-727; BAC1-11
Instrument Rating:	Valid till 31/07/08
Proficiency Check:	16/12/07
Medical:	30/06/08
Total flying Experience:	9730 hrs
On type:	852 hrs
Last 90 days:	57:26 hrs
Last 28 days:	46:16 hrs
Last 24 hrs:	Nil

From evidence available to AIB, the captain had only been i.e. landed in Bebi once, his second attempt was diverted to Calabar and his third attempt was the crash. He never had route check to Bebi, which is a requirement of Nigeria Civil Aviation Regulations (NCA

R 8.10.1.30). The captain was the Flight Safety Pilot for the airline as at the time of the accident.

1.5.2 First Officer

Nationality:	Nigerian
Age:	36 years
Gender:	Male
Licence No:	CPL 4305
Aircraft Rating:	Beech 1900D
Instrument Rating:	Valid till 12/07/08
Proficiency check:	16/12/08
Medical:	August, 2008
Total flying Experience:	444.7 hrs
On type:	204 hrs
Last 90 days:	88: hrs
Last 28 days:	37:45 hrs
Last 24 hrs:	Nil

The First Officer is relatively low in experience. With total flying experience of 444.7hrs and no record of operational experience into Bebi.

1.5.3 Staff (Passenger)

Age: 24 years

Gender: Female

Employed As: Marketing Executive

Date Joined: 16/08/07

1.6 Aircraft Information

Aircraft Type: - Beech 1900D

Year of Manufacture: - 1998

Serial Number: - UE - 322

Registration: - 5N-JAH

Total Airframe time: - 5,578 HRS. 40 Minutes

Certificate of Airworthiness: - Issued 1st February, 2008

Validity: - 31st January, 2009

Category: - Transport (Passenger)

Certificate of Registration: - Issued 26th April, 2007

Operator: - Wings Aviation Ltd.

Insurance Validity: - 30-09-2008

Engine Type:	-	PT6A - 67 D.
Manufacturer:	-	Pratt & Whitney
Engine No 1:	-	PSO 356
Total Time since new	-	4844 HRS. 45 Minutes
Cycles:	-	5099 HRS
Engine No 2:	-	PSO 362
Total Time since new:	-	4844 HRS. 45 Minutes
Cycles:	-	5149 HRS

1.7 Meteorological Information

The Bebi Meteorological office gave the following Terminal Landing Forecast:

Time:	-	0700 UTC
Wind:	-	Calm
Visibility:	-	8 Km
Cloud:	-	Few 300m Broken (BKN) 9000m
Weather	-	BR
QNH	-	1012 HPA
Temperature:	-	25 ⁰ C

1.8 Aids to Navigation

Though Instrument Landing System (ILS) and Non Directional Beacon (NDB) were installed but unserviceable on the day the aircraft was missing.

1.9 Communication

The radio call-sign used by the crew from Lagos to Enugu was TWD 8300 but Bebi Radio Operator recorded a different call-sign which was TYD 800. There was good communication between the aircraft,

Lagos, Port Harcourt, Enugu and Bebi towers/Radio stations before the aircraft lost contact with Bebi. The ATC transcript is attached as appendix C.

1.10 Aerodrome Information

Bebi Airstrip is a private field which is neither licensed nor certified by the appropriate authority. It has an elevation of 850ft and served by a single runway 10/28 that is 1800 meters long. The NDB and ILS installed at the station were unserviceable at the time of the accident. The NAMA chart co-located Obudu and Bebi on coordinates of “N06⁰ 1001 .9000^l , E009⁰ 1527. 5000^l” whereas these two locations are 27 Nm apart while SAR Aircraft from NEMA that landed at Bebi gave the coordinates as N06⁰ 39^l 23^l, E 009⁰ 19^l 46^l.

There is no Licensed Air Traffic Controller to provide Air Traffic Control Services; however, an unlicensed radio operator is available to provide weather advisory information.

The airstrip is also served by a meteorological office operated by NIMET during the hours of daylight. An ILS and NDB were installed at the airstrip. Nevertheless, they were not commissioned for operation. The Airstrip lies under very busy Airway (UA 604) from Europe to South Africa, in a very difficult terrain due to the Topography of the area (mountainous terrain), which raises the Minimum Safe Altitude (MSA) to 11,200ft as published by Jeppesen Chart, though not indicated on Nigeria route map published by Nigerian Airspace Management Agency (NAMA).

There was no published NAMA approach chart for Bebi and none from Jeppesen available to the crew.

1.11 Flight Recorders

The aircraft was fitted with a solid-state cockpit voice recorder (CVR) of 35 minutes duration and a Fairchild solid-state flight data recorder (FDR) the information on both of which were successfully downloaded by the Air Accident Investigation Branch (AAIB), United Kingdom. The recorders exhibited impact and severe fire damage. Data could not be extracted from units in normal manner. The crash protected memory were removed from the damaged accident box and transferred to a surrogate units in order to download the data. The FDR contained many hours of recorded data of which the event flight was the last data with a recording duration of 120 minutes. The three plots in this report contained data, which illustrated the event flight on the 15th march, 2008. Flight recorders parameters revealed that all engine and flight control inputs were functioning normally up till the moment the aircraft impacted terrain. The FDR data indicated that there was power on both engines, the speed at impact was over 150 kts, and the propeller speed on both engines was about 1500 rpm.



Cockpit voice recorder



Flight data recorder

1.12 Wreckage and Impact Information

The airplane wreckage was found on the southwest side of Bebi airstrip in a Hilly terrain at about 3,200 feet high in a 200-foot-long wreckage path. The aircraft structures displayed heavy impact damage and fire damage consistent with a post crash ground fire. Examination of the wreckage area and vicinity revealed no evidence of a pre-impact fire or in-flight separation of components. The majority of the airplane's system components were located in and around the main debris field. All evidence, on close examination of the initial tree breaks indicated that the evidence were lost to

weather and environmental pressure, since the wreckage was found on the 30th of August 2008 which was six months later.

The wreckage was contained within a sizeable area in a wooded valley with several trees typical of a thick forest located at about 5 nautical miles from Bebi airstrip. The main parts of the aircraft i.e. fuselage, engines, landing gears and tail section were found. The main fuselage and wings suffered severe fire damage. The trees served as breakers and helped in confining the breakups though it was a high speed impact. The wreckage path was along the slope/valley of the high terrain the aircraft impacted. Some of the wreckage was found about 100 feet below the main wreckage. The post accident fire and the aircraft impact caused severe damage to the surroundings.



Part of the main wreckage



Burnt fuselage of the Wreckage



Wreckage showing section of the tail

1.13 Medical and Pathological Information

All samples of human remains collected from the accident site were sent to South Africa for Deoxyribonucleic acid (DNA) analysis. The laboratory did not get satisfactory result from the samples. Samples were re- sent to Singapore for further tests. Result of the DNA samples sent to Singapore also came back with an unsatisfactory result; this was due to long exposure of the samples to harsh weather conditions at the accident site. The samples (perishable evidence) were not protected, since the aircraft was missing for six months and was left in the open air at the mercy of inclement weather conditions during the period aircraft was declared missing.

The samples were collected by pathologists from University of Calabar Teaching Hospital who conducted the autopsy on the bones and were able to identify them. There was need to confirm the remains in a scientific way. The laboratory in South Africa, after an extensive and numerous extraction procedures could not generate any DNA profile to identify the bones due to the damage done to the bones because of the severity of the crash and prolonged exposure to weather.

1.14 Fire

There was post impact fire. The fuselage and wings were severely burnt. Most of the trees around the main wreckage had their branches broken and effects of fire damage were seen extensively on many trees. Shortly before the aircraft crashed, it had a fuel endurance of three and half hours signifying there was a large quantity of fuel on board the aircraft before the accident.



SEVERELY BURNT FUSILAGE



SEVERELY BURNT WING

1.15 Survival Aspects

At 0939 hrs, the Bebi Radio Operator reported to Bebi Airstrip Police Post and Fire Service, and the Sankwala Police Division at 1000 hrs. He further contacted Lagos at 1157 hrs and finally contacted Director of Skynote at 1213 hrs.

Search and Rescue commenced by NEMA at 1400hrs. Bristow Helicopters Ltd joined the SAR team later same day and continued till Friday 21st March 2008 within which the following operators joined with their aircraft:

Caverton Helicopter,
Aero Contractors Ltd, and
Border Patrol.

The six (6) days SAR activity covered more than Eleven Local Government Areas in Cross River, Benue and Enugu States.

The last moment of the flight saw the aircraft fly into terrain at a speed of about 150 knots, which led to the disintegration of the aircraft. Because of the fuel quantity on board the aircraft, there was post crash fire, which led to extensive fire on the fuselage, wings and even the surrounding trees. The fire and the impact led to the collapse of the aircraft floor beam and one of the flight crew's remains was found strapped to his seat remote from the main wreckage. The non detection of the crash site immediately coupled with the difficult, mountainous and inaccessible terrain of the crash site made the survival chance of the occupants very remote.

The nature of the crash made survivability almost impossible. There was no livable area intact in the wreckage. The SAR was launched with the dispatching of NEMA helicopter at not more than two hours after the aircraft was declared missing but the helicopter could not pick up the signal from the beech 1900D

406 MHZ Emergency Locator Transmitter (ELT) since the crash was not a survivable crash.

The crash site was eventually discovered by local hunters six (6) months after the crash by which time none of the occupants from the accident could still remain alive. The search aircraft equipped with Infra-red Camera capable of detecting the wreckage came in few days after the Search and Rescue commenced, but was found that the Infra-red Camera was unserviceable.

1.16 Test and Research

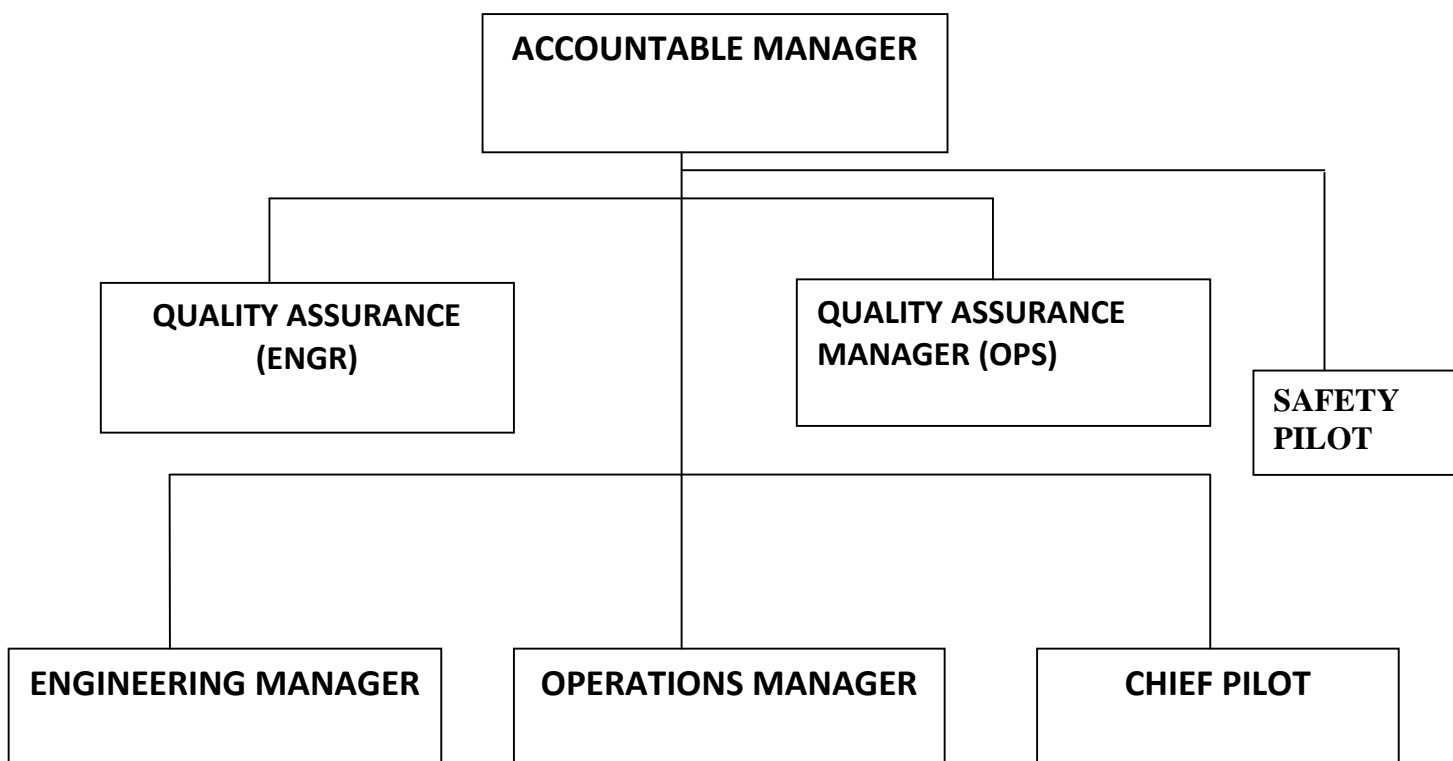
Nil.

