

NIGERIAN SAFETY INVESTIGATION BUREAU



INVESTIGATION POLICY AND PROCEDURES MANUAL (iPPM)

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INVESTIGATION POLICY AND PROCEDURES MANUAL

NIGERIAN SAFETY INVESTIGATION BUREAU, SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT ABUJA



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PREAMBLE

The Nigerian Safety Investigation Bureau (Establishment) Act Part II paragraph 5(b) empowers the Director-General of the Bureau to establish or issue policies and procedures manual for carrying out the functions of the Bureau under the Act.

This Investigation Policy and Procedures Manual (IPPM) is an internal document of Nigerian Safety Investigation Bureau (NSIB) of Nigeria (herein referred to as the Bureau). It contains information, policy, procedures and guidance needed to perform the statutory functions of the Bureau in the investigation of Air Accidents and Incidents as required by the Nigerian safety investigation (Establishment) Act and the current Civil Aviation (Investigation of Air Accidents and Incidents) Regulations. It has been prepared for the use and guidance of all personnel, principally Air Safety Investigators (ASIs) and Investigation Managers who would require it in the performance of their assigned duties.

The policies and procedures contained herein are in conformity with international Standards and best practices. It was developed using the SARPs and guidance material promulgated by ICAO, as well as materials and best practices of some States. The content of this IPPM is consistent with and is organized in accordance with guidance materials contained in the ICAO *Manual on Accident and Incident Investigation Policies and Procedures* (Doc 9962) and *Manual of Aircraft Accident and Incident Investigation* (Doc 9756) Parts I, II, III and IV.

The provisions of this manual are binding on the actions of the Bureau, all its personnel, any other Nigerian government agency, aviation industry organizations, their personnel and other entities, organizations and personnel from outside of the country that participate in the Bureau-led investigations.

This manual is not a substitute for investigation training and experience, as well as common sense. Safety Investigators and other personnel are expected to use good judgment in matters where specific guidance has not been given.

Suggestions to improve format, presentation and contents of this manual are welcomed. All suggestions should be submitted to the Director-General/CEO through email: rc@aib.gov.ng Cc: info@aib.gov.ng.

I require all staff of the Bureau to use the relevant portions of this manual in the performance of their duties.

I hereby approve this manual.

Engr. Akin Olatere M.Sc., CMILT, FRAeS
Director-General/CEO

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184	03	0	20-06-2023	224	03	01	20-09-2023
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186	03	0	20-06-2023	226	03	01	20-09-2023
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196	03	0	20-06-2023	236	03	01	20-09-2023
197	03	0	20-06-2023	237	03	0	20-06-2023
198	03	0	20-06-2023	238	03	0	20-06-2023
199	03	0	20-06-2023	239	03	0	20-06-2023
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RECORD OF AMENDMENTS

Issue No.	Revision No.	Effective Date	Affected Pages	Entered By
02	0	18-12-2018	All	A. B Babanya
02	01	10-01-2022	All	A. B Babanya
03	0	20-06-2023	All	A.B. Babanya
03	01	02-09-2023	Cover page,3-4,11 to 16,18,19, 66, 86,113,137, 170,213 to 236, 257,264, 276 to 358	A.B. Babanya



REASON(S) FOR THE CHANGE(S)

- 1) Cover Page: inserted new revision number and date.
- 2) Page 3: added regulations committee & info e-mail addresses and deleted commissioner e-mail.
- 3) Pages 5 to 10 Pages 11 & 14- List of Effective Pages: inserted new revision number and date.
- 4) Page 16- Records of Revision: inserted new revision number and date.
- 5) Page 17 - Reason(s) for the Change(s): New title inserted.
- 6) Page 18 to19: adjusted texts and context of amendment procedures.
- 7) Page 66: added “safety recommendation follow-up task into the calculation of staffing needs.
- 8) Page 86: deleted text “ and service providers within the country”.
- 9) Page 113: corrected paragraph numbering.
- 10) Page 137: corrected spelling of “Extent”.
- 11) Page 170: added text “appropriate boxes/containers”.
- 12) Page 213: added texts to paragraph 8.2.5.3.1.1 “Investigation of Human Factors”.
- 13) Pages 214 to 236: page shift.
- 14) Page 257: added paragraphs 8.7.2 to 8.7.5.
- 15) Page 264: corrected paragraph numbering.
- 16) Page 276: deleted texts “safety actions taken...”.
- 17) Page 288: corrected paragraph numbering.
- 18) Pages 276 to 308: Page shift.
- 19) Pages 309 to 358 - Reviewed contents of the whole of the Appendix.

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MANUAL AMENDMENT PROCEDURES

This Investigation Policy and Procedures Manual (iPPM) is developed in fulfillment of the requirements of Nigerian Safety Investigation Bureau (Establishment) Act, Civil Aviation (Investigation of Air Accidents and Incidents) Regulations and the relevant ICAO Standards and Recommended Practices (SARPs).

Therefore amendment to the above legislation and the SARPs may affect a portion or the whole of this manual. As such, they shall be monitored by the Bureau's Regulations Committee to capture any amendment to them that may affect this manual. Consequently, the Chairman of the Regulations Committee will forward the the notice of amendment mentioned above to the General Manager, Engineering for incorporation of the appropriate texts into the affected portion of the manual so that its contents remain up-to-date, pertinent and accurate.

The General Manager Engineering in coordination with General Manager Operations will analyse the proposal for change and agree on the right wording of the texts of the recommended change. The General Manager Engineering will incorporate the agreed change into the appropriate portions of the manual and forward to the Director of Engineering and Director of Operations for review and concurrence. The General Manager Engineering will forward final version of the amendment to the Director-General/CEO for approval.

Aside from amending the manual to incorporate change in the Act, the regulations and the SARPs, the dynamic nature of the aviation industry and the speedy evolution of new technologies necessitate the need for periodic review of the contents of the iPPM to capture new developments in the industry and international best practices. The General Manager Engineering in coordination with the General Manager Operations is responsible for the periodic review of the manual to track new changes in the industry to incorporate in the manual. This should be done once every two (2) years and whenever need arises as a result of introduction of a sudden change that affects the contents of the manual. Users of the manual are encouraged to submit proposal for change to the manual to improve its contents to the Regulations Committee through this email: rc@aib.gov.ng and Cc: info@aib.gov.ng. The proposal can also be delivered through postal mail to: The Director-General/CEO Nigerian Safety Investigation Bureau, P.M.B. 16, Garki- Abuja, Nigeria. By courier to: The Director-General/CEO Nigerian Safety Investigation Bureau, Bill Clinton Drive, Opposite Cargo Terminal, Nnamdi Azikiwe International Airport, Abuja, Nigeria.

The initial issue of this manual shall have issue number 01, the revision number 0 and the corresponding date are annotated on the footer of each page. Any subsequent amendment to the manual or portion of it shall be accompanied with new List of Effective Pages (LEP) showing the new revision number and date of the revision against the affected pages, the Record of Revision page is also amended to indicate the new revision number and date inserted. All the affected pages of the manual shall have the new revision number and date annotated on the footer. If there is significant change that affects more than 45% of the contents of the manual, the amendment shall be given the next consecutive ISSUE number while the revision number shall restart afresh from revision number 0.

This iPPM is a controlled document of the Bureau to be used by ASIs and other relevant personnel as a guidance material. The Director-General/CEO has the Master Copy of this iPPM. A digital copy of the manual is uploaded onto the Bureau's website for access by all staff and the general public. Any copy

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printed or downloaded from the website shall be deemed to be valid only for that period and shall not be used to perform tasks except for training purposes. Inquiries about the most up-to-date version of the iPPM shall be forwarded to the Director-General. All Air Safety Investigators (ASIs) and others who need to use this manual during performance of their assigned duties shall ensure that they obtain and use the most up-to-date version.

The Director-General/CEO of the Bureau is accountable for approving the contents and amendments to this manual.

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DEFINITION OF TERMS

When the following terms are used in this manual, they have the following meanings:

Accident: An occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:

a) a person is fatally or seriously injured as a result of:

- being in the aircraft, or
- direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
- direct exposure to jet blast,

except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

b) the aircraft sustains damage or structural failure which:

- adversely affects the structural strength, performance or flight characteristics of the aircraft, and
- would normally require major repair or replacement of the affected component,

except for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

c) the aircraft is missing or is completely inaccessible.

Note 1.— For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified, by ICAO, as a fatal injury.

Note 2.— An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.

Note 3.— The type of unmanned aircraft system to be investigated is addressed in Annex 13, paragraph 5.1.

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Note 4.— *Guidance for the determination of aircraft damage can be found in Annex 13, Attachment E.*

Accident Investigation Authority: The State organization responsible for conducting aircraft accident investigations.

Accident Safety Investigator: A person engaged in the investigation of aircraft accidents, incidents and other aviation safety hazards.

Accredited Representative: A person designated by a State, on the basis of his or her qualifications, for the purpose of participating in an investigation conducted by another State. The Accredited Representative would normally be from the State’s accident investigation authority.

Adviser: A person appointed by a State, on the basis of his or her qualifications, for the purpose of assisting its Accredited Representative in an investigation.

Aircraft: Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth’s surface.

Audit: A USOAP CMA on-site activity during which ICAO assesses the effective implementation of the critical elements (CEs) of a safety oversight system and conducts a systematic and objective review of a State’s safety oversight system to verify the status of a State’s compliance with the provisions of the Convention or national regulations and its implementation of ICAO Standards and Recommended Practices (SARPs), procedures and aviation safety best practices.

Authority: Nigerian Civil Aviation Authority.

Balancing test: The determination whereby the competent authority(ies) assesses competing public interests and decides which interest should prevail leading to the determination referred to in Standard 5.12 of Annex 13.

Bureau: Nigerian Safety Investigation Bureau of Nigeria.

Causes: Actions, omissions, events, conditions, or a combination thereof, which led to the accident or incident. The identification of causes does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Civil aviation authority: The governmental entity or entities however titled, that are directly responsible for the regulation of all aspects of civil air transport, technical (i.e. air navigation and aviation safety) and economic (i.e. the commercial aspects of air transport).

Competent authority: The governmental entity(ies) that has the power and authority to administer the balancing test.

Contracting State: Any state (including Nigeria), which is a party to the Convention on International Civil Aviation.

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Contributory Factors: Actions, omissions, events, conditions, or a combination thereof, which if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident. The identification of contributory factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

Crew: Every person employed or engaged in an aircraft in flight on the business of the aircraft.

Director-General: The Chief Executive Officer of Nigerian Safety Investigation Bureau appointed under the Nigerian safety Investigation (Establishment) Act, 2022.

Dangerous Goods: Articles or substances which are capable of posing a risk to health, safety, property or the environment.

Draft Final Report: A report sent to the relevant State, Authority and other interested parties in the investigation, inviting their significant and substantiated comments on the report.

Fatal Injury: An injury resulting in death within thirty (30) days of the date of the accident.

Final Report: The Bureau's conclusive report on the investigation into an aircraft accident or incident which includes the pertinent factual information, analysis, conclusions and when appropriate, associated safety recommendations issued by the Bureau.

Flight recorder: Any type of recorder installed in the aircraft for the purpose of complementing accident/incident investigation.

Note.— See Annex 6, Parts I, II and III, for specifications relating to flight recorders.

General aviation operation: An aircraft operation other than a commercial air transport operation or an aerial work operation.

Incident: An occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

Note.— The types of incidents which are of main interest to the International Civil Aviation Organization for accident prevention studies are listed in Annex 13, Attachment C.

Investigation: A process conducted for the purpose of accident prevention which includes the gathering and analysis of information, the drawing of conclusions, including the determination of causes and/or contributing factors and, when appropriate, the making of safety recommendations.

Note.— Nothing in the above definition is intended to preclude the functions of an investigator-in-charge being assigned to a commission or other body.

Investigator: The Air Safety Investigator.

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Investigator-in-charge: A person charged, on the basis of his or her qualifications, with the responsibility for the organization, conduct and control of an investigation.

Interim Statement: The communication issued by the Bureau to the public on each anniversary of the accident or incident for informing those having a direct interest in the investigation regarding the progress of an ongoing investigation and any safety issues raised during the investigation.

Maximum Mass: Maximum certificated take-off mass.

Minister: The minister responsible for Nigerian Civil Aviation.

Next-of-kin: The immediate family or other persons closely connected with the victim of an accident.

Observer: A representative of a concerned department who is authorized by the Bureau to attend an investigation as an observer, or the Bureau's investigator authorized to attend an investigation being conducted by the concerned department.

Occurrence: Accident, serious incident, incident or other safety related events.

Operator: The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Pilot-in-Command: A pilot designated by the operator, or in the case of general aviation, the owner as being in command and charged with the safe conduct of a flight.

Police Officer: Any person who is a member of the Nigeria Police Force.

Preliminary Report: The communication used for the prompt dissemination of data obtained during the early stages of the investigation.

Regulations: Civil Aviation (Investigation of Air Accidents and Incidents) Regulations of Nigeria, made pursuant to the Nigerian safety Investigation (Establishment) Act, 2022.

Relevant record: Any item in the possession, custody or power of the Director-General which is of a kind referred to above.

Safety Investigator-in-charge: A person charged, on the basis of his or her qualifications, with the responsibility for the organization, conduct and control of an investigation. See also Investigator-in-charge

Note.— Nothing in the above definition is intended to preclude the functions of an Safety Investigator-in-charge being assigned to a commission or other body.

Safety recommendation: A proposal of an accident investigation authority based on information derived from an investigation, made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or

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incident. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies.

Safety recommendation of global concern: A safety recommendation regarding a systemic deficiency having a probability of recurrence, with significant consequences at a global level, and requiring timely action to improve safety.

Note.— *The Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part IV – Reporting contains the criteria for a recommendation to be classified as an SRGC.*

Serious incident: An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.

Note 1.— *The difference between an accident and a serious incident lies only in the result.*

Note 2.— *Examples of serious incidents can be found in appendix D to this iPPM.*

State: A Contracting State of the International Civil Aviation Organization.

State of Design: The State having jurisdiction over the organization responsible for the type design.

State of Manufacture: The State having jurisdiction over the organization responsible for the final assembly of the aircraft, engine or propeller.

State of Occurrence: The State in the territory of which an accident or incident occurs.

State of the Operator: The State in which the operator’s principal place of business is located or, if there is no such place of business, the operator’s permanent residence.

State of Registry: The State on whose register the aircraft is entered.

Note.— *In the case of the registration of aircraft of an international operating agency on other than a national basis, the States constituting the agency are jointly and severally bound to assume the obligations which, under the Chicago Convention, attach to a State of Registry. See, in this regard, the Council Resolution of 14 December 1967 on Nationality and Registration of Aircraft Operated by International Operating Agencies which can be found in Policy and Guidance Material on the Economic Regulation of International Air Transport (Doc 9587).*

State safety programme: An integrated set of regulations and activities aimed at improving safety.

Statement: The whole or any part of an oral, written or recorded statement relating to an aircraft accident given by the author of the statement to the Bureau.

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The Annex: Annex 13 to the Convention on International Civil Aviation, Chicago 1944;

Witness: A person required to attest to matters of facts, for this purpose, all statements taken from persons in the cause of accident investigation processes before the Director-General or any of his designated officer thereof which an affirmation may be required.



LIST OF ACRONYMS

ADREP	Accident/Incident Data Reporting System
AIA	Accident Investigation Authority
NSIB	Nigerian Safety Investigation Bureau (Nigeria)
AIPB	Accident Investigation and Prevention Bureau
AIG/08	Accident Investigation Group (AIG) Divisional Meeting (2008)
ATC	Air Traffic Control
ATS	Air Traffic Services
BAGAIA	Banjul Accord Group Accident Investigation Agency
CAA	Civil Aviation Authority
CAD	Civil Aviation Department
CEO	Chief Executive Officer
CVR	Cockpit Voice Recorder
ECCAIRS	European Co-Ordination Centre for Accident and Incident Reporting Systems
FAAN	Federal Airports Authority of Nigeria
FDR	Flight Data Recorder
ICAO	International Civil Aviation Organization
IDP	Individual Development Plan
IIC	Safety Investigator-In-Charge
ISASI	International Society of Air Safety Investigators
MoU	Memorandum of Understanding
NAMA	Nigerian Airspace Management Agency
NCAA	Nigerian Civil Aviation Authority
NEMA	National Emergency Management Agency
NPF	Nigeria Police Force
OJT	On-The-Job Training
iPPM	Investigation Policy and Procedures Manual
RAIO	Regional Accident and Incident Investigation Organization
SARPs	Standards and Recommended Practices
SDCPS	Safety Data Collection and Processing Systems
SRGC	Safety Recommendation of Global Concern
SSP	State Safety Programme
TCB	Technical Co-operation Bureau
USOAP	Universal Safety Oversight Audit Programme



ORGANIZATION

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CHAPTER 1

1.0 INTRODUCTION

1.1 GENERAL

1.1.1 This manual contains the Nigerian Safety Investigation Bureau’s policies and procedures for the investigation of civil aircraft accidents and incidents that occur in the Nigerian territory. This manual also contains investigation policies and procedures for the Bureau and other Nigerian organizations’ participation in investigations of accidents and incidents that occur outside of Nigerian territory, but involving Nigerian interests, including Nigerian operated, registered, designed and manufactured aircraft. An organizational chart of the Bureau is contained in Chapter 3 of this manual.

1.1.2 The policies and procedures contained herein are in conformity with international Standards and best practices.

1.1.3 This manual was developed using the SARPs and guidance material promulgated by ICAO, as well as materials and best practices of some States.

1.1.4 The provisions of this manual are binding on the actions of the Bureau including its Safety Investigators and management personnel. The provisions of this manual are also binding on any other Nigerian government and aviation industry organizations and personnel, and other personnel and organizations from outside of Nigerian that participate in the Bureau-led investigations.

Note 1.— Since investigations vary in complexity, a document of this kind cannot cover all eventualities. The more common techniques and processes, however, have been included. Although this manual may be of use for experienced and inexperienced Safety Investigators alike, it is not a substitute for investigation training and experience, as well as common sense.

Note 2.— Because this manual deals with investigations of accidents, serious incidents and incidents, for reasons of brevity, the terms “accidents,” “investigations” and “accident investigations”, as used herein, should apply equally to the investigation of accidents, serious incidents, and incidents.

1.2 STATE SAFETY PROGRAMME

1.2.1 In compliance with provisions of Annex 19 - *Safety Management*, Nigeria, being an ICAO Member State is required to implement and maintain a State Safety Programme (SSP) that is commensurate with the size and complexity of the country’s aviation system. The implementation of an SSP requires coordination among multiple authorities responsible for individual element functions in the State.

1.2.2 The SSP framework contemplates four components. The first component is “State safety policy and objectives”, second component is “State safety risk management” and its third element is “accident and incident investigation”. The investigation process has a pivotal role in the SSP, enabling

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the State to identify causes and/or contributing factors and to generate the necessary countermeasures to prevent recurrence.

1.2.3 A State, or a regional grouping of States, must establish an independent accident and incident investigation process, the sole objective of which is the prevention of accidents and incidents, and not the apportioning of blame or liability. Such investigations are in support of the management of safety in the State. In the operation of the SSP, the State maintains the independence of the accident and incident investigation authority from other State aviation authorities.

1.2.4 The Bureau has developed this manual as part of its efforts in support of Nigeria to implement and maintain its SSP.

1.2.5 Nigeria has established an SSP in order to manage aviation safety in Nigeria. As part of its implementation of the SSP requirements, Nigeria has established an Nigerian Safety Investigation Bureau (NSIB) independent and separate from the regulatory agency. The Nigerian Civil Aviation Authority (NCAA) is the Placeholder of the SSP, while the Director-General/CEO of NCAA is appointed Accountable Executive for the SSP. The Bureau is a member of the SSP Coordination Committee.

1.3 BACKGROUND DOCUMENTS

1.3.1 The following are the reference documents which can provide additional information and guidance on related subjects:

- a) Nigerian Safety Investigation (Establishment) Act
- b) Civil Aviation (Investigation of Air Accidents and Incidents) Regulations
- c) Convention on International Civil Aviation (Doc 7300)
- d) Annex 13 - Aircraft Accident and Incident investigation
- e) Annex 19 - Safety Management
- f) Manual on Accident and Incident Investigation Policies and Procedures (Doc. 9962)
- g) *Manual of Aircraft Accident and Incident Investigation* (Doc 9756):
 - Part I – *Organization and Planning*
 - Part II – *Procedures and Checklists* (in preparation)
 - Part III – *Investigation* (in preparation)
 - Part IV – *Reporting*
- h) *Manual on Aircraft Accident and Incident Investigation policies and Procedures* (Doc 9962)

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- i) *Manual on Regional Accident and Incident Investigation Organization (Doc 9946)*
- j) *Model Accident Investigation Authority Act*
- k) *Model Aircraft Accident and Incident Investigation (AIG) Regulations*
- l) *Investigation of Human Factors in Accidents and Incidents (Circular 240)*
- m) *Human Factors Training Manual (Doc 9683)*
- n) *Manual of Civil Aviation Medicine (Doc 8984)*
- o) *Safety Oversight Manual (Doc 9734)*
- p) *Safety Management Manual (SMM) (Doc 9859)*
- q) *Safety Information Protection Handbook Part I - Protection of Accident and Incident Investigation Material (Doc 10053)*
- r) *Airport Services Manual (Doc 9137), Part 5 – Removal of Disabled Aircraft*
- s) *ICAO Policy on Assistance to Aircraft Accident Victims and their Families (Doc 9998)*
- t) *Manual on Assistance to Aircraft Accident Victims and their Families (Doc 9973)*
- u) *Guidance on Assistance to Aircraft Accident Victims and their Families (Circular 285)*
- v) *Training Guidelines for Aircraft Accident Safety Investigators (Circular 298)*
- w) *Hazards at Aircraft Accident Sites (Circular 315)*
- x) Nigerian Safety Investigation Bureau’s Engineering Guidance Materials
- y) Nigerian Safety Investigation Bureau’s Operations Guidance Material
- z) Nigerian Safety Investigation Bureau’s Flight Data Recorder Policy
- aa) Nigerian Safety Investigation Bureau’s Cockpit Voice Recorder Policy

1.4 INVESTIGATION DOCUMENTATION

1.4.1 General

1.4.1.1 The Director-General/CEO shall ensure that all personnel assigned duties relating to the conduct of aircraft accident and incident investigation are provided with up-to-date documentation that they may require to effectively perform their assigned tasks. The documentation required are classified into the Bureau’s documentation, ICAO documentation and Aircraft manufacturers’ documentation.

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1.4.1.2 The Bureau's documentation relating to accident investigation includes the following:

- a) Aviation legislation (NSIB establishment Act, Civil Aviation (Investigation of Air Accidents and Incidents) regulations);
- b) Investigation Policy and Procedures Manual;
- c) Investigation Rulemaking Handbook;
- d) Investigation Training Manual;
- e) Guidance materials issued from time-to-time;
- f) Investigation Forms and Checklists;
- g) Transportation Safety Laboratory Standard Operating Procedures.

1.4.1.3 The minimum ICAO Documentation relevant to accident and incident investigation includes the following:

- a) Convention on International Civil Aviation (Doc 7300)
- b) Annex 13 Aircraft Accident and Incident Investigation
- c) Annex 19 Safety Management
- d) Manual on Accident and Incident Investigation Policies and Procedures (Doc 9962;
- e) Manual of aircraft accident and incident investigation (Doc 9756):
 - Part I - *Organization and Planning*
 - Part II - *Procedures and Checklists*
 - Part III - *Investigation*;
 - Part IV - *Reporting*
- f) *Manual on regional aircraft accident and incident investigation organization (Doc 9946)*
- g) *Investigation of Human factors in accidents and incidents (Cir 240)*;
- h) *Human Factors Training Manual (Doc 9683)*;

- i) *Safety Management Manual (SMM) (Doc 9859)*;
- j) *Safety Information Protection Handbook Part I - Protection of Accident and Incident Investigation Material (Doc 10053)*;
- k) *ICAO Policy on Assistance to aircraft victims and their families (Doc 9998)*;

- l) *Manual on Assistance to Aircraft Accident Victims and their Families (Doc 9973)*;

- m) *Manual on the investigation of Cabin Safety Aspects in Accidents and incidents (Doc 10062)*;
- n) *Hazards at Aircraft Accident Sites (Cir 315)*;

- O) *Training Guidelines for Aircraft Accident Investigators (Cir 298)*.

1.4.1.4 The following are aircraft manufacturers whose aircraft are prevalent in the Nigerian Aviation airspace:

- a) Boeing
- b) Airbus
- c) Bombardier
- d) Embraer
- e) Cessna
- f) Gulfstream
- g) Dassault Aviation
- h) Hawker
- i) Beechcraft
- j) Aerospacial
- k) Bell
- l) Eurocopter
- m) Agustawestland

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- n) Sikorsky
- o) Allison, and others

1.4.2 Accessing the Bureau’s Documentations

1.4.2.1 The Bureau’s documentation can be accessed through the following means:

- a) Bureau’s E-Document Platform on the Cloud: edoc.nsib.gov.ng
- b) Bureau’s website: www.nsib.gov.ng
- c) Bureau’s Library

A) Access through E-Document

1.4.2.2 The Bureau has established an E-Document platform hosted on the cloud where Bureau’s documentation, including documents that are not for public view from all departments and units are uploaded for access by authorized personnel, including those who are assigned duties relating to investigation of aircraft accidents and incidents. The platform can be accessed from any remote location when there is internet connection. Investigators in the office, at site or regional offices do have access using their assigned login credentials. To access the page: Click edoc.nsib.gov.ng Enter username and password then click the arrow beside *File Management* to gain access to the files.

1.4.2.3 The Head of ICT is responsible for creating accounts for access/login to the E-Doc platform for all personnel of the Bureau. The login details include Username (official email assigned to the individual personnel) together with a default password. Personnel can access only documents they are allowed by the Administrator of the platform. Privileges are awarded for upload and/or view/download. All personnel can have viewing/downloading/printing privilege while select few (decision by Director of Engineering, Director of Operations in coordination with the Head of ICT and Head of Library) are awarded UPLOAD privileges.

1.4.2.4 E-Doc is relatively new, therefore Users are advised to follow instructions given by the ICT unit on how to access and to practice frequently to gain proficiency on the use of the platform.

1.4.2.5 The authority holders of each of the documents uploaded unto the E-Doc platform are responsible for ensuring the SharePoint contains the latest up-to-date version of each of the the documents therein. Anytime a document is updated, the authority holder shall immediately forward the updated version to the Head of ICT for uploading to the E-Doc to replace the obsolete document.

1.4.2.6 Users are advised to login to the E-Doc whenever they need to make reference to the relevant document to perform assigned tasks. Any document downloaded from the E-Doc should be used for the performance of duties relating to investigation of aircraft accidents or incidents within 7 days. No further use of the downloaded document is permitted other than for training purposes only.

1.4.2.7 The General Manager, Engineering in coordination with the General Manager, Operations should keep up-to-date list of all personnel assigned duties related to the conduct of aircraft accident and incident investigation and to ensure they are provided access to the E-Doc platform.

1.4.2.8 Upon completion of Investigation indoctrination training for new hire personnel, the Training Coordinator should forward, within 7 days, the name(s) of the new personnel posted to investigation duties to the General Manager, Engineering for inclusion into the list of personnel who are assigned duties relating to the conduct of investigation of accidents and incidents. By this time, it is expected that the new employee would have received official email account so that login details can be created.

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1.4.2.9 The General Manager Engineering or General Manager Operations should immediately forward the details of the new entrants to the Head of ICT for creation of the E-Doc access/login details.

1.4.2.10 The General Manager Engineering should ensure the list is kept up-to-date as soon as any investigation related new hire employee completes the Indoctrination training. Anyone that resigns or no longer performing duties of investigation, should be removed from the list as soon as practicable.

B) Access through Bureau’s website (Documentation suitable for public view)

1.4.11 Once there is internet connection, the Bureau’s documentation (such NSIB Establishment Act, Civil Aviation can be accessed from remote locations outside of the office. The following documentations are available on the Bureau’s website:

- a) Aviation legislation (NSIB establishment Act,
- b) Civil Aviation (Investigation of Air Accidents and Incidents) Regulations);
- c) Investigation Policy and Procedures Manual;
- d) Investigation Rulemaking Handbook;
- e) Investigation Training Manual;
- f) Guidance materials issued from time-to-time;
- g) Investigation Forms and Checklists;
- h) Transportation Safety Laboratory Standard Operating Procedures.

1.4.12 The personnel that require to make reference to any of the Bureau’s documentations should Click on the link: www.nsib.gov.ng to access the Bureau’s documentations. Quick link to each of the uploaded documentation is available on the HOME PAGE of the website. This option is meant to ensure personnel at the remote locations (for example: regional offices, accident/incident sites, etc.) can access the Bureau’s documentations online to perform their duties.