1.17 Organizational and Management Information

1.17.1 General

Wings Aviation Limited was incorporated on May 11th 2001 and operates charter services on local and international travel. According to the Operations specifications approved by Nigerian Civil Aviation Authority the airline was issued AOC with an effective date of 15th February 2006.

WINGS AVIATION TOP MANAGEMENT ORGANOGRAM



**Figure. 1.17.1.
Management Organogram**

At the time of the accident the captain of the accident aircraft was the airlines safety pilot. There were discrepancies in recency, route familiarization and the use of unapproved aeronautical chart. The airline organizational structure comprises the accountable officer who sees to the running of the company and reports to chief executive. Other post holders include the quality manager, the chief pilot and the chief engineer. See Figure 1.17.1

1.17.2 Nigerian Civil Aviation Authority (NCAA)

There were deviations from the Nigerian Civil Aviation Requirements on route and area check for pilot qualification reference NCAR 8.10.1.30 which states as follows:

- (a) No person may serve nor may any AOC holder use a person as a pilot unless, within the preceding 12 calendar-months, that person has passed a route check in which he or she satisfactorily performed his or her assigned duties in one of the types of aeroplanes he or she is to fly.*
- (c) Each PIC shall demonstrate operational competency by navigation over the route or area to be flown and the aerodromes to be used as PIC under the supervision of a check airman and, on a continuing basis, by flights performing PIC duties. This, at a minimum, shall include a PIC demonstration of knowledge in the following:*
 - (1) The terrain and minimum safe altitudes.*
 - (2) The seasonal meteorological conditions.*
 - (3) The search and rescue procedures.*
 - (4) The navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place.*
 - (5) Procedures applicable to—*
 - (i) Flight paths over heavily populated areas or high air traffic density ;*
 - (ii) Obstructions ;*
 - (iii) Physical layout ;*
 - (iv) Lighting, approach aids ;*
 - (v) Arrival, departure, holding and instrument approach procedures ; and*

(vi) *Applicable operating minima.*

(6) *Notices to airmen.*

In addition, flight plan was changed not in accordance with NCAR 8.6.1.5 which states as follows:


(a) *When a change occurs to a flight plan submitted for an IFR or VFR flight operated as a controlled flight, the pilot shall report that change as soon as practicable to the appropriate ATC facility.*

The change from IFR to VFR as stipulated in the NCAR 8.8.4.18 below needed to be complied with.

(a) *Any pilot electing to change from IFR to VFR flight shall notify the appropriate ATC facility specifically that the IFR flight is cancelled and then communicate the changes to be made to his or her current flight plan.*

(b) *When a pilot operating under IFR encounters VMC, he or she may not cancel the IFR flight unless it is anticipated, and intended, that the flight will be continued for a reasonable period of time in uninterrupted VMC.*

1.17.2.1 Air Operator's Certificate Operations Specifications (Ops-Specs)



Nigerian Civil Aviation Authority
Operations Specifications

A9. AIRPORT AERONAUTICAL DATA

a. The system described or referenced in this paragraph is used by the certificate holder to obtain, maintain, and distribute current aeronautical data for the aerodromes it uses.

1. *As stated for each Airport on Jeppessen Airport Utilisation Approach and take-off charts*
2. *As stated in Wings Aviation Operations Manual for Take-Off and Landing min in section*
3. *In the event of Any conflict on the above, the limiting minimum takes precedence*

Issued by the Nigerian Civil Aviation Authority Effective Date 15 - 02 - 2006

Page 1 of 1

Figure 1.17.2a
NCAA Operations Specifications



Nigerian Civil Aviation Authority
Operations Specifications



OpSpecs Paragraph _____ is issued to and accepted by:

AAZ / C / 026

(AOC No.)

Wings Aviation

(Name of Operator)

[Signature]
(Signature)

Accountable Manager

(Title)

Application For Amendment:

I certify that the statements submitted in connection herewith are true and that I am duly authorised to make application on behalf of the applicant.

(Signature)

Date

(Title)

The amendment to the standard OPS SPEC paragraph on the reverse side hereof is/is not approved.

Amendment No. _____

(Signature)

Date: _____

(Title)

This standard OpSpecs paragraph is issued by the authority of the Director-General, NCAA.

[Signature]
(Signature)

15th February, 2006

Effective date

7 Director, Operations & Training
(Title)

Issued by the Nigerian Civil Aviation Authority

Effective Date 15 - 02 - 2006

Figure 1.17.2b
NCAA Operations Specifications

1.17.2.1.1. Air Operator's Certificate Operations Specifications (Ops-Specs)

At the time of the accident the approved aeronautical data for aerodrome as stated in the Operations Specifications was not used, instead NAMA chart was used as claimed by Wing Aviation management. However, the Wings Aviation dispatcher stated that Aero Airline chart was used for approach on previous flights. The appropriate NCARs are quoted below as follows:

NCAR 9.1.1.7 The AOC will consist of two documents -

- (1) A one-page certificate for public display signed by the Authority, and
- (2) Operations specifications containing the terms and conditions applicable to the AOC holder's certificate.

NCAR 10.2.1.3 - (a) Operations Specifications issued shall specify which specific operations are authorized, prohibited, limited, or subject to certain conditions, in the interest of public safety.

(b) Operations Specifications issued under this section shall contain details of the following:

- 1) The purpose of issuance;
- 2) Application and duration;
- 3) Limitations to, or actions required by, the operator;
- 4) General provisions;
- 5) En-route authorization and limitations;
- 6) Aerodrome authorizations and limitations;
- 7) Maintenance;
- 8) Mass and balance;
- 9) Interchange of equipment operations; and
- 10) Aircraft leasing operations.

See figures 1.17.2a and 1.17.2b above.

1.17.3. Nigerian Airspace Management Agency (NAMA)

Nigeria Airspace Management Agency is vested with the responsibility of Aeronautical search and rescue procedure, in the event of air mishaps or near mishaps. In keeping with its statutory role, ensures aviation safety within the country's airspace and minimizing losses in aircraft accidents and incidents.

The NAMA is mandated to chart the entire airfield and its surroundings. They are charged with providing air navigation services to all navigable airports in the Country. The chart used during the accident flight was provided by NAMA, where Bebi and Obudu were co-located.

1.17.4. National Emergency Management Agency (NEMA)

The National Emergency Management Agency (NEMA) was established via Act 12 as amended by Act 50 of 1999, to manage disasters in Nigeria. Therefore, from inception, NEMA has been tackling disaster related issues through the establishment of concrete structures and measures.

Such measures as the education of the public in order to raise their level of awareness and reduce the effects of disasters in the Country. The Agency has also put in place structures that enable it detect, respond and combat disasters in a timely manner.

1.17.5 Department of Safety and Technical Policy (DSTP)

This department is a technical and specialized department charged with the responsibility for the coordination, formulation and review of technical policies on the promotion of safety and security of civil aviation in Nigeria.

FUNCTIONS OF DSTP

- *Co-ordination, formulation and review of technical policies with emphasis on the promotion of safety and security of civil aviation in Nigeria in accordance with international standards and best practices.*
- *Co-ordination and monitoring of the implementation of aviation policies by the parastatals of the Ministry including the private operators.*
- *Conducting and supervision of auditing/verification of the operation of parastatals to promote safety.*
- *Supervision of the design, construction and maintenance of Federal Government owned airstrips and aerodromes including other non-revenue generating facilities of the aviation industries.*
- *Briefing the Honourable Minister/Permanent Secretary on the progress/constraints in the implementation of programmes and operations of the various parastatals including recommendation on corrective measures.*
- *Execution of technical projects of the Ministry with a view to sustaining the implementation of national and international standards.*

1.18 Additional Information

The search and rescue operation was carried out with aircraft that were not properly equipped for the operation. AIB was in Calabar as observer during the operation.

The ATC in Enugu descended 5N-JAH to 5000 feet, even when the aircraft was outside its control area.

The estimates passed to Area Control Centre (ACC) at 06:44.57hrs was as indicated below:

AREA CONTROL (127.3 MHZ) TAPE TRANSCRIPT ON TWD 8300
OF 15th MARCH 2008

TIME	STATION	TEXT
06:44:40	TWD 8300	AH LAGOS CONTROL FROM TWD 8300 GOOD MORNING TO YOU
06:44:49	ACC	TWD 8300 CLEARED TO OBUDU VIA A 609 FL 190 GO AHEAD
06:44:57	TWD 8300	OK SIR WE'RE CLEARED TO OBUDU REQUESTING FL 250 SIR, AND WE ESTIMATE MOPAD AT 0655 BEN 0714 AH POTGO 0737 LIPAR 0744 LUNDO 0802 AND OBUDU DESTINATION AT 0817
06:45:30	ACC	TWD 8300 CLEARED TO OBUDU VIA UA 609 FL 250 REPORT MILBO
06:45:45	TWD 8300	AH OKOK WE CLEARED TO OBUDU A 609 FL 250 CONFIRM TO CALL POTGO?
06:45:58	ACC	CORRECTION REPORT MOPAD, MOPAD
06:45:59	TWD 8300	OK NEXT WILL BE MOPAD 8300
06:48:17	NIG 299	LAGOS NIG 299
06:48:22	ACC	299 GO AHEAD
06:48:25	NIG 299	APPROACHING TYE LEVEL 180 TWO-WAY WITH ACCRA
06:48:28	ACC	CONTINUE WITH ACCRA
06:48:31	NIG 299	THANK YOU TO CONTINUE
06:48:33	VGN 041	LAGOS VGN 041 118 MILES TWO-WAY CONTACT WITH KANO.....LEVEL 330
06:48:45	ACC	VGN 041 CONTINUE WITH KANO 124.1
06:48:51	VGN 041	124.1 GOOD DAY
06:49:33	VGN 040	LAGOS 040 REQUEST DESCEND THIS TIME LAG 118
06:49:05	ACC	VGN 040 DESCEND FL 160 REPORT LEAVING 310
06:49:11	VGN 040	ROGER CLEARED LEVEL 160, CALL YOU LEAVING 310 VGN 040
06:49:20	VGN 040	VGN 040 LEAVING FL 310
06:49:26	ACC	NEXT CALL ERAMI
06:49:29	VGN 040	WILCO VGN 040
06:51:40	BLV 200	CONTROL GOOD MORNING BLV 200
06:51:47	ACC	200 CLEARED TO ABUJA UR 778 FL 250

Transmission of
the Aircraft to
the ACC.

The Pilots loaded co-ordinates that led to conflicting distances on both Pilot GPS displays. While one gave 27 miles, the other gave 62 miles distance to destination.

Wings Aviation employed marketing executives as cabin attendants.

The aircraft was fitted with Ground Proximity Warning System (GPWS), however most modern aircraft are equipped with Enhanced Ground Proximity Warning System (EGPWS) which could provide a relative advantage in the operating environment.

1.19 Useful or effective investigation techniques

Not applicable.