C) Access through the Library

1.4.2.13 The personnel should approach the Library at the Bureau’s headquarters either in person or request for the Bureau’s documentation to the Head of Library through email to: belloamina@aib.gov.ng. if no response to the email, follow-up with a phone call to: 0802 303 3209.

1.4.2 Accessing Aircraft Manufacturers’ Documentation

1.4.2.1 The Director-General/CEO shall ensure that the Bureau’s Library maintains subscriptions to ensure continuous access to aircraft manufacturers’ documents, including aircraft continuing airworthiness information of aircraft fleet which frequently operate in the Nigeria’s airspace. Maintaining access to Original Equipment Manufacturers (OEMs) ensures that the Bureau’s personnel have access to the updated documentations whenever they need to reference a particular document for the purpose of accident and incident investigation activities. However, due to limitation set by the manufacturers, just a single access is granted the Bureau and some in cases only one access is granted to Nigeria as a whole. In the latter case, the Head of Library liaises with the head of NCAA Library on how to gain access to that particular manufacturer’s documents when the need arises.

1.4.2.2 The manufacturers’ documentations are often large in size/volumes and multiple in variety (different aircraft types, models, variants, etc) are often navigating the website becomes complicated to a new user, therefore, the most likely option is that when the need for access for a particular document arises, the personnel involved should contact the Head of Library through:

Email: belloamina@aib.gov.ng; or

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Call: 0802 303 3209; or
Visit the Library (if possible).

1.4.2.3 The Head of Library shall keep record of the lists to the aircraft manufacturers' documentations and to ensure access is maintained by the Library at all times. The Library is equipped with computer system access for access to the required documentations.

1.4.2.4 The Head of Library is responsible for forwarding the downloadable aircraft manufacturers' documents to the Head of ICT for uploading unto the SharePoint.

1.4.2.5 The Head of Library should immediately forward to the Head of ICT any new update/revision/amendment to manufacturers' documentation received from the Manufacturers and to advise the ICT to upload them unto the portal without much delay.

1.4.2.6 The Head of ICT should send feedback to the Head of Library upon successful upload of the aircraft manufacturer's document unto the SharePoint.

1.4.3 Access to ICAO Secured Portal

1.4.3.1 The Director-General/CEO shall ensure all personnel assigned duties related to investigation of aircraft accidents and incidents have access to all ICAO documents and guidance materials through the ICAO secured portal.

1.4.3.2 However, due to limitation of the number of access to the ICAO portal, the Bureau is granted four slots for access to the portal. The following are the holders of access to ICAO secure portal and their contact information:

Head of Library:

Email: belloamina@aib.gov.ng; or
Call: 0802 303 3209; or
Visit the Library (if possible).

General Manager, Operations:

Email: oditafrancis@aib.gov.ng; or
Call: 0811 399 1100 .

Secretary Regulations Committee:

Email: alaojoseph@aib.gov.ng;
Call: 0807 709 0914

Focal Point (USOAP CMA AIG):

Email: babanyaabdullahi@aib.gov.ng; or
Call: 0705 130 0014

1.4.3.3 All the personnel assigned duties relating to investigation of aircraft accidents or incidents are to contact any one of the above four holders of access to ICAO secure portal whenever they need to

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make use or reference relevant ICAO publications when performing assigned tasks. The access holders shall ensure to provide the requested assistance as soon as practicable.

1.4.3.4 The holders of the access to the ICAO Portal should regularly (at minimum once a month) login to the ICAO portal and navigate through the web page to review the information therein for updates and to keep proficiency.

1.4.4 ICAO Portal Access Instructions

1.4.4.1 Access the ICAO Portal at the following link: <https://portal.icao.int>.

1.4.4.2 if you do NOT have a Portal username/password, click the REQUEST AN ACCOUNT option.

1.4.4.3 Click the OK button on the pop-up message to indicate this is your first Portal account. In the pop-up window, enter the group name (all caps and no spaces).

1.4.4.4 Click the OK button.

1.4.4.5 Enter the necessary information in the New User Account Application form.

1.4.4.6 Click the SUBMIT REQUEST button.

1.4.4.7 After these steps are completed and the request reviewed, you will receive an email confirmation that you have been granted or denied access to the group in question. (if granted, the email will include your username and password).

Note:- Please type icao\ in front of your user name to login. ex: icao\jdoe



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CHAPTER 2

2.0 LEGISLATIVE REQUIREMENTS

2.1 ICAO REQUIREMENTS

Article 26 of the *Convention on International Civil Aviation* specifies that it is incumbent on a State in which an aircraft accident occurs to institute an inquiry into the circumstances of the accident. This obligation can only be met when appropriate legislation is in place. Such legislation must establish an accident investigation authority (or commission, board or other body) for the investigation of aircraft accidents. Annex 13 contains SARPs for the investigation of accidents and incidents in ICAO Member States. The Nigerian safety Investigation (Establishment) Act 2022 and the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations are in place in Nigeria to address these international requirements.

2.2 THE REQUIREMENTS IN NIGERIA

2.2.1 General

Nigeria has adopted legislation, regulations, policies and procedures that meet the requirements of ICAO for accident and incident investigation. However, the Bureau shall file “differences” to ICAO in accordance with Article 38 of the Convention, where required in line with the procedures in 2.3 of this manual.

2.2.2 Legislation in Nigeria

The legislative basis for the policies and procedures contained in this manual are codified in Part VIII Section 29 of the Nigerian Safety Investigation (Establishment) Act 2022 and the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations. A copy of the Act and the Regulations are contained in Appendices A and B respectively. This legislative basis illustrates Nigeria’s commitment to comply with the Chicago Convention, particularly Article 26 of the Convention, and the SARPs contained in Annex 13. The Nigerian safety Investigation (Establishment) Act 2022:

- a) establishes the Nigerian Safety Investigation Bureau;
- b) demonstrates the independence of the Nigerian Safety Investigation Bureau from Nigerian Civil Aviation Authority and other entities that could interfere with the conduct or objectivity of an investigation;
- c) provides it with the responsibilities and authorities (including funding) regarding civil aviation accident and incident investigation on behalf of the State; and
- d) authorizes the publication of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations regarding investigations of accidents and incidents.



2.2.3 Regulations in Nigeria

The regulatory basis for the policies and procedures contained in this manual are codified in the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations. The Nigerian Safety Investigation Bureau (Establishment) Act 2022 empowers the Director-General of the Bureau to make the regulations for investigation of air accidents and incidents in Nigeria. The Regulations address the requirements emanating from the Nigerian safety Investigation (Establishment) Act 2022, and provide for standardized investigation processes consistent with the provisions of Annex 13 and other ICAO documents regarding accident and incident investigation, including the ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Parts I, II, III and IV. A copy of the regulations is contained in Appendix B.

2.3 POLICY MATTERS AND AMENDMENTS TO AVIATION LEGISLATION

2.3.1 It is the policy of the Bureau to conduct its aircraft accident and incident investigation business in accordance with ICAO SARPs, particularly those contained in Annex 13 and the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756 Parts I, II, III and IV). It is also the policy of the Bureau to conduct its business in accordance with the relevant laws and regulations of Nigeria.

2.3.2 The laws and regulations are supplemented by this manual, which contains the policies and procedures of the Bureau for the conduct of aircraft accident and incident investigation in Nigeria or outside of Nigeria, when Nigeria's interests or responsibilities apply.

2.3.3 The Director-General/ CEO has constituted a standing Regulations Committee to review this manual, our laws and regulations on a periodic basis and in a timely manner to prepare amendments, as necessary, to ensure their currency and consistency with the standards and best practices of the international aviation community.

2.3.4 It is part of the responsibilities of the Regulations Committee (*herein referred to as the Committee*) to monitor amendments to ICAO SARPs and other ICAO documents through review of relevant ICAO State Letters proposing/adopting to ensure that relevant Nigerian laws, regulations, policies and procedures are also amended as necessary. The Director-General, upon receipt of transmittal of ICAO State Letter containing adoption of amendment to relevant ICAO SARPs, will forward it to the Regulations Committee for assessment and necessary action.

2.3.5 The Director-General, Regulations Committee, other personnel of the Bureau, stakeholders and the general public shall be guided in this regard by the procedures provided in the Bureau's Investigation Rulemaking Handbook.

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INVESTIGATION POLICY AND PROCEDURES MANUAL

NIGERIAN SAFETY INVESTIGATION BUREAU, SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT ABUJA



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CHAPTER 3

3.0 INVESTIGATION OBJECTIVE AND INDEPENDENCE

3.1 ICAO REQUIREMENTS

3.1.1 According to Annex 13, an accident investigation authority must be strictly objective and totally impartial and must also be perceived to be so. It must also be able to conduct investigations in an independent manner that precludes interference from outside pressures. The following references are relevant:

- a) Annex 13, Chapter 3, paragraph 3.1:

“The sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability.”

- b) Annex 13, Chapter 5, paragraph 5.4:

“The accident investigation authority shall have independence in the conduct of the investigation and have unrestricted authority over its conduct...”

- c) Annex 13, Chapter 5, paragraph 5.4.1:

“Any investigation conducted in accordance with the provisions of this Annex shall be separate from any judicial or administrative proceedings to apportion blame or liability.

Note: Separation can be achieved by the investigation being conducted by State accident investigation authority experts, and any judicial or administrative proceedings being conducted by other appropriate experts. Coordination, as per 5.10, between the two processes would likely be required at the accident site and in the gathering of factual information, with due consideration to the provisions in 5.12.”

- d) In accordance with Annex 13, Chapter 5, paragraph 5.4.3:

“A State should ensure that any investigations conducted under the provisions of this Annex have unrestricted access to all evidential material without delay and are not impeded by administrative or judicial investigations or proceedings.

Note: The intent of this recommended practice may be achieved through legislation, protocols, or agreements between the accident investigation authorities and the judicial authorities.”

- e) ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I – *Organization and Planning*, paragraphs 2.1.7, which states, in part, the following:

“The accident investigation authority must be strictly objective and totally impartial and must also be perceived to be so. It should be established in such a way that it can withstand political or other interference or pressure from other government organizations, as well as from industry. Many States have achieved this objective by setting up their accident investigation authority as an independent

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statutory body or by establishing an accident investigation organization that is separate from the civil aviation administration. In these States, the accident investigation authority reports direct to Congress, Parliament or a ministerial level of government that is different than the Ministry, which also oversees State aviation authorities”.

3.1.2 Nigeria has achieved this objective by the establishment of Nigerian Safety Investigation Bureau (NSIB) as an independent statutory body that is separate from the Nigerian Civil Aviation Authority (NCAA) and other entities that could interfere with the conduct or objectivity of an investigation. The Bureau reports directly to the President through the Minister responsible for civil aviation.

3.2 INDEPENDENCE AND FUNDING OF THE BUREAU

3.2.1 Independence of the Bureau

3.2.1 Maintaining independence in the conduct of investigations will result in enhancing the credibility of the Bureau and its ability to avoid situations that have the potential to create conflicts of interest. Maintaining independence of the investigation function is equally important for the conduct of accident and incident investigations.

3.2.1.2 The intent of “independence” is that the Bureau shall be functionally independent of the Ministry responsible for Aviation, Nigerian Airspace management Agency (NAMA), Federal Airports Authority of Nigeria (FAAN), other airport operators, and in particular of Nigerian Civil Aviation Authority, which is responsible for airworthiness, certification, flight operation, maintenance, licensing, air traffic control or airport operation. The Bureau shall in general, be functionally independent of any other party whose interests could conflict with the task entrusted to the Bureau, including independence from judicial authorities.

3.2.1.3 “Independence” does not mean that the Bureau would not be administratively supervised and accountable to a supervising Minister or ministry (or National Assembly) for its finances, administration, policies and working methods (which should be transparent).

3.2.1.4 The Nigerian Safety Investigation (Establishment) Act 2022 has provided for the independent funding, staffing, autonomy and functional independence of the Bureau to discharge its investigation functions without conflict of interest or interference from outside pressure.

3.2.1.5 The Bureau shall not be perceived to be influenced by the supervisory ministry or any authority on the conduct of investigations, the issuance of findings, safety recommendations, preliminary report(s) and the Final Report.

3.2.1.6 The Bureau shall neither take nor seek instructions from other authorities and shall have unrestricted authority over the conduct of investigations. The Nigerian safety Investigation (Establishment) Act 2022 provided to the Bureau the legislative support to ensure funding for its routine investigation activities with contingency plans in place for emergency funding of costly investigations.

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3.2.1.7 According to the NSIB (Establishment) Act, any administrative or judicial proceedings to apportion fault or liability shall be separate from the investigations of the Bureau.

In carrying out its functions, the Bureau remains objective, totally impartial and completely free from any political or other interference or pressure.

3.2.2 FUNDING OF THE BUREAU

3.2.2.1 In line with Section 17 of the Nigerian Safety Investigation Bureau (Establishment) Act 2022, the Bureau shall have sufficient funds to enable it properly conduct aircraft accidents and incidents investigation within its areas of responsibility.

3.2.2.2 The NSIB (Establishment) Act enumerates the sources of funding for the Bureau, including annual budgetary allocations from Federal Government.

3.2.2.3 When during the conduct of investigation, the need for additional funding arises the investigator-in-charge forward the request to the Director-General/CEO. The Director-General upon review of the request may direct the Director of Finance and Accounts (DFA) provide the funds required support the conduct of the investigation.

3.2.2.4 in the event of the occurrence of a major aircraft accident, the Director-General/CEO should direct the DFA to immediately make available the Emergency funds set aside for that purpose in line with the Section 18 of the NSIB (Establishment) Act.

3.2.2.5 in the event the Emergency funds becomes inadequate and the investigator-in-charge in coordination with the Director of Finance and Accounts has made determination of the estimated amount needed to complete the investigation, such information should made known to the Director-General/CE as soon as practicable. The Director-General/CEO shall make an urgent request in writing to the Federal Government through the Minister responsible for Aviation for additional funds to enable the Bureau to continue the conduct of major accident investigation.

3.2.2.6 The budgeting process and disbursement of funds is provided in the Budget, Accounting and Finance Manual of the Bureau. The DFA is responsible for the development, implementation and maintenance of the manual in accordance with the financial regulations.

3.3 THE REQUIREMENTS IN NIGERIA

3.3.1 The Nigeria legislation, regulations, policies, and procedures are consistent with and reinforce the provisions of Annex 13 regarding the objective and independence of the investigation.

3.3.2 The requirements of the Nigerian Safety Investigation Bureau are contained in Part VIII Section 29 (2), 29(5), 29(7), 29(9), 29(11)(e) and 29(12) of the Nigerian safety Investigation (Establishment)

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Act 2022 for the autonomy, funding, staffing, independence and objectivity of investigations, as follows:

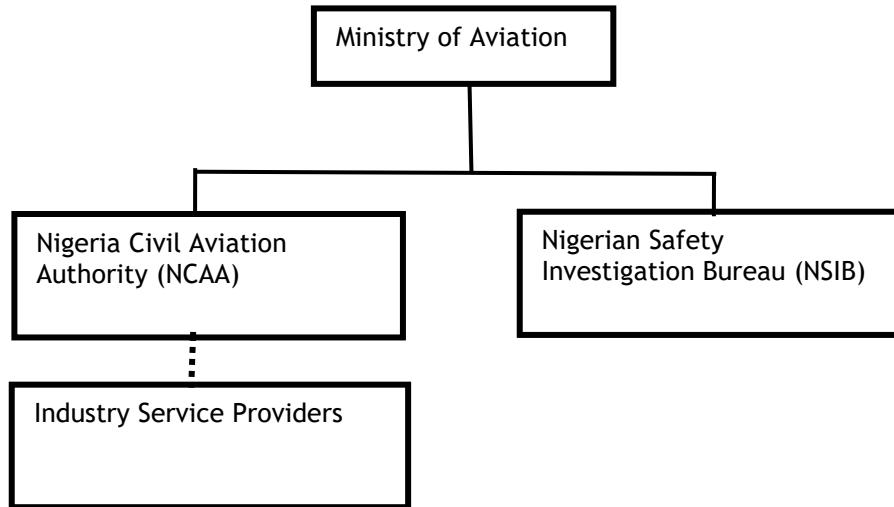
- a) ensure the establishment of an adequately funded, professionally trained, independent and impartial aircraft accident investigative body in Nigeria;
- b) ensure the independence of all investigations into aircraft accidents and incidents that are carried out in Nigeria, from political or other interference or pressure; and
- c) promote the use of a common set of regulations compliant with the provisions of Annex 13 *Aircraft Accident and Incident Investigation*, including regulations for the protection of safety data with the purpose of accident prevention and not the assignment of blame.



3.4 ORGANIZATIONAL STRUCTURE AND STAFFING

3.4.1 Organizational Structure

3.4.1.1 Aviation System in Nigeria



Legend: = oversight activities.

Figure 3-1: Organizational Structure of Aviation System of Nigeria



3.4.1.2 Organizational Structure of the Bureau

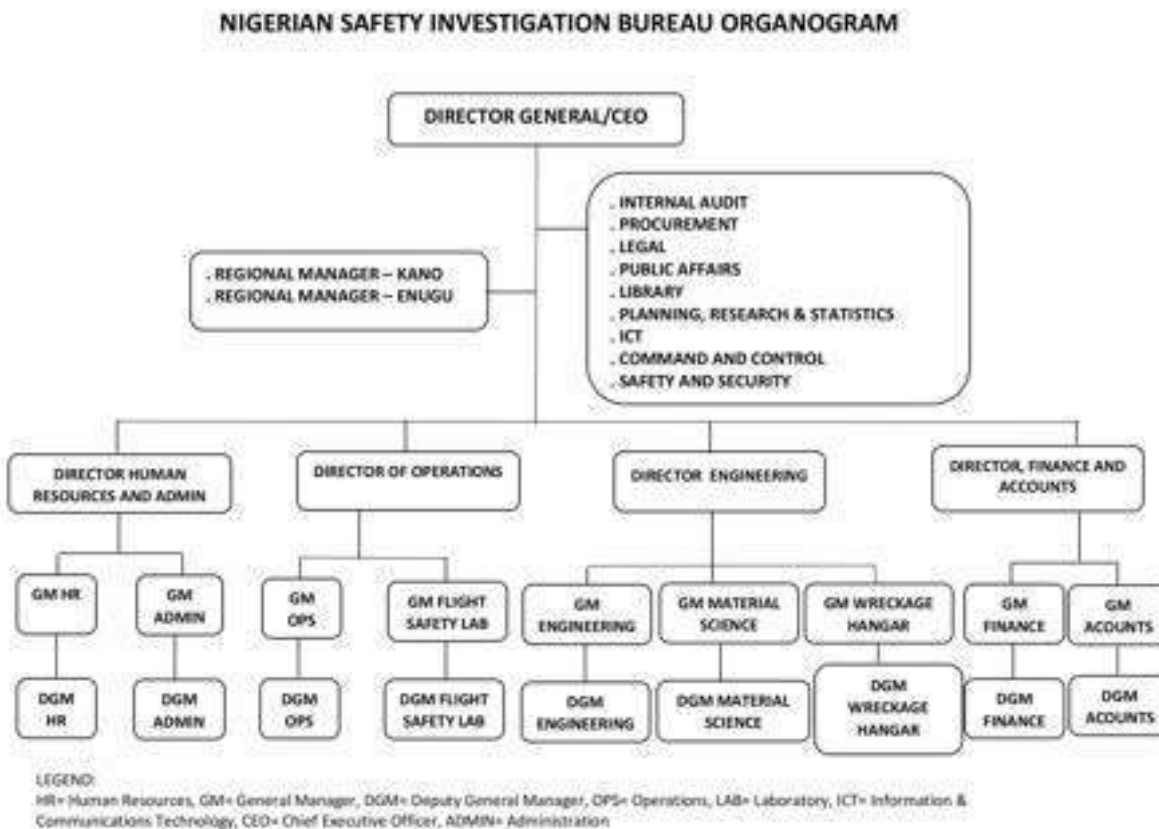
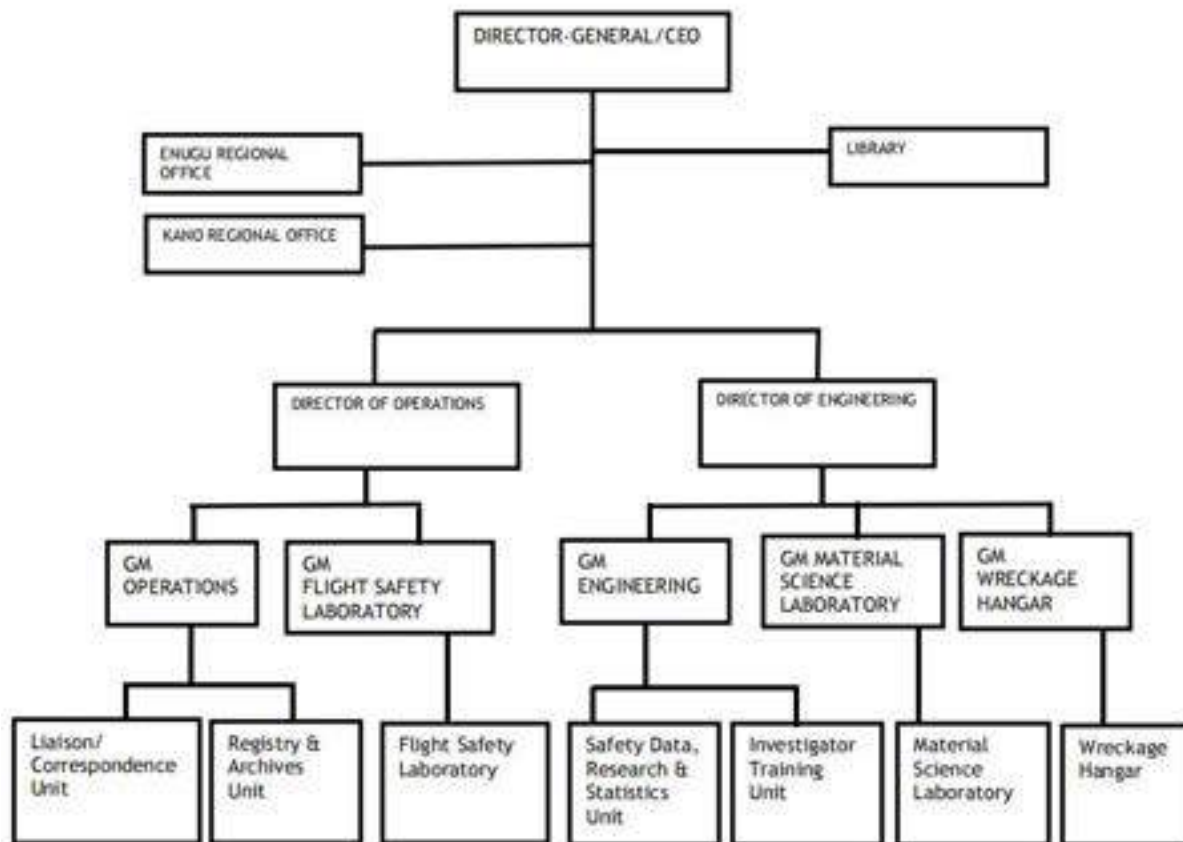


Figure 3-2: Corporate Level Organizational Structure



3.4.1.3 Organizational Structure of Investigation



LEGEND: GM= General Manage

Figure 3- 3: Organizational Structure of Investigation Section

3.4.1.2 Structure of the Bureau

3.4.1.2.1 Part II Section 3(1) of the Nigerian Safety Investigation Bureau (Establishment) Act provides for the establishment of the Bureau charged with the responsibility of conducting safety investigation of occurrences in Air, Marine and Rail modes of transportation in order to determine the causes and to make safety recommendations, if required to prevent recurrence. Section 7(1) provide for the establishment of a Governing Board of the Bureau which is headed by a Chairman and eight other members, including the Director-General of the Bureau. The Governing Board is responsible to formulate, monitor, and determine general policy guidelines for the Bureau,



formulate and develop guidelines for investigations and to ensure implementation of the policies and programs of the Bureau.

Note: The Governing Board is yet to be constituted by government.

3.4.1.2.2 Part IV Section 11 of the Nigerian Safety Investigation Bureau (Establishment) Act also provides for the appointment of a Director-General/CEO, who shall be the chief executive and accounting officer of the Bureau. Administratively, the Director-General/CEO reports to the President through the Minister responsible for Aviation. However, on matters relating to the conduct of transport occurrence investigation, the Director-General/CEO shall not be subject to direction from anyone and must act consistently with the provisions of the NSIB (Establishment) Act.

3.4.1.2.3 To ensure smooth day-to-day activities, the Bureau is comprised of four Directorates namely; Operations, Engineering, Finance & Accounts and Human Resources with a number of functional units. Each Directorate is headed by a Director, who is in turn assisted in the day-to-day activities of the directorate, by one or more General Managers. Seven (7) functional units have been created to ensure effective operation of the investigation section, namely; Safety data, Research and Statistics Unit, Investigation Training Unit, Registry and Archives Unit, Wreckage Hangar, Transportation Safety Laboratory and Material Science Laboratory. However, the Material Science Laboratory is yet to be active.

Note: The Marine and Rail aspects of the Bureau is yet to take off.

3.4.1.2.4 The workings of the investigation section of the Bureau are such that there cannot be clear departmental divisions between the Operations and Engineering Directorates; and as such duties may be allocated to Air Safety Investigators (ASIs) across the two directorates depending on the requirements and expertise available.

3.4.1.2.5 There are two (2) Regional Offices located in Enugu and Kano in order to enhance the operations of the Bureau to cover the entire geographic areas of the country in terms of its ability to prompt arrive at accident or incident sites within the shortest possible time-frame upon receipt of notification of an occurrence. Each Regional Office is headed by a Regional Manager, who should be a middle level management staff of the investigation section and assisted by heads of functional units that are representatives of all the Directorates at Headquarters for effective operation of the Regional Offices. The Regional Manager reports to the Director-General/CEO through the Director of Human Resources and Administration on day-to-day running of the Regional Office. However, on matters relating to accident and incident investigation, the heads of Engineering and Operations should report through the Regional Managers to their respective Directorate of Engineering and Operations respectively at the Bureau Headquarters.

3.4.2 Duties and Responsibilities

3.4.2.1 Duties and Responsibilities of the Governing Board

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The Governing Board is responsible for the following:

- a) formulate, monitor, and determine the general policy guidelines for the Bureau;
- b) formulate and develop guidelines for investigations;
- c) ensure the implementation of the policies and programs of the
- d) Bureau;
- e) fix terms and conditions of service including remuneration of the
- f) employees of the Bureau in accordance with the directives of the National
- g) Salaries Incomes and Wages Commission;
- h) receive and review annual reports from the management of the
- i) Bureau of the activities of the Bureau in the preceding calendar year, which shall include a copy of the audited accounts of that calendar year; and
- j) perform such other functions as are necessary or expedient to ensure the efficient performance of the functions of the Bureau.

3.4.2.2 Duties and Responsibilities of the Director-General/CEO

The Director-General is responsible for the following:

- a) execution of the policies, decisions and program of the Bureau ;
- b) administration, coordination, supervision and management of the day to day activities of the Bureau;
- c) implementation of the Board's decisions and ensuring that the Bureau achieves its objectives;
- d) direction and supervision of all employees of the Bureau;
- e) maintenance of proper accounting and financial records in accordance with extant Federal Government financial guidelines and regulations;
- f) performance of such other duties as the Board may assign; and
- g) give directions as to:
 - i) how investigation is to be conducted ;
 - ii) the content of a public report as to a particular investigation ; and
 - iii) the publication and circulation of the final report.

3.4.2.3 Duties and Responsibilities of Directorate of Engineering

The Directorate of Engineering performs the following duties during an investigation:

- a) Collation of aircraft maintenance information;
- b) Retrieval of flight recorders;
- c) Documentation of accident site;
- d) Conduct wreckage mapping;
- e) Identification of fractured parts of aircraft;

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- f) Obtain fuel, fluid and oil samples for analysis;
- g) Carryout engineering laboratory tests;
- h) Identification of airworthiness deficiencies;
- i) Identification of metallurgical failures;
- j) Carryout power plant investigation;
- k) Carryout aircraft structures and systems investigation;
- l) Carryout testing of components, including engine tear down;
- m) Drafting the parts covering technical engineering subjects of the Preliminary and Final Report;
- n) Conduct Safety Recommendation Follow-up;
- o) Oversee the collection and management of safety database and safety studies;
- p) Oversee operations of wreckage hangar and material science laboratory
- q) Oversee matters on training of investigators.
- r) Any other duty assigned by the Board or Director-General/CEO.