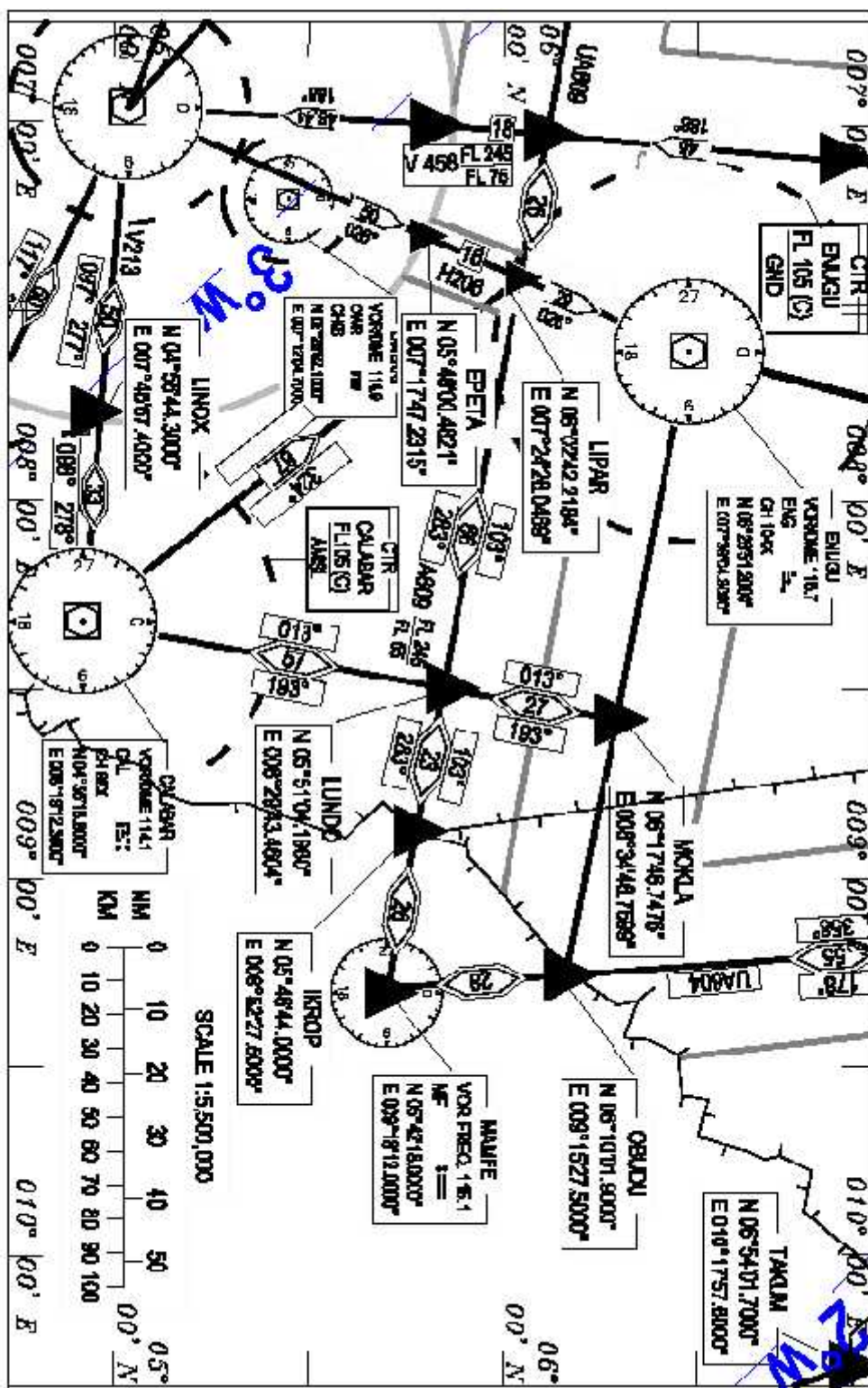
2.0 Analysis

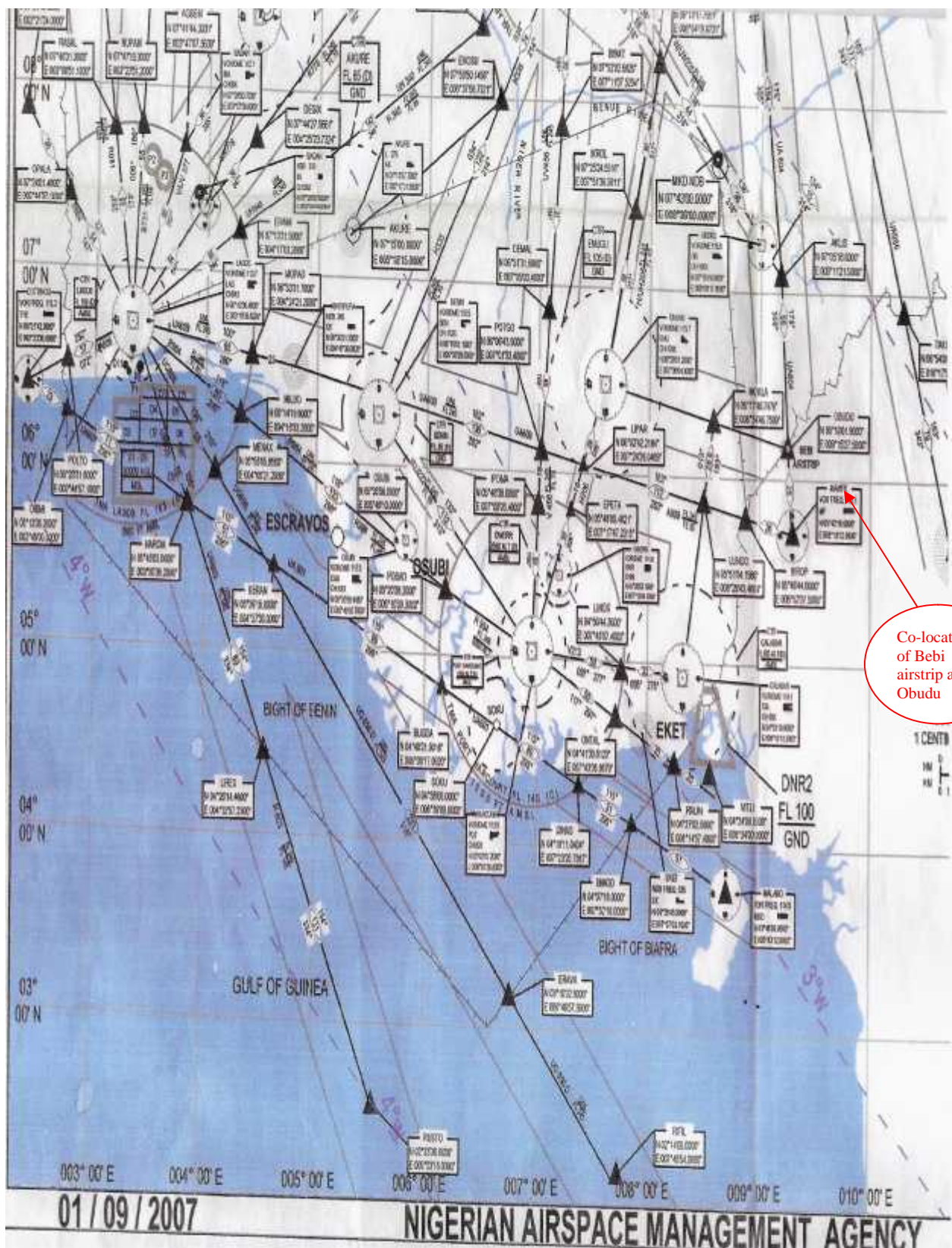
2.1 Conduct of Flight

The flight plan by the crew of TWD 8300 was duly filed with ATS office at Murtala Muhammed Airport, indicating routes to be flown as, “Lagos (LAG) via Airways (UA609) to Potgo direct Enugu (ENU) and direct to Obudu”. The aircraft did not follow the filed route but instead flew the airway estimated Ikrop at 0906 hrs. It maintained twenty-five thousand feet (FL250) before commencement of descent to eleven thousand feet as cleared by Port Harcourt tower.

At 0856 hrs, the aircraft contacted Enugu Tower, estimated Ikrop at 0906 hrs and Obudu at 0909 hrs. TWD 8300 checked abeam Enugu at 0845 hrs with four hours endurance. At 0905 hrs, it requested for further descent and was cleared by Enugu to 5000ft AMSL (FL050) to report again rejoining. From the estimate given for Ikrop at 0906 hrs meant it was one minute to Ikrop and twenty minutes away from abeam Enugu, which was out of Enugu control airspace. Enugu airspace lateral limit is 30NM from reference and from ground level to 10,500ft (FL105).

From FDR analysis, it descended to 8000ft AMSL (FL080) and climbed back to 9000ft (FL090) within 80 seconds. The aircraft maintained 9000ft for another 720 seconds, again descended to 3500ft within 240 seconds. This time the GPWS came on warning the crew of terrain and to pull up. Before the crew responded, the aircraft impacted the terrain at 3,400ft at about 0920.17hrs.





2.2 Event Phase

The recordings from CVR and FDR have been amalgamated to present the information in a chronological order. The aircraft took off from Lagos at 0636 hours, climbed to FL 250. FDR plot indicated that engine and flight control parameters were normal. The analysis of the last 30.5 minutes of the accident flight was as follows:

At 10 minutes 38 seconds into last leg of the flight, the crew experienced disparity in the GPS distance to Obudu from Ikrop. The co-pilot instrument read 27 miles to Obudu from Ikrop while captain instrument was reading 62 miles to Obudu. This was the beginning of the crew navigational problem. Henceforth, they were preoccupied with imputing and authenticating the right co-ordinates of Obudu. At 22 minutes 55 seconds, the crew managed to input a mutually accepted coordinates for their destination.

At 25 minutes 22 seconds, the crew descended further from 9,000ft to 3,500ft. The Captain Said: “We have to go down further”.

At 26 minutes 55 seconds, the crew was still looking out for the ground and landmarks. At 28 minutes 24 seconds, approach checklist was read and completed at 28 minutes 46 seconds.

At 29 minutes 42 seconds, the first terrain proximity warning came from the GPWS followed by multiple GPWS warning at 29 minutes 51 seconds and continuous GPWS warning at 30 minutes 7 seconds and finally at 30 minutes 13 seconds the captain shouted ‘shit’ while the copilot shouted ‘climb!’ The aircraft impacted terrain at 30 minutes 18 seconds after 36 seconds of GPWS persistent warning. See the FDR plots overleaf figures 2.2a, 2.2b and 2.2c.