3.4.2.4 Duties of the Directorate of Operations

The Directorate of Operations performs the following duties during an investigation:

- a) Conduct flight operations investigation;
- b) Collation of crew information;
- c) Collation of ATS information;
- d) Collation of Aerodrome information;
- e) Collation of weather information;
- f) Documentation of cockpit area;
- g) Collation of history the flight;
- h) Collation of the performance /weight and balance information, including cargo manifest;
- i) Collation of operations manuals/ documents;

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- j) Interviewing eyewitnesses, including relevant personnel;
- k) Identification of deficiencies in aircraft operations;
- l) Establish notification contacts with all interested parties an and outside Nigeria;
- m) Carryout flight recorder read-out and analysis;
- n) Coordinate the medical and autopsy investigation;
- o) Coordinate human factor and psychological investigation aspects of the accident;
- p) Drafting of flight operations parts of the preliminary and final report;
- q) Overseeing registry and archiving of investigation files and material evidences;
- r) Overseeing operations of Transportation safety laboratory
- s) Overseeing correspondences and liaison with external entities on matters relating to investigation;
- t) Any other duty assigned by the Board or Director-General/CEO.

3.4.2.5 Duties of Directorate of Human Resources and Administration

In addition to its administrative and personnel duties, this Directorate handles the process of travelling logistics of officers and Air Safety Investigators (ASIs). The exigencies will require that the officer/ASIs may have to proceed at short notice.

3.4.2.6 Duties of Directorate of Finance and Accounts

In addition to overseeing the operations of the Finance and Accounts department, the directorate is responsible for ensuring adequate funding of investigation activities, including sourcing for emergency funds in relation to funding investigation of major accident in a timely manner.

3.4.2.7 Other Units under the Office of Director-General/CEO

To ensure effective operations of the Bureau, the following units report directly to Director-General/CEO:

- a) Legal
- b) ICT
- c) Library
- d) Command and Control Centre
- e) Safety and Security

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- f) Audit
- g) Procurement
- h) Public Affairs
- i) Planning, Research and Statistics

3.4.3 Overview of the Bureau

Vision and Mission Statements

Vision

To be one of the foremost accident investigation authorities in the world striving towards improved aviation safety.

Mission

To carry out qualitative and timely investigations using competent aviation professionals applying best practices.

3.4.3.1 The Nigerian Safety Investigation Bureau (NSIB) was established by Part VIII Section 29 of the Nigerian Safety Investigation Bureau (Establishment) Act 2022. Its primary objective is to improve aviation safety. It does this by investigating civil aviation occurrences within Nigerian territory in order to identify and communicate factors that affect, or might affect aviation safety.

3.4.3.2 The Act makes it clear that, in carrying out its purpose, the Bureau cannot apportion blame, assist in determining liabilities or, as a general rule, assist in court proceedings. Its sole focus remains the prevention of future accidents and the improvement of safety.

3.4.3.3 The Bureau is responsible to the President and Commander-In-Chief of the Armed Forces of the Federal Republic of Nigeria and reports to the President through the Minister supervising civil aviation.

3.4.3.4 It is entirely separate and independent from the aviation regulator (NCAA), judicial authorities, policy makers and service providers. It remains administratively and financially accountable to the Federal Ministry of Aviation. Other parastatal under the ministry of aviation are:

- a) Federal Airports Authority of Nigeria (FAAN);
- b) Nigerian Airspace Management Agency (NAMA);
- c) Nigerian Civil Aviation Authority (NCAA);

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- d) Nigerian College of Aviation Technology (NCAT); and
- e) Nigerian Meteorological Agency (NiMET).

3.4.3.5 The Bureau works cooperatively with the aviation industry, regulators and governments at state, national and international levels to improve safety standards. It also fosters cooperation with equivalent bodies in other countries and international organizations with responsibilities for worldwide aviation safety standards.

3.4.3.6 In order to cultivate a strong reporting culture within the industry, the Bureau promotes an appropriate level of confidentiality and protection for sensitive safety information provided to it in the course of its work.

3.4.4 Objectives of the Bureau

3.4.4.1 The fundamental objective of the Bureau is the prevention of aircraft accidents or incidents (improve aviation safety) demonstrated through impartial, thorough and timely conduct of investigations of accidents and incidents to determine the circumstances and causes of air accidents and incidents, and providing safety recommendations intended to prevent recurrence of similar accidents. The Bureau shall not be seen or perceived to apportion blame or to determine administrative, civil or criminal liability.

3.4.4.2 The fundamental objective of the Bureau is achieved through the following:

- a) Conducting thorough, impartial, systematic and timely investigations
- b) Identifying safety issues clearly and objectively without attributing blame or liability
- c) Ensuring the significance of causal and contributory factors is clearly understood by all concerned
- d) Promoting effective safety action
- e) Harnessing expertise and information necessary to its safety role
- f) Focusing its resources in the areas that are most likely to result in safety improvement

3.4.5 Rights, Authority and Obligations of the Bureau

3.4.5.1 The Bureau has the following rights, authority and obligations:

- a) call local law enforcement or other authorized persons to provide protection to the aircraft accident site, including the aircraft and its contents, until the Bureau and investigators are able to assume direct custody and security of the aircraft and its contents.

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- b) ensure that the aircraft, its contents and all other relevant physical items are not disturbed, moved, where possible, until arrival and inspection by an accredited representative, when requested. When for any reason the aircraft and other elements are moved or disturbed, pending the arrival of an accredited representative, the investigator-in-charge ensures that his activities are documented by appropriate means, including photographs.
- c) ensuring, in the event of an investigation, that all ATS communications recordings, radar data and documents relating to the flight are secured for safekeeping;
- d) allow the accredited representatives of the following States to participate in the investigation:
 - 1) State of Registry;
 - 2) the State of the Operator;
 - 3) State of Design;
 - 4) state of construction;
 - 5) any other State which, upon request, has provided information, means or experts.
- e) allow accredited representatives' advisers to participate in the investigation to the extent necessary to make the participation of accredited representatives effective;
- f) allow the participation of experts from States whose nationals are among the injured and/or dead. These experts are admitted to:
 - 1) visit the accident site;
 - 2) access relevant factual information that the Bureau approves for public disclosure, as well as information on the progress of the investigation;
 - 3) Assist in identification of victims;
 - 4) Be present during meeting with aircraft accident victims and their families
 - 5) receive a copy of the final report.
- g) allow accredited representatives under the control of the investigator-in-charge to take part in all aspects of the investigation, including:
 - 1) visit the scene of the accident/incident;
 - 2) examine the wreckage;
 - 3) obtaining information from witnesses and suggesting subjects for questioning;
 - 4) free access to all useful material clues, as soon as possible;
 - 5) receive copies of all relevant documents;
 - 6) participate in the playback of recordings;
 - 7) Participate in off-scene accident/incident investigation activities such as component examinations, technical briefings, tests and simulations;
 - 8) in investigation progress meetings including deliberations on analysis, findings, causes, contributing factors and safety recommendations;
 - 9) make suggestions about the different elements of the survey.
- h) invite the operator of the aircraft to participate in the investigation, when no accredited representative is appointed by the State of Registry and the State of the Operator;

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- i) invite aircraft type and/or final assembly design organizations to participate in the investigation, where no accredited representative is appointed by the State of Manufacture and State of Design;
- j) call on external expertise if necessary to assist investigation staff;
- k) protect the physical evidence and ensure custody of the aircraft and its contents for the time necessary to conduct the investigation, including protection against other damage, access by unauthorized persons, pilferage or deterioration;
- l) photograph and document ephemeral material evidence by appropriate means, to prevent loss of evidence;
- m) conduct tests and examinations of aircraft components that would cause damage to the components during such tests and examinations;
- n) coordinate with legal authorities to ensure that the sole purpose of the investigation is the prevention of accidents, and that any judicial or administrative proceedings to assign blame or liability are separated from the investigation, in accordance with ICAO Annex 13;
- o) ensure that autopsies as well as toxicology tests are carried out on crew members and passengers for medical investigation purposes. When the investigator-in-charge deems it necessary, medical examinations may be carried out on crew members, surviving passengers and aviation personnel involved in the occurrence (air traffic controllers, etc.)
- p) provide the State conducting the investigation:
 - 1) all relevant information requested by that State;
 - 2) aircraft and operational information (aircraft crew and maintenance records, ATS records, weather information, etc.).
- q) appoint an accredited representative in the event of an accident involving an aircraft with a maximum mass of more than 2250 kg, or when the request is expressly made by the State conducting the investigation.
- r) prevent the disclosure of information by the accredited representative appointed by the Bureau and/or advisers about the progress and findings of the investigation, without the express consent of the state conducting the investigation.
- s) appoint an expert when nationals of Nigeria are among the dead and injured in another State, who may:
 - 1) visit the accident site;
 - 2) access to all relevant factual information that the State conducting the investigation approves for public disclosure, as well as information on the progress of the investigation;
 - 3) receive a copy of the final report.
- t) re-open an investigation when new and significant clues become available.
- u) make public the facts, the circumstances of the event during the investigation, to inform travelers and prevent future occurrences.
- v) identify safety deficiencies during the investigation, indicate them in the final report of the investigation and address the recommendations to the authorities, services and organizations concerned in charge of aviation safety.

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3.4.6 Functions of the Bureau

3.4.6.1 The Bureau performs its functions in accordance with the provisions of the Nigerian safety Investigation (Establishment) Act, regulations and, where applicable, relevant international conventions and agreements. It is responsible for investigating transport occurrences in Nigeria, as well as participating in international investigations involving Nigerian registered transport vessel or where Nigeria is the State of operator of the transport vessel.

3.4.6.2 The key functions of the Bureau include but not limited to:

- a) Receiving, assessing, determining and classifying occurrence reports, including notifications of transport occurrences;
- b) Independently conducting ‘no-blame’ investigations of transport occurrences according to the national legislation, international standards and best practices;
- c) Determination of the causes and/or contributory factors of the transport occurrences;
- d) Preventing similar events by identification of safety deficiencies and issuance of safety recommendations where appropriate;
- e) Fulfilling Nigeria’s obligations under the international Conventions, including Chicago Convention on international civil aviation and the International Maritime Conventions);
- f) Compilation, completion and publication of Final reports of transport occurrences;
- g) Encouraging safety action in response to safety factors by acknowledging safety action taken by operators/manufacturers, and by issuing safety recommendations;
- h) Raising awareness of safety issues by reporting publicly on investigations and conducting educational programs;
- i) Gaining public trust that transport occurrences are thoroughly and independently investigated leading to preventive measures;
- j) Coordination and cooperation with judicial and other authorities in parallel investigations;
- k) Making and amending the regulations, orders, bulletins, circulars, policies and procedures;
- l) Obtaining resources and developing expertise;
- m) Cooperating with the Nigerian Civil Aviation Authority to maintain database of the voluntary non-punitive incident reporting system;
- n) Coordinating with other local authorities (military, police, airport authority, ATC service provider, search and rescue, judiciary, airline, maintenance facilities, hospitals, etc.);

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- o) Liaising with ICAO, IMO, other States and the transport industry;
- p) Conducting research and safety studies on safety data for accident prevention purposes and to maintain relevant statistics;
- q) Advising the relevant Ministers, Federal and State and government agencies on transport safety matters.

3.4.7 Facilities of the Bureau

3.4.7.1 Offices of the Bureau

3.4.7.1.1 The Bureau has its headquarters at Nnamdi Azikiwe International Airport located in Abuja, which houses management and full compliment of staff to ensure its mandate are effectively carried out.

3.4.7.1.2 The headquarter office is equipped with all necessary facilities, including adequate offices, ICT infrastructure, mobile communications equipment, land transportation vehicles, transportation safety laboratory, drones, a mobile office, command and control centre, etc.

3.4.7.1.3 The Bureau has a large hangar for storage of wreckage and other material evidences, material science laboratory and a training school all located at Nnamdi Azikiwe International Airport.

3.4.7.1.4 To ensure prompt arrival at occurrence site by the Bureau's Air Safety Investigators, the Bureau has two regional offices located strategically to cover the entire geographical areas of the country; namely Enugu regional office located southeastern and Kano in the northwestern parts respectively.

3.4.7.2 Transportation Safety Laboratory

3.4.7.2.1 The Bureau has a Transportation Safety Laboratory (TSL) which is located at the Bureau's Headquarters Office at Abuja. This is where data from Cockpit Voice Recorders (CVR) and Flight Data Recorders (FDR) are downloaded, read-out and analyzed. The Transportation Safety Laboratory has the capacity to readout and download data from majority of the CVR and FDR's available today.

3.4.7.2.2 The TSL has capability to readout and download from large range of undamaged recorders models and some damaged recorder models.

3.4.7.2.3 The TSL contributes greatly to seamless investigative process with its ability to recreate simulations in animations based on data from the Flight Data Recorders (FDR) and Cockpit Voice Recorder (CVR).

3.4.7.2.4 The TSL is also equipped with Memory Access and Retrieval System (MARS) to enable download of data from damaged flight recorders.

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3.4.7.2.5 Details of the transportation safety laboratory are contained in the Transportation Safety Laboratory Standard Operating Procedures.

3.4.7.3 Material Science Laboratory

3.4.7.3.1 The material science laboratory (MSL) is located at the Bureau’s headquarter office in Abuja. The MSL is equipped with modern metallurgical test equipment to assist accident investigation in the area of testing or analysis of suspect aircraft part/component whose material failure is suspected to have caused or contributed to the accident.

3.4.7.3.2 Currently, the Material Science Laboratory is not functional.

3.4.7.4 Command and Control Centre

3.4.7.4.1 The Command and Control Centre has an office within the Bureau, communication equipment, permanent internet access and the computer equipment necessary to enable it monitor real-time radio communications between air traffic controllers and the aircraft to detect moment of distress with the flight.

3.4.7.4.2 The Centre is aimed at:

- a) monitoring all flights within the Nigerian airspace;
- b) Timely notification and responses;
- c) Easy deployment of investigators directly to the crash site.

3.4.7.4.3 Upon detection of distress situation occurring with an aircraft in flight, the Officer on duty shall at the Command and Control Centre will immediately make a phone call to the 24-Hour Duty Officer and then call the Head of Command and Control Centre, Director-General/CEO, Director of Operations or Director of Engineering in this order of priority.

3.4.7.4.4 The Command and control Centre also monitors news media through the major international television news stations.

3.4.7.5 Facilities for Archiving and Storage of Investigation Files and Documents

3.4.7.5.1 Investigation Room

3.4.7.5.1.1 The Bureau has established dedicated investigation rooms in all of its offices (headquarters and regional offices), whose access should be restricted to air safety investigators and any other duly authorized persons.

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3.4.7.5.1.2 The Investigation room has provision for Investigation Review Areas for conducting analysis of factual information, witness interview, drafting and technical review of reports; and the Archives section for storage of investigation files, material evidences and documents obtained in the course of conducting investigation.

3.4.7.5.1.3 The Director-General/CEO should ensure that the investigation rooms are equipped with the appropriate furniture, audio-visual gadgets, computer systems, scanners, photocopiers and internet services.

3.4.7.5.1.4 The Archives section should be equipped with waterproof containers, fireproof cabinets, lockable shelves, dedicated computer systems, hard drives and scanners for storage of investigation files, material evidences and documents obtained in the course of accident investigation.

3.4.7.5.2 Archiving, Security, Storage and Retrieval of Investigation Files and Documents

3.4.7.5.2.1 All accident and incident investigation materials (soft and hard copies), including the investigation files, folders, investigators' notes, copies of aircraft documents, operators documents and manuals, recordings of witness interviews, crew statement, copies of FDR downloads and analyses, CVR recordings and transcripts, ATC recordings, tower watch logs and transcripts, test and research reports, medical records and medical tests/autopsy reports should be properly archived in a secure place.

3.4.7.5.2.2 Due to the sensitivity and confidentiality nature of the investigation materials, it is imperative that these materials are retrieved from the Investigators-in-charge (IICs) for proper archiving as soon as the investigation is completed and the related Final Reports issued to the public.

3.4.7.5.2.3 Each investigation file should contain the following:

- a) Notification of the Occurrence
- b) Preliminary Assessment of Occurrence
- c) Investigation Team Composition
- d) Deployment to Site
- e) Site documentation/evidences/ Recovery of flight recorders/aircraft documents
- f) Copies of relevant aircraft documents
- g) Copies of organizational/ operational documents
- h) Aerodrome/ crash site information
- i) Personnel information
- j) Information from witnesses
- k) Record of interviews
- l) All correspondences, transmittal letters
- m) ATC Report, including transcript of ATC recordings/Radar Data
- n) Flight recorders and others (FDR/CVR raw data/readouts/plots)
- o) Onboard image recordings
- p) Report from laboratory tests/examination of components
- q) Autopsy/Medical report

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- r) Aerodrome Rescue and Fire Fight Services report
- s) Search and Rescue report
- t) Preliminary report
- u) Interim Statement
- v) Draft final report
- w) Consultation/ comments received
- x) final report
- y) Safety recommendations
- z) ADREP

3.4.7.5.2.4 It is the responsibility of the IIC to ensure that all investigation materials are to be properly tagged and classified as confidential.

3.4.7.5.2.5 Upon completion of an investigation and release of the Final Report, the IIC should ensure that the hard copies of the investigation materials are scanned, where possible, properly arranged and tagged; and handover all the materials connected to the investigation (electronic, paper and others) to the officer-in-charge of the Archives.

3.4.7.5.2.6 The officer-in-charge of the Archives should:

- a) receive the materials and make entry of the details of the materials in the dedicated paper and computer registers;
- b) save the electronic copies of the materials in a dedicated computer and the duplicate is to be uploaded to share point (or server);
- c) create directory with passwords and only authorized persons are given log in details in order to control access to the materials;
- d) save the electronic copies on a dedicated External Hard Drive. The External Hard Drive should be tagged and kept in a secure save; and
- e) package the paper/hard copies in a suitable container (waterproof), Label the containers and place them in lockable cabinet.

3.4.7.5.2.7 Each accident investigation documents, including investigation files, associated material evidences and documents obtained in the course of accident investigation should be kept protected in the Archives for a minimum period of twenty years following the release of related Final Reports. Thereafter, The Director-General/CEO may wish to discard them in a manner to avoid inappropriate disclosure to the public.

3.4.7.6 Wreckage Hangar and Storage Facilities

3.4.7.6.1 The Bureau has a wreckage hangar/ storage facilities located at Nnamdi Azikiwe Airport, Abuja for the purpose of preserving evidences and maintaining safe custody of wreckage and reconstruction of aircraft involved in accident for the investigation. Necessary hangar equipment and basic tools are provided and a Head of the Wreckage hangar has been appointed, who should possess appropriate type ratings and requisite practical aircraft maintenance experience to oversee the activities of the wreckage hangar. Whenever necessary, other investigators and specialists should be engaged to carry out reconstruction of accident aircraft.

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3.4.7.6.2 The Bureau should make necessary arrangement through MoU or any other means with owners/ operators of hangar/storage facilities spread evenly and at various locations across the country to ensure the availability of the facilities in order to protect the evidence and maintain safe custody of the aircraft for such a period as may be necessary for the purpose of the investigation.

3.4.7.6.3 The arrangement (in the form of MoU) should include requirements to ensure that the hangar/storage facilities shall be equipped to protect the evidences and the aircraft wreckage against environmental factors, fire and unauthorized access.

3.4.7.6.4 The Company Secretary and Legal Adviser in coordination with the Director of Engineering is responsible for drafting the MoU with the identified entities and ensuring effective implementation of the MoU.

3.4.7.7 Training School

3.4.7.7.1 The Bureau has completed the building of a modern training school at the premises of its new permanent headquarter (under construction) site located on the Bill Clinton Drive within the vicinity of Nnamdi Azikiwe International Airport.

3.4.7.7.2 The training school is designed to provided training courses relating to only safety improvement, including accident investigation, safety management, human factors, flight data analysis, material sciences, and related subjects. In order to avoid situations of conflict of interest and the impartiality of its investigation, the Bureau’s training school shall not provide training for acquiring or maintaining license, authorization, certification or approval required to perform aeronautical duties or services.

3.4.7.7.3 When fully operational, the training school is expected to relief the Bureau of huge foreign exchange expenditure for securing foreign training to its large personnel.

3.4.8 Regional Offices

3.4.8.1 General Information

3.4.8.1.1 The Bureau has established Regional Offices at Enugu and Kano airports, being strategic locations across the country, to ensure prompt response to reports of accidents and serious incidents at remote locations and ensuring timely arrival of the Bureau’s initial response team to accident sites countrywide.

3.4.8.1.2 Keeping in view the vast geographical location and increase in the aviation activities in some regions, the jurisdiction of Regional Offices are defined as follows:

Regional Office	Jurisdiction
Enugu	Southeast
	Southwest
	South south



Kano	Northwest
	Northeast

3.4.8.1.3 It is imperative that all Regional Offices shall follow these instructions. Regional officers, as usual will report to their respective Regional Managers on all technical and administrative matters while carrying out the control under the powers delegated to them by the Director-General/CEO.

3.4.8.1.4 Matters requiring urgent attention shall be referred to Headquarters by Regional Officers under intimation to their Regional Offices.

3.4.8.1.5 Managers in charge of the regions would function within the powers delegated to them by the Director-General/CEO as reflected in various notifications.

3.4.8.1.6 The Regional Offices will decide and dispose of the cases referred to them by the Regional Officers. However, matters that may have repercussions in other regions should be referred to the Headquarters.

3.4.8.1.7 The following procedures/guidelines are applicable to the functioning of the regional offices:

- a) Director-General/CEO appoints a Regional Manager, who should be the most senior Air Safety Investigator (ASI) in the Regional Office;
- b) Regional Manager shall report to the Director-General/CEO on all matters on monthly basis;
- c) Regional Office should perform functions prescribed by the Director-General/CEO;
- d) Regional Office should have access to up-to-date working publications and documents, including the Investigation Policy and Procedures Manual, Accident/Serious Incident Reporting Forms, Civil Aviation (Investigation of Air Accidents and Incidents) Regulations and other Regulations, Engineering/Operations Guidance Materials, Accident/Incident Files, other relevant publications, etc.;
- e) All training of the ASIs in the Regional Offices should be coordinated from the Headquarters (HQ);
- f) The Leave Rosters of the Air Safety Investigators in the Regional Offices should be submitted to Headquarters ((HQ) at the beginning of the year. This is to enable deployment of relief officers to the Regional Offices as necessary;
- g) Posting of Air Safety Investigators to the Regional Offices may normally be reviewed every three to four years;
- h) Technical audit of the Regional Offices will be conducted once every three to four years to ensure procedures are adhered to;
- i) Regional Office will be responsible for implementing notification procedures of occurrences in its geographical area of jurisdiction;
- j) Regional office should notify headquarters upon received of a notification of an accident or incident occurs in the geographical areas nearest to it by the most expeditious means;



- k) Designate an ASI to be on-call during off-duty hours;
- l) Initiate travel of relevant personnel to the accident site to perform coordinating functions before the arrival of the Investigator-in-charge (IIC);
- m) The Regional ASI who travel to an accident or incident site will partake in the investigation as the investigation team member;
- n) Regional offices shall keep their records updated at all times so as to enable the visiting officers to complete their task in the shortest possible time.
- o) When necessary, meetings are held between the Headquarters and the Regional Offices physically or virtual at either locations;
- p) Regular visits the Director-General/CEO and other Senior Officers of Headquarters visit regional Offices from time to time to ensure that headquarters' instructions and requirements are being meticulously observed.
- q) The Regional Managers shall ensure that information obtained in the course of conducting investigation are protected and never disclosed to the public or used for purposes other than investigation of accidents or serious incidents. All investigation files and material/evidences are kept in a safe and secure locations to prevent inadvertent access by unauthorized person.
- r) The Regional Managers shall ensure that investigation equipment and kits are periodically monitored to ensure they are available and functional at all time by checking the contents of the kit/bags and comparing with the list of the equipment and kits.

3.4.8.2 Coordination with Regional Offices

3.4.8.2.1 It is necessary that the work carried out by the regional offices is reported to the Headquarters. A monthly report which depicts the entire area of activities for the month in which regional offices are engaged shall be sent to Headquarters by the 10th of the following month; however an executive summary on the activities of the month must reach the Headquarters latest by 4th of the month. It should include reporting all accidents, incidents and investigations carried out by the Regional Office.

3.4.8.2.2 The location of the accident or incident determines the Regional Office to respond. As a general rule, the Regional Office closest to the accident/incident site will dispatch Air Safety Investigators to the site.

3.4.8.2.2 However, when there are not enough personnel available at the Regional Office for one reason or the other, or the accident/incident site is not close to any Regional Office, the Director-General/CEO will appoint a Go-team from HQ to travel to the accident. The Air Safety Investigators from another region will be sent to complement, if necessary.

3.4.8.2.3 The management of investigation training of all ASIs (HQ and regional offices) is centralized and the training are implemented as at when due in accordance with the approved training plan.

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3.4.8.2.4 The officials from the Regional Office regularly attend meetings at the HQ and vice-versa.

3.4.9 Investigation Staffing Requirements

3.4.9.1 General

3.4.9.1.1 The NSIB (Establishment) Act has bestowed on the Bureau the mandate to conduct investigation into the circumstances of transport occurrences in and over Nigerian territory in order to identify and communicate factors that affect, or might affect transport safety.

3.4.9.1.2 in order to fulfil the mandate of the Bureau, it is imperative is to ensure the staffing of the Bureau with a sufficient number of Air Safety Investigators (ASIs) qualified, experienced and capable to accomplish wide range of activities related to conduct of investigation of aircraft accidents and incidents. These tasks and activities may include but not limited to making/amending the NSIB establishment Act, Regulations, instructional duties, developing and amending manuals, conduct of investigation, preparation and submission of reports, publication of final reports, conducting research, safety studies, attending meetings, training, conferences and workshops, etc.

3.4.9.1.3 The number of ASIs required is determined by the level of and the growth of aviation activity in the country. A periodic review will take place from time to time, as required, to determine whether or not there needs to be a change in the number of Investigators authorized.

3.4.9.1.4 The requirements, objectives, and procedures for operation of the Comprehensive Investigator Training is described in the Investigation Training Manual.

3.4.9.1.5 The Bureau adopts Workforce Evaluation Methodology to determine the investigation staffing needs. For this purpose, a methodology was developed and a Microsoft Excel Spread Sheet Form NSIB.01.99 was designed for use to perform the evaluation.

3.4.9.1.6 The General Manager, Engineering and General Manager, Operations are jointly responsible for the conduct of evaluation of investigation staffing level in all specialties or sections of the departments to determine the number of investigators required to ensure that the Bureau fulfills its objectives.

3.4.9.1.7 Under normal circumstances, the determination of the required investigation staffing level should be conducted in an interval of three (3) years. However in situations of need as a result of staff capacity building, acquired experience and the change of the level of activities, the exercise can be conducted anytime earlier than the three (3) year-interval.

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3.4.9.1.8 The evaluation exercise should be conducted at the beginning of the last quarter of each 3-year cycle. The number of additional ASIs determined in the evaluation process should form part of the Engineering and Operations departmental inputs into the budget of the Bureau so that provision is made to ensure the anticipated salaries, allowances, equipment, training needs and other resources required to induct the future new hire investigators are taken into account.

3.4.9.1.9 The General Manager, Engineering is responsible for maintaining the list of all Air Safety Investigators of the Bureau.

3.4.9.2 Workforce Evaluation Methodology

3.4.9.2.1 General Description

3.4.9.2.1.1 The Investigator Evaluation Methodology allows the Bureau to determine whether it has an adequate number of ASIs or needs to hire additional personnel.

3.4.9.2.1.2 The methodology is conducted to determine the ASI's requirements.

3.4.9.2.1.3 The Investigator Workforce Evaluation Methodology should be re-visited periodically to account for aviation system growth.

3.4.9.2.1.4 The Workforce Evaluation Methodology is conducted in 3 steps:

Step 1: Calculate total ASI's working hours available;

Step 2: Calculate total ASI's working hours required;

Step 3: Compare total ASI's working hours available and total ASI's working hours required.

3.4.9.2.2 Available working days per Investigator/employee

3.4.9.2.2.1 The following table below indicates the calculation of the number of available working days per year.

Item	# Days
(1) Annual calendar days	365
(2) Week-ends	104
(3) Public Holidays*	12
(4) Annual leave*	42
(5) Sick leave*	7
(6) Investigator Training (average)*	20
Available working days ((1) minus (2), (3), (4), (5), and (6))	180

Table 3-1: Assumptions



3.4.9.2.2.2 Determination of staffing needs template (excel sheet Form NSIB.01.99) is the used to determine the staffing needs following the steps 1 to 3 below.