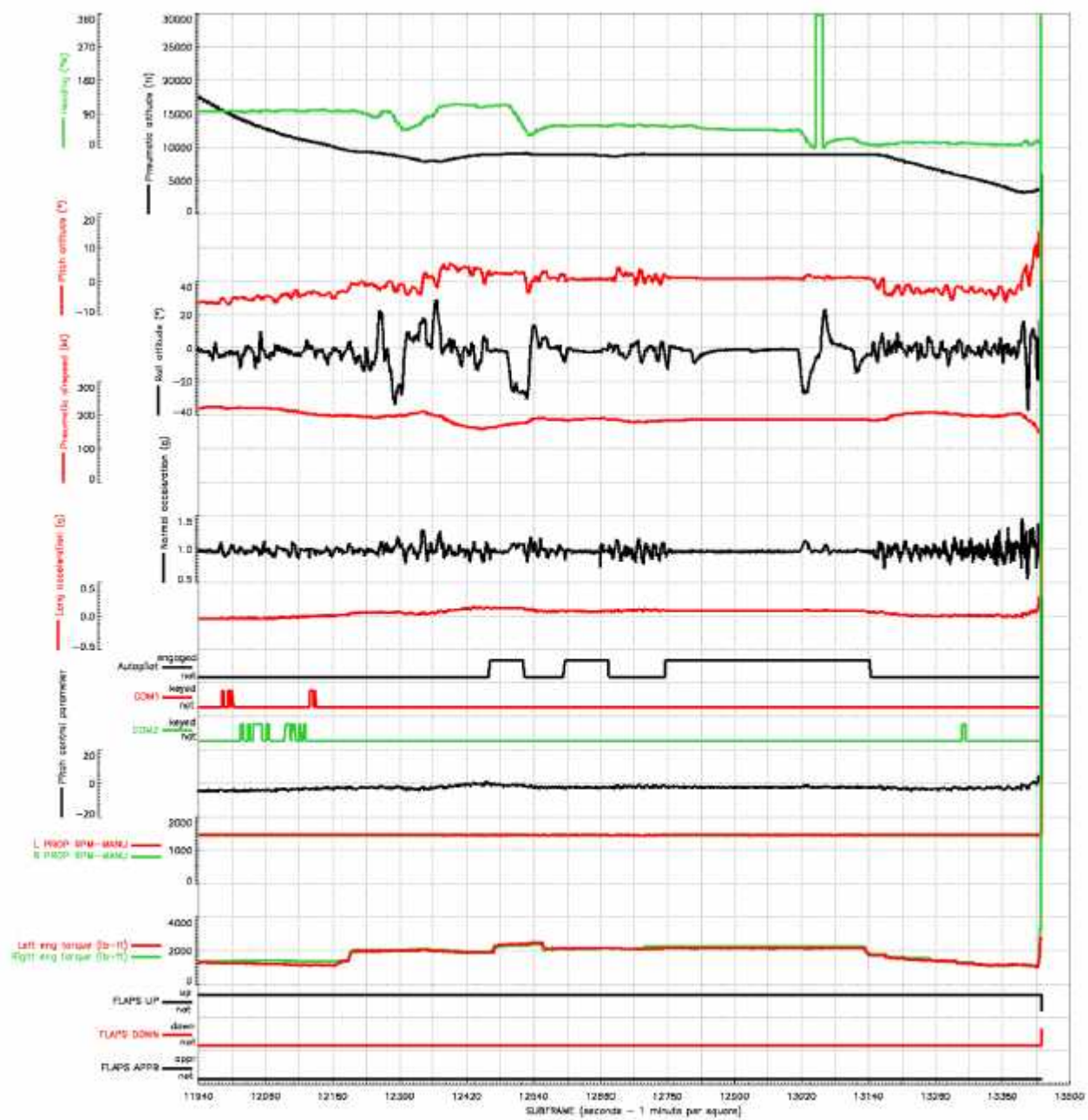


Fig. 2.2a

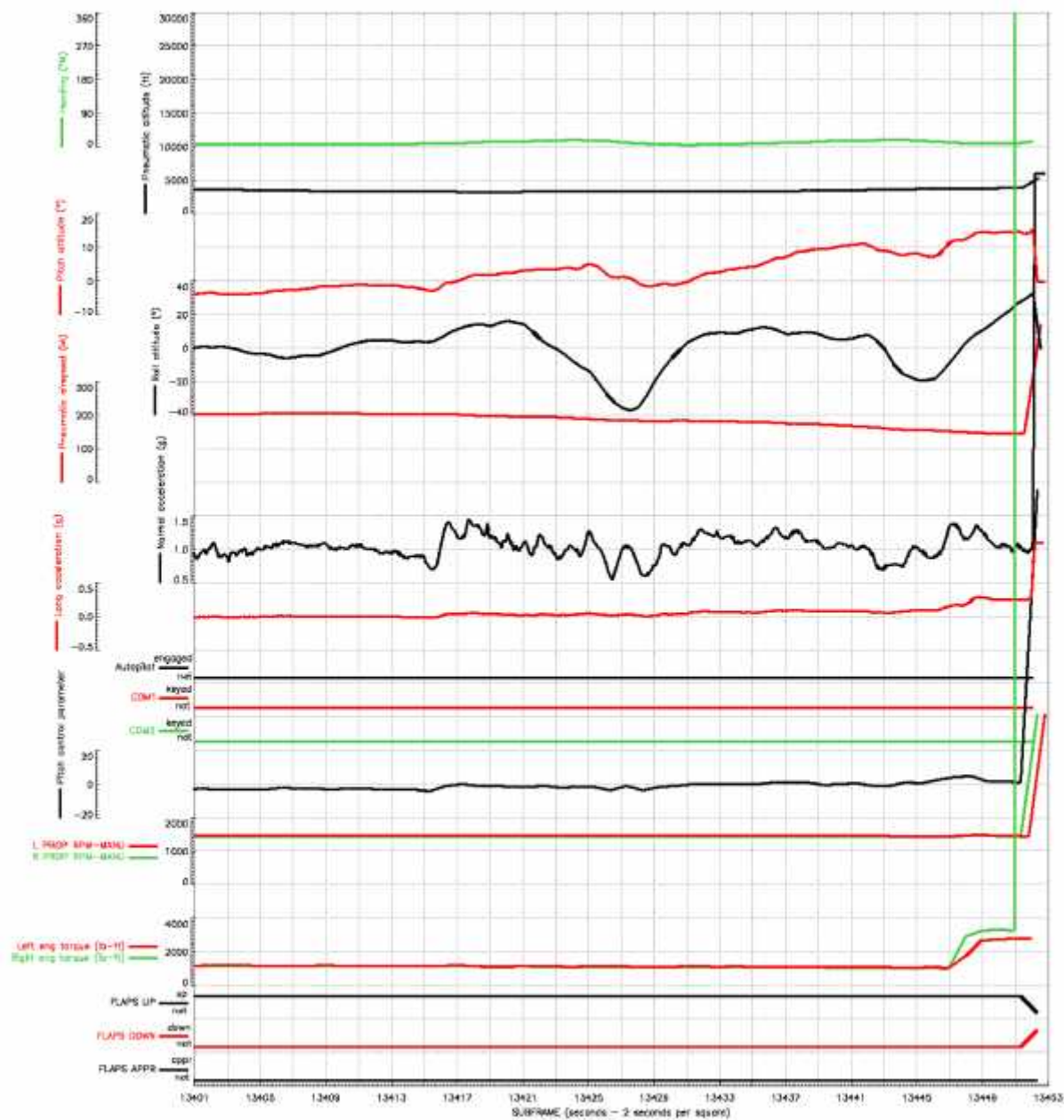


Fig. 2.2b

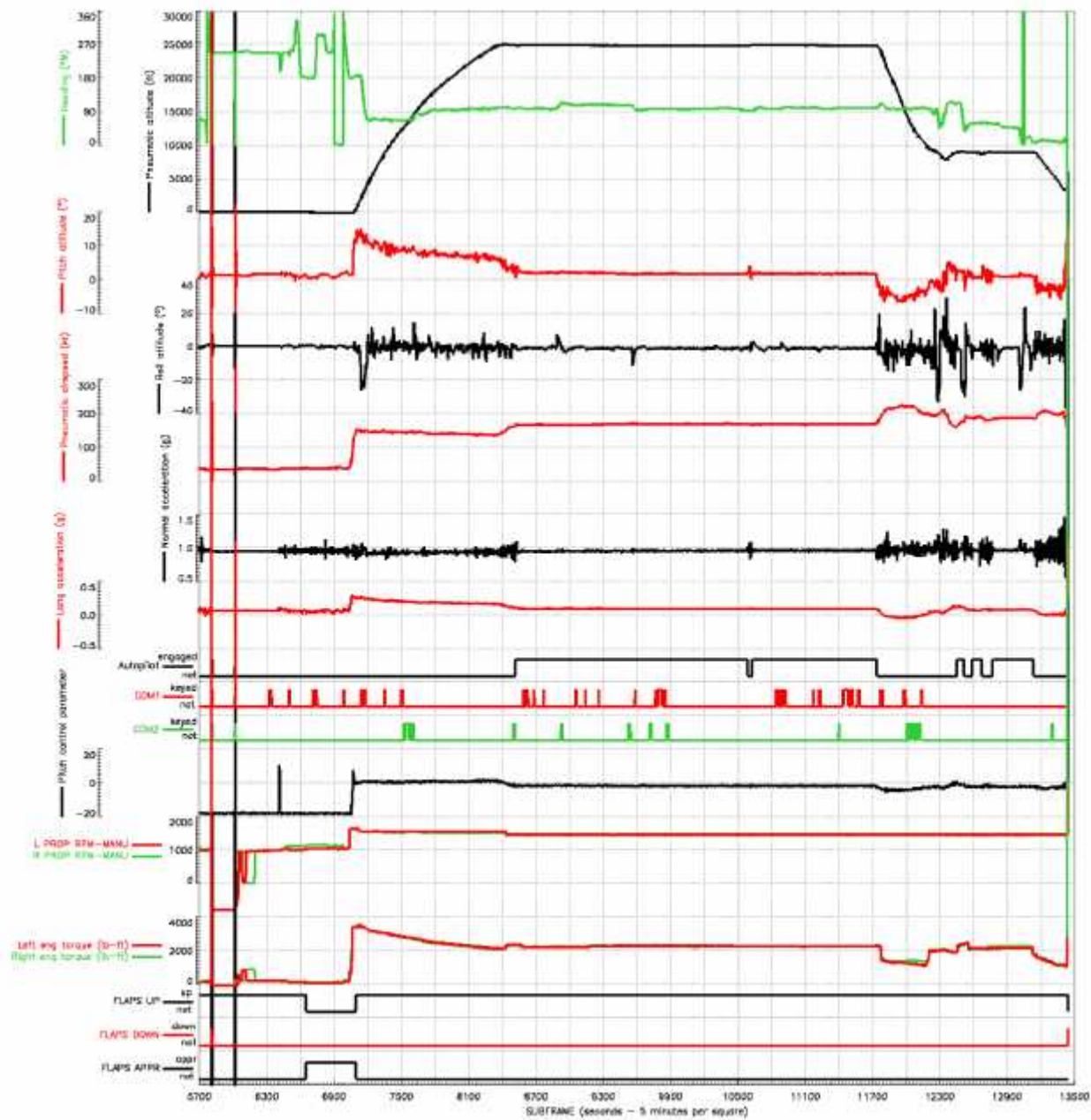


Fig. 2.2c

2.3 The Pilots

The Captain had 852 hrs on type and a total of 9730 hrs flying experience. The captain was duly certified and qualified to fly the aircraft. However the captain had little or no operational experience flying to Bebi. It was evident that the pilot had only operated into Bebi once and this was about 15 months before the accident.

Bebi is a special airstrip surrounded by hilly environment and the NCAA regulation (NCAR 8.10.1.32) clearly states that any AOC Operator to such environment must make sure that the crew are conversant with the route, and that the pilot must have in the last 12 months made a recency flight into such environment (NCAR 8.10.1.33). There was also no evidence that the pilot did any route check on that route before the accident flight (NCAR 8.10.1.30).

The captain was the Flight Safety Pilot of the organization as at the time of the accident. By the quality and experience outlined by the airline for whoever occupies that position, indicated that the captain was an experienced pilot. However the safety captain omitted the safety aspect of route familiarization which would have enhanced route safety.

The first officer was a 36 year old man with 204 hrs on type and a total flying experience of 444.7 hrs. He was relatively low in experience without any previous incident or accident and also with no operational experience to Bebi, but was qualified to fly as a co-pilot (CP).

2.4 The Aircraft

The aircraft was airworthy and maintained in accordance with approved maintenance programme. There were no deferred defects or any known discrepancies in the aircraft technical logbook. The aircraft was fitted with GPWS.

A ground proximity warning system (GPWS) is a system that provides automatically a timely and distinctive warning to the flight crew when the aeroplane is in potentially hazardous proximity to the earth's surface. (ICAO Annex 6, Chapter 6)

A ground proximity warning system shall provide, as a minimum, warnings of the following circumstances: (ICAO Annex 6, Chapter 6)

- a) excessive descent rate;*
- b) excessive terrain closure rate;*
- c) excessive altitude loss after take-off or go-around;*
- d) unsafe terrain clearance while not in landing configuration;*
 - 1) gear not locked down;*
 - 2) flaps not in a landing position; and*
- e) excessive descent below the instrument glide path.*

The ground proximity warning system must automatically provide, by means of aural signals, which may be supplemented by visual signals, timely and distinctive warning to the flight crew of sink rate, ground proximity, altitude loss after take-off or go-around, incorrect landing configuration and downward glide-slope deviation. (JAR-OPS 1.665(b))

Basic GPWS systems use the aircraft radio altimeter to detect terrain hazards. This information is supplemented by the barometric altitude unit (which provides altitude and vertical speed information) and the ILS. The lack of forward-looking ability of the radio altimeter limits the efficiency of basic GPWS.

Advanced GPWS systems, known as Terrain Awareness and Warning System (TAWS) or Enhanced Ground Proximity Warning System (EGPWS), are able to automatically provide the flight crew with sufficient alerting time to prevent controlled flight into terrain events, and provide a forward looking capability and terrain clearance floor. This is done by comparing the aircraft position

derived from a very accurate source e.g. Global Positioning System (GPS) with digitized map data contained in an on-board computer.

Consequently, if the aircraft was fitted with EGPWS it could have given the crew more than 36 seconds (from FDR readout) alert time obtained from the GPWS, since it has earlier warning time and provide a better forward looking capability.

2.5 The Search and Rescue

A search and rescue control room was put in place at the Airport; the Military airport commander's office was used. The coordination involved many stakeholders in the aviation sector. The Accident Investigation Bureau (AIB) was an observer during the Search and Rescue operation.

Search and Rescue commenced by NEMA at 1400hrs. Bristow Helicopters Ltd joined the SAR team later same day and continued till Friday 21st March 2008 within which the following operators joined, with their aircraft:

Caverton Helicopter,
Aero Contractors Ltd, and
Border Patrol.

The 6 days SAR activity covered more than Eleven Local Government Areas in Cross River, Benue and Enugu States.

The thick forest and the deep valley made the Search and Rescue operation very difficult. The ELT is usually designed for survivable incidents or accidents. The ELT was demobilized due to the total destruction of the aircraft. The Search and Rescue aircraft flew above the crash site without seeing the crash site due to the thick forest. The Search and Rescue aircraft used during the operation lacked adequate search and rescue equipment to enable easy location of the missing aircraft.

2.6 The NAMA Enroute Chart Used

The Enroute Chart used during the accident flight created a problem which caused distraction for the crew in the cockpit. On this chart in question, Bebi airfield was co-located with Obudu and from available evidence, the crew was not familiar with the route; the captain's only flight into Bebi was on the 24th of November 2006, that is, 1 year 3 months and 19 days to the day of the accident, with no further evidence to show that the crew observed a Route and Area checks into the airstrip.