3.4.9.2.2.3 The following are explanatory notes and assumptions of the process:

- (a) The method used is based on the types of task performed by the Bureau’s Investigators and the number of hours available for the performance of these tasks by an investigator in a year. The total number of hours required to perform all Investigators task for a year is divided by the number of hours available to an investigators in a year to obtain the minimum number of investigators required.
- (b) The number of hours available to an investigator is obtained by deducting the number of hours not used in the performance of work tasks such as weekends, leave hours holidays, training hours, from the number of hours in a year.
- (c) One year is taken as 365 days.
- (d) Examples of the hours not used in performing tasks are: Weekends Holidays, Training Hours, Annual Leave, sick leave, conference hours, lunch break.
- (e) Total number of weekends in a year is taken as 104 days.
- (f) 42 for Annual Leave days, 7 days for sick leave, 12 days for holidays, 10 training days and 10 conference days, 1 hour for lunch break, etc. have been assumed.
- (g) It is assumed that follow up confirmatory investigation is not done after routine mandatory investigations of a facility. Evidence of closure may be transmitted electronically.
- (h) **Ad-hoc** analysis of safety data and safety studies derived from various investigation occurrence report.
- (i) **Basic Assumption:** The basic assumption is that the Investigators all have the same capability that they are qualified to perform the range of task enumerated on the table. This is the basis for dividing the total tasks hours by the number of hours available to one Investigator in a year. It is recognized that there are specialized tasks or functions of the Bureau which are not assigned to Investigators in the Bureau by virtue of their training and background. These are specialized task and may include tasks material component and part testing or examination, etc. These tasks are not performed on a regular basis and therefore a rule of thumb method can be used in assigning number of specialists. Where it is found uneconomical to exclusively devote personnel on a full-time basis to perform these tasks due to size of the Bureau and the level of activity anticipated, existing Investigators will be multi-tasked. The number of hours required to perform these tasks will be factored into the number of hours for Investigation tasks in determining the number of Investigators required. Delegation of tasks to externally sourced qualified persons could be another option if there is marginal demand for such activities.

3.4.9.2.3 Determination of the staffing needs

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Step 1: Calculate total ASI's hours available

- a) There are two important components to calculating total ASI' hours available:
 - 1) The number of hours that each Investigator is available to conduct work functions;
 - 2) The total number of Investigators;
- b) To determine the number of work hours, assumptions must be made regarding:
 - 1) The number of hours each day each Investigator is expected to work (typically 8 hours per day with a break time of 1 hour/day);
 - 2) The number of hours annually an Investigator will work (typically between 1400 and 1500 hours);
 - 3) The number of work days annually the Investigator is in training, on vacation or unavailable to work for other reasons. For example, if it is assumed an Investigator works 7 hours per day, 5 days per week, and devotes 42 days to vacation and 20 days to training activities, the Investigator's available work hours is 7 hours x 180 work days = 1,260 hours.

Step 2: Calculate total investigators hours required:

3.4.9.2.3.1 First, it is necessary to calculate total Investigators hours required. This requires collection of three types of information:

- a) Determination of investigation related tasks and activities of the Bureau within a year such as:
 - 1) Develop and Review of the Primary legislation and the regulations;
 - 2) Develop and Review of investigation policy and procedures manual;
 - 3) Attend training courses, meetings, conferences and workshops;
 - 4) Conduct instructional duties;
 - 5) Uploading and downloading on ICAO OLF and related activities;
 - 6) Updating E-Library;
 - 7) Develop and review investigation related manuals;
 - 8) Develop and review training program;
 - 9) Develop and review training plans;
 - 10) Develop and review forms, checklists and job-aids;
 - 11) Conduct analysis of safety data;
 - 12) Conduct investigation of accident, if any;
 - 13) Conduct investigation of serious incidents/incidents;
 - 14) Responding to ICAO State Letters and Filing of Differences;
 - 15) Safety Recommendation follow-up
 - 16) Conduct research;
 - 17) Conduct safety studies;
 - 18) Preparation and submission of reports;
 - 19) Publish Final report
 - 20) Administrative activities.

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- b) Determination of the required number of days to accomplish each of the identified tasks/activities;
- c) Determination of the man-hours required to accomplish each of the identified tasks/activities;
- d) Considering the number days in a year;
- e) Considering annual leave days per year per investigator;
- f) Considering sick leave days per year per investigator;
- g) Weekend days per year;
- h) Considering lunch break per day;
- i) Considering the number and length of training courses, workshop, conferences, etc. in a year per investigator;
- j) Determination of available working days in a year per investigator;
- k) Determination of available productivity working hours in a day;
- l) Determination of available productivity working hours per investigator in a year;
- m) consideration of 30% unpredictable tasks/activities; and
- n) Determination of the total hours required to perform all the tasks/activities in a year.

3.4.9.2.3.2 Enter the information into Form Workforce Evaluation Worksheet an excel spreadsheet (see Form NSIB.01.99). The total number of annual hours required for each work function can be calculated by multiplying the times per year each work function is performed by the number of Investigator hours required to complete each work function.

NOTE:- The excel sheet is programmed to make the calculations automatically as soon as the rows are filled with the numbers agreed upon.

3.4.9.2.3.3 Calculate the total Investigators' hours required, then find the sum of the total number of hours required for each work function performed by the Department.

Step 3: Compare total hours available and total hours required:

3.4.9.2.3.4 Compare the Total Investigator Hours Available calculated in Step 1 to the Total Inspectors Hours Required Total Investigator Hours Available calculated in Step 2. If the Total Inspector Hours Required is less than the Total Investigator Hours Available, then the Bureau has sufficient staffing.

3.4.9.2.3.5 The assumption of the calculation is that 30% of the hours required to perform of all the investigation related tasks/activities is allocated to those unpredictable tasks that may be required to be undertaken by the Bureau's investigation staff to adequately support the routine Investigation program.

3.4.9.2.3.6 The output of the calculation is an overall approximation of the Investigation human resource requirement to fulfil the Bureau's objectives. This is expressed as the total number of Investigators required to deliver the Investigation related tasks/activities.

3.4.9.2.3.7 When the outcome of the calculation is:

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- a) a whole number and half e.g., 1.5, the figure will be rounded up to the next whole number e.g., 2.0 which implies the need for two investigation staff; and
- b) below a whole number and half e.g., 1.4 may not necessarily require two investigation staff but an investigator can be contracted to perform some additional specific tasks.

3.4.9.2.3.8 If, the final value obtained in the calculation is less than the number of existing investigators then the number of investigators is sufficient, then no further action will be required other than the General Manager, Engineering should within 2 days forward the result of the evaluation to the Directors of Engineering and Operations for their information.

3.4.9.2.3.9 On the other hand, if the value obtained in the calculation is greater than the the number of existing investigators, then additional investigators are required to be recruited.

3.4.9.3 Staffing Requirement Implementation Procedures

3.4.9.3.1 For the purpose of determining the number of qualified ASIs required to perform investigation related tasks/activities within the Bureau, the General Manager, Engineering assigned the coordinating role and is responsible for the conduct of the exercise.

3.4.9.3.2 Within the first week of the last quarter of each third fiscal year, the General Manager, Engineering should invite the General Manager, Operation for a meeting to:

- a) identify all investigation related commitments of the Bureau in line with its mandate, which should be based on the number of expected Investigation related tasks/activities to be conducted over a particular reporting cycle, typically one (1) year; and
- b) conduct the calculation to determine the investigation staffing level required to ensure the Bureau meets its objectives (described in 3.4.7.2 above).

3.4.9.3.3 A Microsoft Excel Spread Sheet Form NSIB.01.99 is used for this purpose.

3.4.9.3.4 The meeting will conclude and agree on the appropriate figures (values) to be assigned corresponding to tasks/activities and days/times enumerated above and then make entry into the rows of the template excel sheet Form NSIB.01.99.

3.4.9.4 Staffing Requirement Report

3.4.9.4.1 Upon determination that additional Investigators are required, the General Manager, Engineering should forward the report of the evaluation within 2 days, to the Directors of Engineering and Operations for concurrence. The report should provide specific recommendation to the management.

3.4.9.4.2 The two Directors Should jointly review the report and forward it to the Director of Human Resources for inclusion into the consolidated staffing requirement of the Bureau for the incoming fiscal year’s Budge of the Bureau for consideration and approval by the Management.

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3.4.9.4.3 Upon approval of the Budget for the incoming year, the Director of Engineering in coordination with the Director of Operations should within 7 days convene a meeting of supervisors/ heads of units within the Directorates to develop Job Descriptions (JD) for the additional prospecting new hire investigators, indicating job specifications, qualifications and experience requirements.

3.4.9.4.4 When the Job Descriptions are finalized, the Director of Engineering should immediately forward a request for the recruitment of addition investigators together with the JD to the Director-General for approval.

3.4.9.4.5 Upon approval, the Director-General will instruct the Director of Human Resources and Administration (DHR&A) to commence the recruitment process for additional investigators in line with the Bureau's Human Resources and Administration Policy Manual.

3.4.9.4.6 At the completion of the recruitment process, the General Manger, Engineering should include the newly recruited investigators into the the list of investigators of the Bureau.

3.4.9.4.7 The General Manager, Engineering should keep records of all transactions relating the evaluation process to determine the investigation staffing level in a file.

3.4.10 Job Descriptions of Investigation Personnel Cadres

3.4.10.1 General

3.4.10.1.1 A job description is essential to ensure clarity of why the role exists. It can be used:

- a) To provide the employee with the expectations that are required of them in the role;
- b) To provide enough detail to help the candidate assess if they are suitable for the position;
- c) To help formulate questions for the interview process;
- d) To allow the prospective employee to determine their role or standing within the structure of the organization;
- e) To assist in forming a legally binding contract of employment;
- f) To help set goals and target for the employee upon joining;
- g) To aid in the evaluation of the employee's job performance;
- h) To help formulate training and development plans.

3.4.10.1.2 The Directors of Engineering and Operations in coordination with the Director of Human Resources and Administration are responsible for developing Job descriptions (JDs) for advertisement of new positions in Bureau.

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3.4.10.1.3 All personnel assigned duties relating to conduct of aircraft accident and incident investigation shall sign their JD assigned to their job functions, qualifications, experience, skills, responsibilities, and so on. At any time a personnel changes position or job function, a new JD is developed for the new position/ job function by Human Resources Department in coordination with the Director of Engineering or Operations as appropriate. The new JD shall be signed by the personnel concerned.

3.4.10.2 Steps for Developing a Job Description

3.4.10.2.1 The following steps should be followed by the user department in coordination with the Department of Human Resource and Administration.

Step 1: Define the Job

3.4.10.2.2 The first step is to getting a clear understanding the job you want to fill and the tasks you need completed. A good place to start is to talk to the supervisor or person who the employee will be reporting to, and other employees who are working in the area. You should consider:

- a) what tasks you need the new person to undertake
- b) what skills and abilities are needed to perform the role
- c) whether they need any particular qualifications or experience required
- d) what responsibilities the new person will have.

Step 2: Decide on the Type of Employment

3.4.10.2.3 You will need to decide on the type of employment the job needs. That is, whether the position is full-time, part-time, fixed-term or casual. This is important because it will determine the employee's pay and conditions. You should determine:

- a) the number of hours needed to do the job
- b) how long the job will be for (indefinitely or for a specified time or task)
- c) whether the employee is a junior, apprentice or trainee.

Step 3: Create the Job Description

3.4.10.2.4 Once you have defined the role, you can use the information to develop a job description. The below has been colour coded to help you to complete it. Simply replace the <red> writing with what applies to your situation. Explanations and/or examples are shown in blue italics and should be deleted once you have finished the form.

Refer to Figure 3.4.1 below for the template of job description format.

3.4.10.2.5 Detailed procedures of developing and managing the JDs are in the Bureau's Human Resource and Administration Policy Manual.

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JOB DESCRIPTION
<p>JOB TITLE: <i><Role name> e.g. Data Analyst, Flight Recorder Specialist, etc</i></p> <p>EMPLOYMENT STATUS: <i><Type of employment> e.g. Permanent; Full-time; Part-time; Secondment, Casual</i></p> <p>REPORTS: <i><Who the employee will report to. e.g. Head of Safety Data, Research and Statistics; Head of Flight Recorder, Supervisor, etc</i></p> <p>SUPERVISES: <i><Who will report to the employee > e.g. junior Safety Data Analyst, Junior Research and Statistics officer, etc</i></p> <p>COORDINATES/ LIAIZE WITH:</p>
MAIN DUTIES/RESPONSIBILITIES:
<p><i><Outline the duties and responsibilities of the position></i></p> <p><i>e.g.</i></p> <ul style="list-style-type: none"> <i>• Download flight data recorder records</i> <i>• Analyze the data, including analysis of the data</i> <i>• Other tasks as directed by the Supervisor</i>
QUALIFICATION
<p>Qualifications: <i><What qualifications, licences or education level does the employee need?></i></p> <p><i>e.g.</i></p> <ul style="list-style-type: none"> <i>• B.Sc in Engineering; or</i> <i>• aircraft maintenance engineer's licence with Avionics ratings</i> <p>PROFESSIONAL QUALIFICATION:</p> <p>PROFESSIONAL AFFILIATION:</p> <p>Experience: <i><What type and how much experience is needed?></i></p> <p><i>e.g. 3 years previous experience in an similar role/aircraft maintenance</i></p>
SKILLS
<p><i><List skills needed for the job, including any technical or interpersonal skills></i></p> <p><i>e.g.</i></p> <ul style="list-style-type: none"> <i>• Data analytics</i> <i>• Intermediate to advanced Microsoft Office skills (Word, Excel, PowerPoint and Outlook)</i> <i>• Excellent verbal and written communication</i> <i>Organized and able to meet deadlines</i>
<p>ACKNOWLEDGEMENT:</p> <p><i>Date: ___/___/___</i></p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p>_____</p> <p><i>Employee Name and signature</i></p> </div> <div style="text-align: center;"> <p>_____</p> <p><i>Director-General/CEO. Name and Signature</i></p> </div> </div>

Figure 3.4-1 Template Job Description Form



3.5 ETHICS AND CODE OF CONDUCT FOR INVESTIGATORS

3.5.1 General

3.5.1.1 The Bureau's Human Resources and Administration Policy Manual provides details on the personal ethics and Conduct for the entire Bureau and this ethics and code of conduct for investigators is intended to supplement it.

3.5.1.2 In order to achieve the Bureau's mandate of conducting independent, thorough and impartial investigation of accidents and incidents, it is imperative that all employees of the Bureau, and in particular, Air Safety Investigators must conduct themselves in-line with this ethics and code of conduct most especially in relation to or during an accident or incident investigation. It has been prepared by the International Society of Air Safety Investigators (ISASI) and adopted by the Bureau in order to provide guidance to its employees on the principles of behavior at work. It is recognized that provisions of this code may not apply to all employees during the totality of their work activities. In so far as investigations are conducted for safety purposes, and this Code does not conflict with other codes of public service and professional behavior, Air Safety Investigators are expected to adhere to these ethics and Code of conduct. It is also recognized that operative words or phrases describing expected employee conduct are appropriate only if feasibility is assumed under the existent circumstances. Such an interpretation should be applied throughout this Code.