The NAMA Enroute Chart showed that Bebi and Obudu are co-located, while physically they are not, Bebi and Obudu are twenty seven nautical miles apart. The coordinate of Obudu published by NAMA on the Enroute Chart used by the crew was N06° 1001. 9000''; E009° 1527.5000'' as against N06 10.0; E009 15.5 as published by Jeppesen Chart. The Bebi coordinate as improvised by Aero Contractor's company procedure is N06° 37' 35''; E009° 18' 70'' (See Appendix A).

This disparity in the coordinates of Bebi and Obudu, which is 27 NM apart, contributed to the confusion and distraction the crew experienced as evident from the CVR; they were both getting conflicting distance readouts from their respective GPS displays. Besides, the crew had no route check and recency experience on the route; these compounded the crew problems. Operation into Bebi through the northwest axis is less hazardous than approach from the south which has mountainous terrain and requires a good knowledge of the area and operational experience.

The Enroute chart from NAMA did not clearly indicate the height of these obstacles and it was also a Visual Flight Rule (VFR) approach. After the accident a newer version of the same chart produced by NAMA to replace the one used during the accident flight, does not

have the co-location. The new chart confirmed that the old chart was erroneous and misleading.

The actual flight plan filed for the flight was FL190 - LAG UA 609 - POTGO - DCT ENU - DCT OBUDU. The meaning of this clearance is that the aircraft was cleared to FL190 (19000 feet) to fly from Lagos via airway UA 609 to POTGO and to fly direct to Enugu and then direct to Obudu. By this clearance, the crew was expected to report MOPAD and then POTGO before exiting the UA609. The Aerodrome Control (118.1MHZ) clearance given to the pilot at 06:30:16 was “TWD 8300 CLEARED LAGOS OBUDU VIA A609 FL190 AFTER DEPARTURE RWY HEADING 2000FT LEFT TURN ON COURSE”

The ATC confirmed the pilot read-back to be correct. At 06:44:49 the Area Control (127.3 MHZ) clearance was “TWD 8300 CLEARED TO OBUDU VIA A609 FL190 GO AHEAD” at 06:44:57 the pilot replied “OK SIR WE’RE CLEARED TO OBUDU REQUESTING FL250 SIR, AND WE ESTIMATE MOPAD AT 0655 BEN 0714 AH POTGO 0737 LIPAR 0744 LUNDO 0802 AND OBUDU DESTINATION AT 0817”.

The pilot at 06:44:57 requested for FL250 and also relayed aircraft estimate to LIPAR at 0744 and LUNDO at 0802. Looking at the two waypoints the Area Controller should have corrected the pilot since the two waypoints were outside the filed flight plan route. (There was no record of any flight plan change request.)

Secondly, the waypoint LIPAR is neither on the planned route nor on UA609; according to Jeppesen chart, LIPAR is on the UH206 Airway while LUNDO and MOKLA are on the ATS route. (See Jeppesen chart on page 49). The pilot’s estimate which the Controller did not detect or correct was the beginning of the crew navigation problem. LIPAR and LUNDO reporting point/Navaid were never to be used for course guidance on UA609 Airway.

Enugu cleared the TWD 8300 to descend to 5000ft, even when the aircraft was outside its control area. The original flight plan was to route direct Enugu, but the deviation through IKROP removed Enugu from the control area. That descent also endangered the aircraft, since that sector minimum enroute altitude is 11,200ft (Jeppesen).



JEPPESEN ENROUTE CHART

JEPPesen

INTRODU

ENROUTE CHA

AIRWAY NAVAID/REPORTING POINT BY-PASS

When an airway passes over or turns at a navaid or reporting point, but the navaid is not to be utilized for course guidance and/or no report is required, the airway centerline passes around the symbol. In cases where a by-pass symbol cannot be used, an explanatory note is included.



Airway J26 does not utilize the navaid or reporting point.

2.7 Bebi Airstrip and Environ

The airport is located in an area with high terrain which makes the area very dangerous and difficult to operate into, hence the need for the appropriate authority to provide the airstrip with adequate and necessary navigation equipment to enhance safety at the airstrip. The NDB and ILS were not serviceable at the time of the accident. In an environment like that of Bebi the ILS should be made serviceable, calibrated, certified and published. This requires approach procedures but none was available.

2.8 The Operator

The Operator relied on the NAMA chart for its operation into Bebi, but operations into Bebi require more than the NAMA chart since the airstrip has hazardous terrains abounding in and around the airport. The Jeppesen chart has a Minimum Off Route Altitude (MORA) of 11,200 feet for the area the aircraft was approaching from but does not have an approach procedure for Bebi. There is no approved approach procedure for the airstrip. Other operators adopt various operational procedures to operate into Bebi, even though NAMA has

the responsibility of providing an all-inclusive procedure that will be acceptable and approved by NCAA for operations into Bebi.

The deviation from the filed flight plan contributed to their navigational problems which were informed by their lack of operational route experience. Though a captain has the prerogative to change his flight plan, but he/she must follow laid down procedures; the captain must request for flight plan change and the changes must be granted before the new route is flown.

There was no evidence that the captain requested for a change in flight plan, consequently Lagos Area Control (127.3 MHZ) was unable to detect the change in the captain's read back. The operation through the northwest axis into Bebi was less hazardous than the approach from the south which has higher terrain. The Potgo - Enugu - Bebi route would have kept any experienced crew member familiar with the route away from the very high terrain.

The operator did not provide the Bureau with any evidence that they had in-house procedures used in operating into Bebi airstrip. There were other operators operating to Bebi with in-house developed approach plates and procedures (AERO and OVERLAND). Though, this practice is not safe and should not be encouraged therefore the Regulatory Authority should address it.

Wings Aviation in its flight operations carries on board Marketing Executive in lieu of trained cabin crew. The purpose of carrying cabin crew on passenger flight is to enhance safety. In an emergency, cabin crew assists the cockpit crew in executing emergency procedures. Also, they organize, control and direct passengers to safety.

During normal flights, cabin crew provides passenger comfort, makes safety announcements, demonstrates emergency procedures, and when required administer first aids to sick passengers as well as serve

refreshment in the cabin/cockpit. The marketing executives are not trained cabin personnel and as such cannot take the place of a trained cabin attendant.

2.8.1 OPERATIONAL SPECIFICATIONS (OPS-SPECS)

Pursuant to Civil Aviation Act 2006 and the Nigeria Civil Aviation Regulations (NCAR) being in force, Nigerian Civil Aviation Authority (NCAA) granted subject to the conditions in the specific operating provisions and Air Operator's Certificate to WINGS AVIATION;

- (a) Airport Aeronautical Data as stated for each airport on Jeppesen airport utilization approach and take-off charts.

Therefore, a Jeppesen chart was approved for WINGS AVIATION navigation operations, as indicated in section 1.17.3.4.1 and 1.17.3.4.2.

2.9 THE CREW TRANSMISSION TO THE AREA CONTROL CENTRE (ACC)

The estimates transmitted by the crew to the ACC were not in agreement with the Flight Plan filed by the crew. However, this discrepancy was not detected by ACC. The estimate given by the pilot at 06:44.57hrs was not in conformity with the filed flight plan.

2.10 NATIONAL EMERGENCY MANAGEMENT AGENCY (NEMA)

National Emergency Management Agency (NEMA) was established by Act 12 as amended by Act 50 of 1999, to manage disasters in Nigeria. Therefore, from inception, NEMA has been tackling disaster related issues through the establishment of concrete structures and measures.

NEMA did not receive ELT alert from the accident aircraft; this made the Search and Rescue very difficult since the crew deviated from the flight plan route earlier filed. The only clue left was the last contact the aircraft made with ATC. The NEMA response was within two hours of the time the aircraft was declared missing, its rescue helicopter swung into action but without the required infra-red equipment to locate the missing aircraft. The early discovery of the aircraft was made difficult because of the topography of the area - mountainous, uninhabited, thick forest coupled with the deviation from the filed flight plan.

Other operators joined with their aircraft, notably Caverton Helicopters, Aero Contractors Nigeria Ltd, Bristow Helicopters and Border Patrol. The Border Patrol came on the seventh day with an aircraft installed with infra-red camera/equipment, but it was unserviceable.

Search and Rescue was called off after about seven days. Search and Rescue (SAR) can be enhanced if provided with appropriate equipment and trained personnel. NEMA should be able to test-run the ELT equipment in most aircraft bi-annually to ascertain their serviceability.

2.11 Department of Safety and Technical Policy (DSTP)

“This department is a technical and specialized department Charged with the responsibility for the coordination, formulation and review of technical policies on the promotion of safety and security of civil aviation in Nigeria”.

DSTP is mandated to oversee the construction of airstrips in the country, therefore safety and security at these airstrips nationwide fall under its jurisdiction. DSTP has no statutory regulatory power like NCAA but it provides basic amenities at the airports and supervises, coordinates with relevant stakeholders like NCAA, NAMA,

Federal Fire Service, FAAN, State Governments and other security outfit to enhance safety and security at airstrips including Bebi.

2.12 Nigerian Civil Aviation Authority (NCAA)

Nigeria Civil Aviation Authority is the organization charged with regulating the aviation sector. The NCAR clearly outlined the requirement on the following:

- i) Requirement on route and area checks for pilots.
- ii) 12 calendar month recency checks.
- iii) Area that needs Special navigational system or procedures.
- iv) PIC shall demonstrate operational competency by navigating over the route or area.
- v) Change of flight plan
- vi) Change from IFR to VFR.

There was no evidence that a route check was done by the crew. The only flight the PIC operated into Bebi was 15 months before the accident. The airstrip is located around mountainous environment that requires special navigational procedures. The PIC's lack of route experience compounded the crew problems. There was no evidence that the crew requested for flight plan change before deviating from the flight plan earlier filed. The crew changed from Instrument Flight Rule to Visual Flight Rule without contact with the ATC.

Crew Resource Management (CRM) the crew adopted if any was inadequate. There was no evidence that the crew had one in the last 12 calendar months.

3.0 Conclusions

3.1 Findings

- 1 The aircraft was serviceable from available records.
- 1 Bebi airstrip and Obudu are not co-located as indicated on the chart provided by NAMA.
- 3 The Airstrip is neither licensed nor certified by the appropriate authority.
- 4 There were other operators operating to Bebi with their in-house developed approach plates and procedures (AERO and OVERLAND).
- 5 No Licensed Air Traffic Controller was available at the Airstrip to provide Air Traffic Control Services but unlicensed Radio Operators provide advisory services.
- 6 This Airstrip lies under very busy Airway (UA 604) from Europe to South Africa, in a very difficult terrain due to the topography of the area (mountainous terrain), which raises the Minimum Off Route Altitude (MORA) to 11,200ft as published by Jeppesen Chart though not indicated on Nigeria route map published by NAMA.
- 7 An aircraft belonging to Border Patrol of Nigerian Immigration Service installed with Infra-red Camera capable of detecting the wreckage came in 7 days after Search and Rescue had commenced. It was discovered that the Infra-red Camera on board the aircraft was unserviceable.
- 8 The Captain and the First Officer were qualified to fly the aircraft at the time of the accident.

- 9 The crew departed as per the flight plan filed.
- 10 The crew deviated from the filed route on the flight plan en-route, without proper procedure.
- 11 The flight crew experienced navigational problem, which distracted their attention during the flight.
- 12 Bebi airstrip is equipped with one improvised Land Rover fire vehicle without base water reservoir.
- 13 A Minimum Off Route Altitude (MORA) of 11,200ft was published by Jeppesen chart owing to the topography of the area.
- 14 The meteorological equipment in Bebi airstrip were inadequate and the few available ones were not calibrated.
- 15 The aircraft documentation was in order and there were no outstanding defects recorded in the technical log.
- 16 The commander did not promptly initiate terrain avoidance action when the GPWS sounded “Terrain!” “Terrain!!” “Pull up!!!”
- 17 The captain had a total flying time of 852 hrs on aircraft type while the co - pilot had 204 hrs on type.
- 18 The operator did not provide the Bureau with any evidence that they had procedures used in operating into Bebi airstrip.
- 19 There was no weather brief before the flight departure. Bebi airstrip has no published standard instrument approach procedure by any authority.

- 20 There was no evidence from the crew training files to show that the accident crew had any recency, route check or CRM within the last one year.
- 21 The flight crew changed from IFR flight to VFR flight without proper procedure and ATC clearance.
- 22 The flight was operated with a NAMA/AIS Map of September 2007.
- 23 There was no evidence that the chart used was approved by NCAA.
- 24 The crew did not use Jeppesen charts as approved in WINGS AVIATION Operational Specifications by NCAA.
- 25 The Lagos Area Control Center (ACC) did not detect or question the disparity in waypoints and routing as read back by the crew, compared with the filed flight plan

3.2 Causal Factor

- I. The flight crew conducted an approach into a VFR airfield in an instrument meteorological condition and did not maintain terrain clearance and minimum safe altitude which led to Controlled Flight Into Terrain.
- II. The crew did not respond promptly to GPWS warning.

3.3 Contributory Factors

- 1. The flight crew was not familiar with the route in a

situation of low clouds, poor visibility and mountainous terrain.

2. The Area Controllers did not detect the estimate as passed by the pilot for positions not in the filed flight plan (LIPAR and LUNDO) and omitting ENUGU.

4.0 Safety Recommendations

- 4.1 The NCAA and NAMA should ensure that the airstrip is certified and licensed with all available nav-aids made functional and effectively maintained with appropriate charts and correct coordinates.
- 4.2 NCAA should ensure that Airstrip operator, services and maintains ILS and VOR/DME where installed and the Authority to provide Approach and Area charts for the Airstrip.
- 4.3 All Search and Rescue Aircraft owned by Government agencies such as NEMA, Nigerian Air Force, Border Patrol and the Police should be well equipped with specialized Equipment suitable for efficient conduct of Search and Rescue missions.

These include:

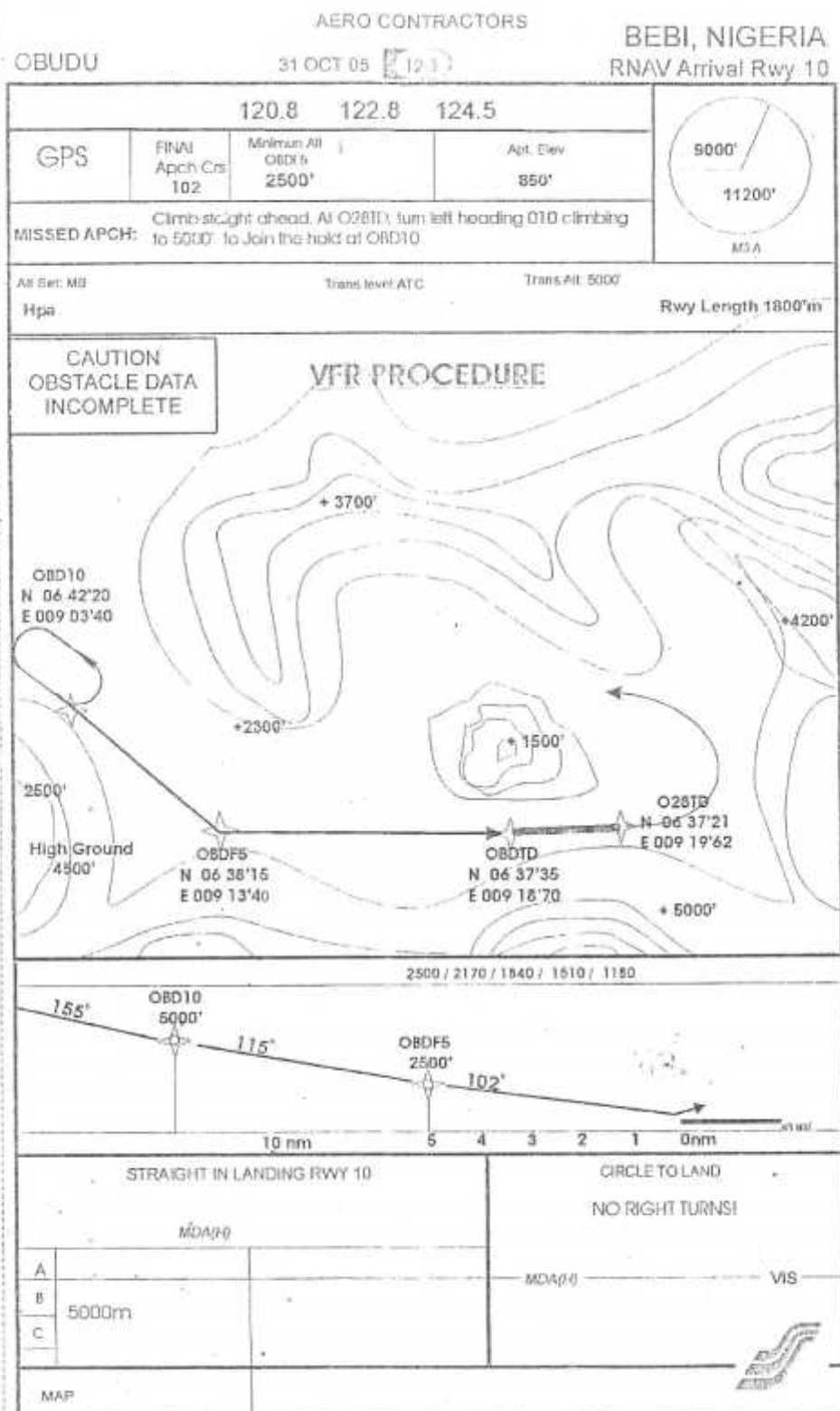
- Rescue Hoist
 - Emergency Floatation Kit
 - Night-Sun Search light
 - Auxiliary Fuel System for Extended Range
 - Cargo Hook
 - Stretcher System
 - HF Radio
 - Forward looking Infra-Red System
- 4.4 NCAA should ensure compliance of AOC holders with NCAR Part 8.10.1.30 and increase their surveillance.
 - 4.5 Wings Aviation Limited should enhance Safety in their operations by developing an approved SOP which should include but not limited to:

- a) Aircraft dispatch procedure.
- b) CRM, Route and Recency checks for the crew in accordance with NCAR. 8.10.1.12 and 8.10.1.30.
- c) Operation in Hazardous environment (mountainous).
- d) Wings Aviation should ensure that safety critical appointments are not Concentrated in a multiple manner in the hand of a specific or particular Personnel, to encourage check and balance in their operations.

SAFETY ACTION

The disparity in the co-ordinates of Bebi Airstrip and Obudu has been redressed as a matter of urgency, as this constituted a safety item.

Appendix A



CHANGES: New Procedure

AEROCONTRACTORS Approved Procedure

Appendix B

GROUND CONTROL (121.9MHZ) TAPE TRANSCRIPT ON TWD 8300.15TH OF MARCH 2008.

TIME	STATION	TEXT
06:07:15	TWD 8300	AH --- LAGOS GROUND FROM TWD 300 GOOD MORNING
06:07:20	GND	TWD 300 GO AHEAD
06:07:23	TWD 8300	TWD 8300 MA
06:07:26	GND	TWD 8300 GO AHEAD
06:07:30	TWD 8300	OK WE ARE REQUESTING START-UP FOR OBUDU
06:07:38	GND	TWD 8300 LEVEL REQUESTING?
06:07:43	TWD 8300	STAND-BY
06:07:50	TWD 8300	AH WE ARE REQUESTING--- WE ARE REQUESTING FLIGHT LEVEL 250.
06:08:00	GND	TWD 8300 STAND -BY
06:08:55	GND	TWD 8300 LAGOS GROUND?
06:08:58	TWD 8300	AH GO AHEAD MA
06:09:00	GND	TWD 8300 START-UP APROVED QNH 1010 TEMP 26°C TIME 0609
06:10:00	TWD 8300	OK CLEARED TO START 1010 TEMP 26 0609 8300 THANK YOU VERY MUCH



AERODROME CONTROL(118.1MHZ) TAPE TRANSCRIPT ON
TWD 8300 OF 15TH MARCH 2008.

TIME	STATION	TEXT
06:23:49	TWD 8300	LAGOS TWD 8300 REQUESTING TAXI
06:23:52	TWR	TWD 8300 TAXI HOLDING POSITION RWY 18R REPORT LINK 2 18L FOR CROSSING.
06:23:59	TWD 8300	ROGER CLEARED TO TAXI 18R TO CALL AT LINK 2 FOR CROSSING TWD 8300
06:24:07	TWR	THAT'S CORRECT
06:24:16	NIG 5228	LAGOS NIG 5228
06:24:19	TWR	NIG 5228 DESTINATION MALABO GO AHEAD
06:24:23	NIG 5228	REQUEST START-UP POSITION E52
06:24:26	TWR	CONTACT LAGOS GROUND CONTROL 1219
06:24:28	NIG 5228	ROGER 1219
06:25:57	5NJEC	LAGOS 5NJEC
06:26:04	TWR	JEC GO AHEAD
06:26:09	5NJEC	MORNING SIR ARA HANGAR REQUEST TO POSITION AT INTERNATIONAL REQUESTING TAXI
06:26:12	TWR	TAXI IS APPROVED VIA THE EAST ----CORRECTION REPORT LINK 4 FOR CROSSING
06:26:32	5NJEC	ROGER TAXI APPROVED CALL YOU LINK 4
06:26:48	TWD 8300	TWD 8300 AT LINK 2 FOR CROSSING
06:26:52	TWR	CLEARED TO CROSS AT LINK 2.CONFIRM ROUTING A609?
06:26:54	TWD 8300	THAT'S AFFIRMATIVE
06:26:57	TWR	ROGER
06:27:00	TWR	VGN 041 AIRBORNE AT 26 CONTACT LAGOS APPROACH CONTROL 1247 SAFE FLIGHT.
06:27:03	VGN 041	1247 GOOD DAY
06:27:10	TWR	ROGER
06:27:20	5NDAP	LAGOS GOOD MORNING THE 5NDAP ACN RAMP REQUEST TAXI REPOSITION MM2
06:27:27	TWR	TAXI APPROVED VIA THE EASTERN TAXI- WAY RWY 18L REPORT REPOSITIONED AT MM2
06:27:35	5NDAP	ROGER SIR CLEARED TAXI WE CALL AT POSITION AT MM2

06:27:50	NIG 299	LAGOS NIG 299
06:27:55	TWR	NIG 299 GO AHEAD
06:27:58	NIG 299	REQUEST TAXI
06:28:00	TWR	NIG 299 TAXI HOLDING POSITION RWY 18R, TRAFFIC IS B737 THAT WILL BE PUSHING BACK SHORTLY.
06:28:05	NIG 299	TAXI HOLDING POSITION 18R NIG 299
06:28:10	TWR	THAT'S CORRECT THE TRAFFIC IS PACKED AT E52
06:28:13	5NJE	ARA ----- AH 5NJE LINK 4 FOR CROSSING
06:28:20	TWR	CLEARED TO CROSS AT LINK 4 PACK AT D33
06:29:00	TWR	NIG 299 CONFIRM LEVEL REQUESTING LEVEL 60?
06:29:03	NIG 299	NEGATIVE, LEVEL 140
06:29:06	TWR	ROGER STANDBY FOR LEVEL 140
06:29:50	TWR	NIG 299 COPY ATC CLEARANCE
06:29:53	NIG 299	GO AHEAD
06:29:55	TWR	NIG 299 IS CLEARED TO TOGO IN LOME VIA A609 FLIGHT LEVEL 140 AFTER DEPARTURE RIGHT TURN ON COURSE
06:30:00	NIG 299	CLEARED TO A609 LEVEL 140 AFTER DEPARTURE RIGHT TURN ON COURSE NIG 299
06:30:02	TWR	READ BACK CORRECT
06:30:06	TWR	STANDING BY FOR SOULS ON BOARD ENDURANCE
06:30:08	NIG 299	STAND- BY
06:30:10	TWR	TWD 8300 COPY ATC CLEARANCE
06:30:13	TWD 8300	GO AHEAD SIR
06:30:16	TWR	TWD 8300 IS CLEARED LAGOS OBUDU VIA A609 FLIGHT LEVEL 190 AFTER DEPARTURE RWY HEADING 2000FT LEFT TURN ON COURSE
06:30:20	TWD 8300	CLEARED LAGOS OBUDU FL190 VIA A609 AFTER DEPARTURE RWY HEADING 2000FT LEFT TURN OUT 8300
06:30:25	TWR	READ- BACK CORRECT REPORT PERSONS ON BOARD ENDURANCE, CONFIRM JAH?
06:30:30	TWD 8300	AH---THAT'S AFFIRMATIVE JAH 3 SOULS ENDURANCE 5HOURS SIR.
06:30:40	NIG 299	LAGOS NIG 299 4 SOULS ALL CREW ENDURANCE IS 4 HOURS BHW
06:31:00	TWR	COPIED OK REPORT READY FOR DEPARTURE
06:31:06	NIG 299	WE ARE READY NIG 299
06:31:10	TWR	NIG 299 WHEN IN POSITION CLEARED TAKE-OFF RWY 18R SURFACE WIND IS CALM

06:31:13	NIG 299	CLEARED TAKE-OFF RWY 18R NIG 299
06:31:17	ZSSAH	LAGOS TOWER GOOD MORNING ZSSAH
06:31:20	TWR	ZSSAH GO AHEAD
06:31:23	ZSSAH	CAN I HAVE THE LATEST WEATHER REPORT PLEASE?
06:31:26	TWR	TUNE TO LAGOS ATIS 1238
06:31:28	ZSSAH	1238 THANK YOU
06:33:07	NIG 299	AIRBORNE 299
06:33:09	TWR	I HAVE YOU INSIGHT, AIRBORNE AT 32 REPORT ON RIGHT TURN
06:33:14	NIG 299	WE ARE TURNING RIGHT NOW
06:33:17	TWR	CONTACT CONTINUE LAGOS APPROACH 124.7
06:33:19	NIG 299	124.7 THANK YOU BYE BYE 299
06:33:22	5NDAP	TOWER THE 5NDAP IS POSITIONED MM2
06:33:25	TWR	ROGER
06:33:30	BLV 200	LAGOS BLV 200 REQUEST TAXI
06:33:35	TWR	BLV 200 TAXI HOLDING POSITION RWY 18R REPORT LINK 4 18L FOR CROSSING
06:33:40	BLV 200	HOLDING 18R CALL YOU LINK 4 FOR CROSSING
06:34:08	ZSPKY	LAGOS FROM ZSPKY GOOD MORNING
06:34:11	TWR	GOOD MORNING TO YOU GO AHEAD
06:34:20	ZSPKY	REQUEST TAXI INSTRUCTIONS FROM OPPOSITE LINK 3 TO THE VIP PLEASE, WE ARE ----- TO THE VIP.
06:34:22	TWR	ROGER TAXI IS APPROVED VIA THE EASTERN TAXI-WAY 18L EXPEDITE
06:34:24	ZSPKY	ROGER TAXI VIA EASTERN 18L ZSPKY
06:34:26	TWR	AND BREAK BLV 200 TRAFFIC TAXING VIA THE EASTERN TAXI-WAY JUST OUT OF THE CAFU RAMP NOW IS HS 25. TAXI SLOWLY BEHIND THE HS 25
06:34:30	BLV 200	AH COPIED
06:34:33	TWR	TWD 8300 READY FOR DEPARTURE?
06:34:35	TWD 8300	AFFIRMATIVE
06:34:38	TWR	LINE- UP CLEARED TAKE-OFF 18R, SURFACE WIND IS CALM
06:34:40	TWD 8300	CLEARED FOR TAKE-OFF 18R 8300
06:36:40	ARA 1007	LAGOS ARA 1007 ON GAT GOOD MORNING REQUEST TAXI
06:36:43	TWR	STATION CALLING?
06:36:50	ARA 1007	ARA 1007 GOOD-MORNING

TIME	STATION	TEXT
06:36:52	TWR	1007 GO AHEAD
06:37:02	ARA 1007	WE ARE ON GAT AND WE REQUEST TAXI
06:37:04	TWR	TAXI HOLDING POSITION RWY 18R REPORT LINK 4
06:37:10	ARA 1007	18R AND CONFIRM LINK 4 OR LINK 2 FOR ARA 1007 ?
06:37:12	TWR	CONFIRM YOU PREFER LINK 2 ?
06:37:15	ARA 1007	REQUEST LINK 2 ARA 1007
06:37:18	TWR	CLEARED TO CROSS AT LINK 2
06:37:20	ARA 1007	THANK YOU LINK 2 ARA 1007
06:37:22	TWR	THAT'S CORRECT,BREAK TWD 8300 AIRBORNE AT 36 APPROACH CONTROL 124.7 SAFE FLIGHT
06:37:25	TWD 8300	AH GOOD DAY TO YOU SIR

APPROACH CONTROL (124.7MHZ)TAPE TRANSCRIPT ON TWD
8300 OF 15TH MARCH 2008

TIME	STATION	TEXT
06:37:36	TWD 8300	AH LAGOS RADAR GOOD MORNING 8300 OUT OF 29 TURNING LEFT
06:37:42	APP	TWD 8300 TURN LEFT ON COURSE AND CONTINUE CLIMB FL 190 REPORT PASSING FL 110
06:37:50	TWD 8300	OK AH CONTINUE TURNING LEFT WE REPORT PASSING 110-----8300
06:37:59	APP	CORRECT
06:40:12	NIG 299	OUT OF 120 THE NIG 299
06:40:14	APP	NIG 299 CONTACT CONTROL 1273
06:40:16	NIG 299	1273 BYE BYE NIG 299
06:40:48	APP	TWD 8300 PASSING LEVEL DISTANCE FROM LAG
06:40:50	TWD 8300	AH---WE ARE OUT OF 90 FOR ----- WE ARE OUT OF 90 FOR 190 11DME FROM LAG
06:41:02	APP	ROGER
06:41:35	APP	5NFLY PASSING LEVEL DISTANCE LAG
06:41:38	5NFLY	PASSING LEVEL IS 224 LAG
06:41:47	APP	SAY AGAIN PASSING LEVEL
06:41:50	5NFLY	80
06:41:53	APP	ROGER REPORT PASSING LEVEL 60
06:42:08	5NFLY	WILCO FLY
06:43:01	5NFLY	LAGOS 5NFLY OUT OF FL 60 18MILES LAG
06:43:03	APP	5NFLY RECLEARED 2200 FT QNH 1010 REACHING CLEARED ILS APPROACH RWY 18R REPORT ESTABLISHED LOCALIZER RWY 18R
06:43:10	5NFLY	5NFLY CLEARED TO DESEND TO 2200FT ON 1010 WE CLEARED FOR ILS TO INTERCEPT THE LOCALIZER FOR ILS APPROACH RWY 18R. NEXT CALL ON THE LOCALIZER
06:43:24	APP	CORRECT
06:43:27	TWD 8300	AH 8300 OUT OF 120 FOR 190
06:43:31	APP	TWD 8300 CONTACT CONTROL 127.3
06:43:39	TWD 8300	127.3 GOOD DAY TO YOU SIR

AREA CONTROL (127.3 MHZ) TAPE TRANSCRIPT ON TWD 8300
OF 15th MARCH 2008

TIME	STATION	TEXT
06:44:40	TWD 8300	AH LAGOS CONTROL FROM TWD 8300 GOOD MORNING TO YOU
06:44:49	ACC	TWD 8300 CLEARED TO OBUDU VIA A 609 FL 190 GO AHEAD
06:44:57	TWD 8300	OK SIR WE'RE CLEARED TO OBUDU REQUESTING FL 250 SIR, AND WE ESTIMATE MOPAD AT 0655 BEN 0714 AH POTGO 0737 LIPAR 0744 LUNDO 0802 AND OBUDU DESTINATION AT 0817
06:45:30	ACC	TWD 8300 CLEARED TO OBUDU VIA UA 609 FL 250 REPORT MILBO
06:45:45	TWD 8300	AH OKOK WE CLEARED TO OBUDU A 609 FL 250 CONFIRM TO CALL POTGO?
06:45:58	ACC	CORRECTION REPORT MOPAD, MOPAD
06:45:59	TWD 8300	OK NEXT WILL BE MOPAD 8300
06:48:17	NIG 299	LAGOS NIG 299
06:48:22	ACC	299 GO AHEAD
06:48:25	NIG 299	APPROACHING TYE LEVEL 180 TWO-WAY WITH ACCRA
06:48:28	ACC	CONTINUE WITH ACCRA
06:48:31	NIG 299	THANK YOU TO CONTINUE
06:48:33	VGN 041	LAGOS VGN 041 118 MILES TWO-WAY CONTACT WITH KANO LEVEL 330
06:48:45	ACC	VGN 041 CONTINUE WITH KANO 124.1
06:48:51	VGN 041	124.1 GOOD DAY
06:49:33	VGN 040	LAGOS 040 REQUEST DESCEND THIS TIME LAG 118
06:49:05	ACC	VGN 040 DESCEND FL 160 REPORT LEAVING 310
06:49:11	VGN 040	ROGER CLEARED LEVEL 160, CALL YOU LEAVING 310 VGN 040
06:49:20	VGN 040	VGN 040 LEAVING FL 310
06:49:26	ACC	NEXT CALL ERAMI
06:49:29	VGN 040	WILCO VGN 040
06:51:40	BLV 200	CONTROL GOOD MORNING BLV 200
06:51:47	ACC	200 CLEARED TO ABUJA UR 778 FL 250

		REPORT PASSING LEVEL AND ESTIMATES
06:51:59	BLV 200	AH CLEARED TO ABUJA UR 778 LEVEL 250 ESTIMATING IBA 0659 BDA 0719 ABUJA 0732
06:52:19	ACC	WHATS YOUR PASSING LEVEL?
06:52:22	BLV 200	OUT OF 130
06:52:26	ACC	CALL IBA
06:52:29	BLV 200	ROGER CALL YOU IBA BLV 200
06:55:02	VGN 040	LAGOS VGN 040 POSITION ERAMI COMING OUT FL 227 DISTANCE 67 RADIAL 065
06:55:15	ACC	VGN 040 CONTACT LAGOS APPROACH 124.7
06:55:21	VGN 040	124.7 GOOD DAY
06:55:46	ACC	NIG 523 CLEARED TO MALABO UR 984 FL 290 GO AHEAD ESTIMATES
06:55:53	NIG 5228	ROGER UR 984 FL 290 MILBO AT TIME 0659 POSAD 0717 POT 24 LT 0735 MBO 0747 REQUESTING FL 330 SIR
06:56:14	ACC	SAY AGAIN ESTIMATES BIMOT AND DESTINATION
06:56:18	NIG 5228	BIMOT AT 0735 AND DESTINATION 0747
06:56:26	ACC	ROGER CLEARED FL 330
06:56:29	NIG 5228	RECLEARED 330 5228 THANKS SIR.
06:57:35	NIG 5200	LAGOS GOOD MORNING NIG 5200
06:57:50	NIG 5200	LAGOS NIG 5200
06:57:56	ACC	NIG 5200 LAGOS GOOD MORNING GO AHEAD
06:58:00	NIG 5200	OK AIRBORNE ABUJA AT 45 CLIMBING TO MAINTAIN 310 WE ARE ESTIMATING POSITION ERAMI AT TIME 0716 LAG AT 27 144-8 SOB ENDURANCE AT DEPARTURE 3 HOURS. 734 BJA
06:58:25	ACC	NIG 5200 CLEARED LAG UH 340 FL 310 NO DELAY EXPECTED ILS APPROACH RUNWAY 18R QNH 1010 TEMPERATURE 25 TIME 0658 GO AHEAD
06:58:44	NIG 5200	1010 25 TIME SYNCHRONIZED 58 LAG UH 340 LEVEL 310 NO DELAY ILS 18R 5200
07:00:18	BLV 200	AH LAGOS BLV 200 IBA OUT OF 200
07:00:24	ACC	REPORT MAINTAINING 250
07:00:29	BLV 200	CALL MAINTAINING 250 BLV 200

07:00:56	TWD 8300	LAGOS CONTROL TWD 8300 POSITION MOPAD MAINTAINING 250
07:01:02	ACC	MOPAD 250 REPORT OK
07:01:08	TWD 8300	I HEAD FOR THE OK 8300
07:02:10	NIG 5228	LAGOS NIG 5228 POSITION
07:02:14	ACC	GO AHEAD
07:02:15	NIG 5228	MILBO FL 250 FOR 330
07:02:21	ACC	REPORT 330 POSAD
07:02:25	NIG 5228	WILCO
07:02:30	VGN 091	LAGOS CONTROL VGN 091 GOOD MORNING
07:02:41	VGN 091	LAGOS CONTROL VGN 091 GOOD MORNING
07:02:45	ACC	VGN 091 MORNING GO AHEAD
07:02:48	VGN 091	OK AIRBORNE OUT OF LAGOS 56 ESTIMATING MILBO 0709 POSAD 26 POT 36 AND DESTINATION DNPO AT 44
07:03:05	ACC	SAY AGAIN ESTIMATE POT
07:03:09	VGN 091	ESTIMATE POT AT 36
07:03:13	ACC	36 REPORT PASSING LEVEL
07:03:15	VGN 091	WE'RE OUT OF FL 135 CLIMBING TO 270 REQUEST FL 330
07:03:39	ACC	VGN 091 RECLEARED FL 290 330 NOT AVAILABLE DUE TRAFFIC IN FRONT
07:03:45	VGN 091	ROGER RECLEARED FL 290 VGN091
07:03:52	BLV 200	BLV 200.....
07:03:56	ACC	REPORT 120 NAUTICAL MILES AND IN CONTACT WITH KANO ON 124.1
07:04:05	BLV 200	ROGER BLV 200
07:04:08	DAL 50	LAGOS CONTROL DAL 50 DESCENDING LEVEL 210
07:04:50	ACC	DELTA 50 LAGOS
07:04:53	DAL 50	DAL 50 GOOD MORNING DESCENDING LEVEL 210
07:04:58	ACC	ESTIMATE TYE AND LAG
07:05:08	DAL 50	DAL 50 COPIED DIRECT TYE LAG
07:05:13	ACC	REQUEST ESTIMATES TYE, LAG ESTIMATES
07:05:22	DAL 50	DAL 50 ESTIMATES TYE 0707 ESTIMATES LAG 0719
07:05:35	ACC	DAL 50 CLEARED TO LAG LEVEL 210 AND NO DELAY EXPECTED FOR ILS APPROACH ON 18R QNH 1010 TEMP. 26

		TIME 0705 GO AHEAD
07:05:55	DAL 50	DAL 50 ROGER CLEARED LAG WE'LL EXPECT ILS APPROACH RUNWAY 18R
07:06:01	ACC	REPORT TYE
07:06:04	DAL 50	COPIED REPORT TYE DAL 50
07:06:10	BLV 201	LAGOS BLV 201 GOOD MORNING
07:06:14	ACC	201 STANDBY
07:06:26	ACC	BLV 210 LAGOS GO AHEAD
07:06:28	BLV 201	AH B732 ABUJA LAGOS LEVEL 230 FOR 280 CHECKED BISAP 0704 NEXT ERAMI 24 AND LAG 35. WE HAVE A TOTAL OF 93 .06 CREW INCLUSIVE ENDURANCE REMAINING 2 HOURS 40 MINUTES.
07:06:57	ACC	SAY AGAIN LEVEL CLIMBING TO
07:07:00	BLV 201	AH CLIMBING 280 WE'RE OUT OF 240
07:07:07	ACC	ROGER BLV 201 CLEARED TO LAG UH 340 FL 280 NO DELAY EXPECTED ILS APPROACH RWY 18R QNH 1010 TEMP 26 TIME 0706
07:07:20	BLV 201	AH CLEARED LAG VIA HU 340 LEVEL 280 NO DELAY ILS 18R BLV 201 NEXT CALL FOR DESCENT
07:07:42	MKA 275	LAGOS MKA 275 POSITION NASTO 0705 MAINTAINING LEVEL 350
07:07:59	TWD 8300	LAGOS CONTROL THE TWD 8300 POSITION OK FL 250
07:08:06	ACC	REPORT BENIN TWD 8300
07:08:10	DAL 50	LAGOS DAL 50 OVER TYE07 OUT OF 210
07:08:40	ACC	DAL 50 CONTACT LAGOS APPROACH 124.7
07:08:42	DAL 50	ROGER BYE-BYE
07:08:48	ARA 1007	LAGOS ARA 1007 GOOD MORNING
07:08:51	ACC	ARA 1007 GOOD MORNING CLEARED TO DNPO R984 FL 170 GO AHEAD
07:09:00	ARA 1007	CLEARED TO PORT HARCOURT 170 ARA 1007 IS A DHC 8 PHIZ 31-3 CREW 3HRS READY FOR ESTIMATES
07:09:13	ACC	GO AHEAD
07:09:15	ARA 1007	ESTIMATING MILBO 0715 POSAD 45 POT 0757 AND PORT HARCOURT (UNCLEARE)
07:09:30	ACC	REPORT MILBO LEVEL 170
07:09:35	ARA 1007	REPORT MILBO 170 ARA 1007

07:09:40	VGN 091	LAGOS VGN 091 CHECKING MILBO FL 270CLIMBING 290
07:09:49	ACC	VGN 071 CORRECTION 091 REPORT 120 NM IN CONTACT WITH PORT HARCOURT
07:10:00	VGN 091	OK 120 MILES CALL YOU IN CONTACT WITH PORT HARCOURT VGN 091
07:10:03	MKA 275	LAGOS MKA 275 POSITION GW FL 350
07:10:10	BLV 200	LAGOS BLV 200
07:10:15	ACC	200 STANDBY BREAK MKA 275 LAGOS GO AHEAD
07:10:20	NIG 5200	NIG 5200 REQUESTING DESCENT
07:10:24	ACC	5200 DESCEND FL160
07:10:30	NIG 5200	NIG 5200 OUT OF 310 FOR 160
07:10:35	BLV 200	LAGOS BLV 200 125 MILES TWO-WAY WITH KANO
07:10:41	ACC	CONTINUE WITH KANO BLV 200
07:10:45	ARA 151	AND LAGOS ARA 151
07:10:48	ACC	151 LAGOS STANDBY BREAK MKA 275 LAGOS
07:10:56	MKA 275	275 GO AHEAD
07:11:01	ACC	GO AHEAD WITH YOUR FLIGHT DETAILS
07:11:03	MKA 275	ROGER WE PASSED OVER POSITION GW AT TIME 0709 ESTIMATING LAGOS DESTINATION 0729 WE ARE NOW 16.....160 MILES NORTH OF YOUR AIRPORT FL 350
07:11:24	ACC	REPORT POINT OF DEPARTURE AND ESTIMATE FOR NUPAM
07:11:35	ACC	MKA 275 REPORT POINT OF DEPARTURE AND ESTIMATE FOR NUPAM
07:12:03	ACC	MKA 275 LAGOS
07:12:05	MKA 275	ROGER WERE ESTIMATING POSITION NUPAM 0721 MKA 275
07:12:13	ACC	0721 POINT OF DEPARTURE?
07:12:18	MKA 275	POINT OF DEPARTURE SHAKURU LFLX
07:12:30	ACC	SAY AGAIN POINT OF DEPARTURE?
07:12:35	MKA 275	POINT OF DEPARTURE LFLX SHAKURU
07:12:40	ACC	ROGER MKA 275 CLEARED TO LAG UB 731 FL350 AND STANDBY EAT ILS APPROACH RUNWAY 18R QNH 1010 TEMP. 26 TIME 0742 GO AHEAD
07:13:03	MKA 275	ROGER COPIED ILS APPROACH RUNWAY 18R MKA 275

07:13:15	ARA 151	ARA 151 WE GO AHEAD?
07:13:22	ARA 151	CONTROL 151
07:13:23	ACC	ARA 151 LAGOS GO AHEAD
07:13:28	ARA 151	OK OUT OF LEVEL 270 FOR 330 REQUESTING FL 370 WE'RE ESTIMATING IBA 18 BDA 39 ABC 55
07:13:44	ACC	ROGER ARA 151 CLEARED TO ABUJA UR 778 CLIMB FL 370 REPORT IBA
07:13:51	ARA 151	ROGER CLEARED ABC VIA 778 LEVEL 370 CALL YOU NEXT IBA AT 18
07:14:30	BHN 422	LAGOS BHN 422 WITH YOU WE'RE 8 MILES OUT OF LAG WE'RE CLIMBING OUT OF 225 REQUESTING 330
07:14:44	ACC	BLV 422... CORRECTION BHN 422 CLEARED TO ABUJA UR 778 FL 330 GO AHEAD
07:14:55	BHN 422	OK RECLEARED 330 IBA 0720 BDA 45 AND ABC 0759
07:15:11	ACC	ROGER REPORT IBA
07:15:14	BHN 422	WE CALL IBA 330
07:15:18	MKA 275	LAGOS MKA 275 REQUEST DESCENT
07:15:26	ACC	MKA 275 DESCEND FL 180
07:15:31	MKA 275	DESCEND LEVEL 180 MKA 275
07:15:38	ARA 1007	LAGOS ARA 1007 OVER MILBO FL 170
07:15:45	ACC	1007 CONFIRM?
07:15:49	ARA 1007	AFFIRM
07:15:52	ACC	ROGER REPORT 120 NM IN CONTACT WITH PORT HARCOURT 124.9
07:15:58	ARA 1007	WE REPORT 120 MILES AH.....IN CONTACT WITH PORT HARCOURT ARA 1007
07:16:08	NIG 5200	LAGOS NIG 5200 70 DME OUT OF 220
07:16:14	ACC	CONFIRM ARA 5200?
07:16:17	NIG 5200	NIG 5200
07:16:19	ACC	5200 CONTACT APPROACH 124.7
07:16:23	NIG 5200	124.7 GOOD MORNING
07:16:28	VGN 091	LAGOS VGN 091 115 MILES TWO-WAY
07:16:36	ACC	115 MILES ROGER CONTINUE WITH PORT HARCOURT 124.9
07:16:41	VGN 091	124.9 ROGER VGN 091
07:18:02	TWD 8300	LAGOS CONTROL THE TWD 8300.....MAINTAINING FL 250
07:18:14	ACC	ROGER TWD 8300 REPORT IN CONTACT

		WITH PORT HARCOURT 124.9
07:18:22	TWD 8300	8300
07:18:38	ARA 151	ARA 151 IBA FL 270
07:18:44	ACC	270 IBA ARA 151 ROGER REPORT 120NMS
07:18:52	ARA 151	ROGER 120NMS
07:19:30	NIG 5218	LAGOS CONTROL NIG 5218 WITH YOU OUT OF 185 FOR 210
07:19:41	ACC	NIG 5218 CLEARED TO PORT HARCOURT R984 GO AHEAD WITH ESTIMATES
07:19:51	NIG 5218	WE'RE ESTIMATING MILBO 0725 POSAD 0803 POT 19 PORT HARCOURT MILITARY AT 0822
07:20:09	ACC	CALL MILBO 210
07:20:14	NIG 5218	SAY AGAIN SIR
07:20:18	ACC	REPORT MILBO LEVEL 210 MAINTAINING
07:20:24	NIG 5218	WILCO NIG 5218
07:20:28	NIG 5228	LAGOS NIG 5228 POSITION
07:20:31	ACC	5228 GO AHEAD
07:20:35	NIG 5228	FL 330 MOPAD
07:20:38	ACC	CONTINUE WITH PORT HARCOURT ON 124.9
07:20:41	NIG 5228	124.9 THANKS SIR
07:20:43	BLV 201	CONTROL BLV 201 REQUEST DESCENT
07:20:53	ACC	BLV 201 DESCEND FL 180
07:20:59	BLV 201	RECLEARED LEVEL 180 BLV 201
07:21:05	ACC	MKA 275 REQUEST PASSING LEVEL AND DISTANCE TO LAG
07:21:12	MKA 275	RIGHT NOW WE'RE PASSING LEVEL 20.5 DESCENDING LEVEL 180 AND DISTANCE FROM LAG IS 80 MILES 275
07:21:27	ACC	DESCEND FL 160
07:21:30	MKA 275	DESCEND LEVEL 160 MKA 275
07:21:36	ACC	AND REPORT NUPAM
07:21:38	MKA 275	ROGER WE CALL YOU AT NUPAM MKA 275
07:21:59	ZSPKY	LAGOS CONTROL ZSPKY
07:22:13	ZSPKY	LAGOS CONTROL ZSPKY
07:22:16	ACC	ZSPKY REPORT PASSING LEVEL
07:22:22	ZSPKY	WE'RE PASSING 185 FOR 270 REQUESTING LEVEL 370 WE ESTIMATING IBA 0729 35 BDA 0753 AND ABC 0811
07:22:41	ACC	REQUEST DISTANCE FROM LAG VOR?

07:22:46	ZSPKY	WE'RE 08 MILES WOW INCREASING OUT OF 190
07:22:52	ACC	ROGER ZSPKY RECLEARED FL 370 REPORT IBA CLEARED TO UR CORRECTION TO ABUJA UR 778
07:23:09	ZSPKY	ROGER WE'RE RECLEARED FL 370 UR 778 PKY WE CALL AGAIN IBA
07:23:18	MKA 275	MKA 275 AT POSITION NUPAM AND 600 MILES FROM LAG
07:23:30	ACC	ROGER CONTACT APPROACH 124.7
07:23:34	MKA 275	GOOD DAY MKA 275
07:23:42	TWD 8300	AH LAGOS CONTROL TWD 8300 TWO- WAY CONTACT WITH PORT HARCOURT MAINTAINING 250
07:23:50	ACC	TWD 8300 CONTINUE WITH PORT HARCOURT 124.9
07:23:55	TWD 8300	124.9 GOOD EVENING SIR