3.5.1.3 This code applies to all personnel of the Bureau, including personnel assigned duties relating to the conduct of investigation and are expected to be committed to a high degree of self-discipline and to a broader obligation than the ordinary adherence rules and regulations. The personnel must be aware that the application of these rules require a personal effort of interpretation and analysis of any situation.

3.5.1.4 Any violation of the code resulting in unacceptable or unbecoming behaviour shall expose the perpetrator to disciplinary sanctions.

3.5.1.5 The Director of Human Resources and Administration (DHR&A) is responsible for the application and enforcement of the ethics and the code of conduct and managing conflict of interest.

3.5.1.6 All personnel are to ensure compliance with the ethics and code of conduct and should refrain from any practices contrary to professional morality and ethics. The personnel should notify the DHR&A of any acts that contravene the requirements prescribed in this code.

3.5.1.7 The following nine (9) prioritized values are established to guide staff in the conduct of the business relating to carrying out of investigation. They are as follows:

- a) Integrity
- b) Impartiality/ objectivity

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- c) Logic
- d) Principles
- e) Accident prevention
- f) Competence
- g) Independence
- h) Good communication
- i) Confidentiality

3.5.2 Integrity

3.5.2.1 Each employee should at all times conduct his activities in accordance with the high standards of integrity required of his profession.

3.5.2.2 Therefore, each employee shall:

- a) Not attempt, or assist others to attempt, to falsify, conceal or destroy any facts or evidence which may relate to an accident.
- b) Not make any misrepresentations of fact to obtain information that would otherwise be denied to him.
- c) Be responsive to the feelings, sensibilities and emotions of involved persons, and shall avoid actions which might aggravate what may already be a delicate situation.
- d) Not divulge fragmentary or unsupported information concerning the accident to parties external to the investigation no matter how publicly important such parties may appear to be.
- e) Refrain from engaging in any activity that could create a conflict of interest or prevent them from fulfilling their duties and responsibilities objectively.
- f) Avoid actions or comments which might be reasonably perceived during the fact-finding phase of the investigation as favoring one party or another.
- g) Establish and adhere to the chain of authority with attendant responsibilities throughout the course of the investigation.
- h) Not attempt to profit, nor accept profit, other than by normal processes of remuneration for professional services.
- i) Remain open-minded to the introduction of new evidence or opinions as to interpretation of facts as determined through analysis, and be willing to revise one's own findings accordingly.
- j) Avoid any implication of professional impropriety by continuously applying the foregoing principles to one's own endeavors, and encouraging the application of these same principles to others associated with air safety investigation.

3.5.3 Impartiality/ Objectivity

3.5.3.1 Each employee should lend emphasis to impartial and objective determination of facts during investigations.

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3.5.3.2 Therefore, each employee shall:

- a) Ensure that all items presented as facts reflect honest perceptions or physical evidence that have been checked insofar as practicable for accuracy.
- b) Ensure that each item of information leading to fact determination be documented or otherwise identified for a reasonable time for possible follow-up by others.
- c) Use the best available expertise and equipment in determining the validity of information.
- d) Pursue fact determination expeditiously.
- e) Following all avenues of fact determination which appear to have practical value towards achieving accident prevention action.
- f) Avoid speculation except in the sense of presenting a hypothesis for testing during the fact-finding and analysis process.
- g) Refrain from release of factual information publicly except to authorized persons, by authorized methods and then only when it does not jeopardize the overall investigation.
- h) Handle with discretion any information reflecting adversely on persons or organizations and, when the information is reasonably established, notify such persons or organizations of potential criticism before it becomes a matter of public record.

3.5.4 Logic

3.5.4.1 Each employee should develop all accident cause-effect relationships meaningful to air safety based on logical application of facts.

3.5.4.2 Therefore, each employee shall:

- a) Begin sufficiently upstream in each sequence of events so as to ascertain practicable accident prevention information.
- b) Continue downstream in a sequence of events sufficiently to include not only accident prevention information but also crash injury prevention, search and survival information.
- c) Ensure that all safety-meaningful facts, however small are related, to all sequences of events.
- d) Delineate those major facts deemed not to be safety-related, explaining why they should not be considered as critical in the sequences of events.
- e) Be particularly alert to value judgments based upon personal experiences which may influence the analysis; and where suspect, turn to colleagues for independent assessment of the facts.
- f) Express the sequences in simple, clear terms which may be understood by persons not specializing in a particular discipline.
- g) Include specialist material supporting the analysis either in an appendix or as references clearly identified as to source and availability.
- h) Prepare illustrative material and select photographs so as not to present misleading significance of the data or facts thus portrayed.
- i) List all documents examined or otherwise associated with the analysis and include an index thereof.

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3.5.5 Principles

3.5.5.1 Each employee should respect and adhere to the principles on which the Bureau was founded and developed, as illustrated by the Bureau's establishment Act and the regulations.

3.5.5.2 Each employee shall:

- a) Promote accident investigation as a fundamental element in accident prevention
- b) Assist other employees to carry out their accident investigation tasks.
- c) Not use status to effect personal gain or favor.
- d) Not represent the Bureau or imply a position of the Bureau in public utterances on any issue unless prior written authority has been received from the Director-General/CEO or any officer assigned by him/her.
- e) Encourage uninhibited, informal interchange of views among employees; however, any sensitive information thus gained shall not be made public or transmitted to others without clear approval of the person from whom the information was gained.
- f) Have an obligation to improve the professional image of the Bureau, however, employees shall:
 - i. Refrain from unfounded criticism of officers of the Bureau either publicly or privately unless the matter is investigated thoroughly and brought to the attention of the management with reasonable time being allocated to review the situation and act accordingly.
 - ii. Refrain from public criticism of any fellow employee unless that individual has first been apprised of the alleged basis for that criticism and given an opportunity for rebuttal.
- g) Encourage and participate in the education, training and indoctrination of personnel likely to become involved actively in accident investigation.
- h) Develop and implement a personal program for a continually improving level of professional knowledge applicable to accident investigation.

3.5.6 Accident Prevention

3.5.6.1 Each employee should apply facts and analyses to develop findings and recommendations that will improve aviation safety.

3.5.6.2 Each employee should:

- a) Identify from the investigation those cause-effect relationships about which something can be done reasonably to prevent similar accidents.
- b) Document those aviation system shortcomings learned during an investigation which, while not causative in the accident in question, are hazards that may require further study and/or remedial action.

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- c) Communicate facts, analyses and findings to those people or organizations which may use such information effectively; such communication to be constrained only by investigation policies and procedures of the Bureau.
- d) Provide specific, practical recommendations for remedial action when supported by the findings of the accident having been investigated singly or as supported by other cases.
- e) Communicate the above noted information in writing, properly identified as a matter of record.
- f) Encourage retention of relevant investigation evidence within the aviation system in such a manner as to form an effective baseline for further investigation of the given accident and/or facilitate analysis in connection with future accidents.
- g) Demonstrate a respect for interpretation of facts by others when developing conclusions regarding a given accident and provide reasonable opportunity for such views to be made known during the course of the investigation.

3.5.7 Competence

3.5.7.1 Each employee should apply technical experience and recognized expertise in the field to perform their assignments.

3.5.7.2 Each employee should:

- a) Commit to render only services for which he/she has the recognized skills and qualifications
- b) Ensure that its integrity, professionalism and competence are at the centre of its decision-making
- c) To carryout professional tasks in accordance with the set rules
- d) To provide reasons for decisions and opinions in accordance with legal and regulatory requirements

3.5.8 Independence

3.5.8.1 Each employee should be free to express a professional opinion without external influence.

3.5.8.2 Each employee should:

- a) Carry out its activities without any external influence
- b) Avoid openly exposing political or religious affiliation or strictly personal opinions
- c) Avoid receiving instructions from structure other than hierarchical ones

3.5.9 Good communication skills and opinions

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3.5.9.1 Each employee should have ability to listen, understand and transmit information orally, in writing and with gestures.

3.5.9.2 Each employee should:

- a) Ensure that the person you are talking to is in a position to receive the information
- b) Confirm that the person transmitted has been received and understood by the interlocutor
- c) Listen actively and do not interrupt
- d) Present the results of the work in a clear, concise, constructive, complete and timely
- e) Adapt the tone and style to the audience
- f) Take into account the concerns of others
- g) Convey information clearly, tactfully and diplomatically

3.5.10 Confidentiality

3.5.10.1 Each employee should have the ability to protect and refrain from disclosing sensitive information obtained in the course of their work taking into account Non-disclosure clause in Chapter 5.12 of Annex 13 to the Convention on International Civil Aviation (the Chicago Convention).

3.5.10.2 each employee should:

- a) Use information obtained in the course of his or her professional activities with caution
- b) Avoid using confidential information for personal gain
- c) Avoid irresponsible, false or defamation statements
- d) Avoid disclosing or discussing any classified information or any to be “official use only”

3.6 CONFLICT OF INTEREST

3.6.1 General

3.6.1.1 The purpose of this chapter is to outline the process for the identification and management of actual, potential or perceived conflicts of interest, and the monitoring requirements once declared.

3.6.1.2 All staff of the Bureau shall comply with the provisions of the Bureau’s Ethics and Code of Conduct as in the Human Resource and Administration Policy Manual. A declaration of interests is initially filled in by each investigator at the start of his service for the Bureau and evaluated by the Director of Human Resources in coordination with the Director of Engineering and Director of Operations.

3.6.1.3 Letters of agreement to participate in the investigations are used by the Bureau Bureau during investigations to specify the obligations of the participants (seconded experts, accredited

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representatives, advisers, observers and experts), relating in particular to conflicts of interest. The model letters are contained in Appendix E of this Manual).

3.6.1.4 The assessment of possible conflicts of interest concerning its staff (full-time or part-time) and experts proposed by other national bodies before their secondment for an investigation is carried out in accordance with the Ethics and Code of Conduct.

3.6.1.5 To reduce the risk of conflicts of interest, each investigative group set up during an investigation is led by an investigator from the Bureau.

3.6.2 Description of Conflict of Interest

3.6.2.1 Conflicts of Interest occur where staff with a particular interest could be influenced, or might appear to be influenced, in the performance of their duties. Staff are required to disclose and obtain evaluation of any conflict of interest.

3.6.2.2 Conflict of Interest is defined as any relationship that might influence an investigator to act, either knowingly or unknowingly, in a manner that does not hold the safety of the travelling public as the primary and highest priority.

3.6.2.3 All contracted or subcontracted investigators are held to be in a “perceived conflict of interest” in that they are simultaneously employees or agents (regular or contract) of a company and delegates of the Director-General/CEO when performing their investigation duties. To avoid a “real conflict of interest”, it is imperative that investigators strictly adhere to the policy and guidelines contained in this and other applicable manuals.

3.6.2.4 When conducting investigator duties, the following are examples (not exhaustive) of situations that could be considered as possible conflict of interest for the investigator:

- a) Level of the investigator’s financial interest in the company being investigated;
- b) The investigator’s direct involvement in company ownership;
- c) The investigator owning a substantial number of voting shares of the company;
- d) The investigator having family ties with company owners; and
- e) Any privileges or favors which could bias the investigator’s ability to conduct his or her duties.

3.6.2.5 In order to determine whether an investigator’s conflict of interest is real or perceived, each investigator shall declare any conflict of interest of which they have knowledge and shall disclose any change to their status in this regard. The results of this shall be recorded in the investigator’s file.

3.6.2.6 The final authority for deciding whether there is any conflict of interest that might affect the investigator’s ability to conduct his duties in an impartial manner rests with the Director-General/CEO.

3.6.2.7 Should any investigator come into a situation of conflict of interest, a full report of the circumstances shall be immediately submitted to the Director-General for review.

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3.6.3 Scope

The procedure applies to employees of the Bureau at all times while carrying out official duties or otherwise representing the the Bureau.

3.6.4 Principles

3.6.4.1 The Bureau has a responsibility to ensure that its official activities and those of its staff conform to acceptable standards of integrity and good conduct. It recognizes that a well-established system for identifying, declaring and managing conflicts of interest increases its public accountability and reduces the risk of corruption, misconduct and bias in its operations and decision-making processes.

3.6.4.2 The Bureau also recognizes that conflicts of interest are not unusual in the exercise of public responsibility, and cannot always be avoided.

3.6.4.3 The Bureau expects:

- a) Staff will not allow their external, personal or financial interests or their duties to any external entity to compromise their duties, obligations and responsibilities to the Bureau.
- b) All conflicts of interest, regardless of their character or level, will be identified, declared and managed.
- c) Any gifts/donations/benefits/sponsorship/hospitality or service will not be accepted by staff if it might be reasonably interpreted as intended to influence current or future behaviour of staff or Directorate of the Bureau. The preservation of independence is a paramount consideration and should be made clear to potential sponsors/donors.
- d) Where a conflict of interest occurs, the interests of the Bureau will be balanced against the interests of the staff member. Unless exceptional circumstances exist, the balance of interests will be resolved in the Bureau's favour.
- e) Managers/Supervisors, when notified of a conflict of interest, will deal promptly with the conflict as per the procedure in this chapter and put in place arrangements that protect the integrity of the staff member who has declared the interest and the Bureau's processes and decision-making.

3.6.5 Roles and Responsibility

3.6.5.1 Senior management (Director-General/CEO and Directors) are responsible for:

- a) understanding and complying with this Policy and the Procedures;
- b) being aware of areas of conflict of interest within their area of responsibility, assessing risks and advising the relevant Responsible Officer;

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- c) registering their Declaration of Interests, where applicable, on initial appointment and reviewing these annually;
- d) assisting staff who have queries about actual, perceived or potential conflicts of interest.

3.8.5.2 The Director Human Resources is responsible for:

- a) maintaining a central private and confidential register of disclosures;
- b) supporting the Senior Management to manage any potential or declared conflicts of interest in their respective functional areas;
- c) reviewing and ensuring that management of conflicts of interest for their respective areas complies with the policy and procedures of this section.

3.8.5.3 Other Staff are responsible for:

- 1) understanding and complying with this policy and the procedures;
- 2) assessing their own private and personal interests and whether they conflict or have the potential to conflict with the Authority’s interests, including their own duties as staff members;
- 3) disclosing and managing any actual, perceived or potential conflicts of interest in accordance with the procedure.

3.6.6 Types of Declaration of Interests

3.6.6.1 Annual Declaration of Interests

3.6.6.1.1 Individuals who are requested to submit a Declaration of Interest shall declare any interest belonging to the categories defined in paragraph 2.3 with respect to all activities in which they are involved or have been involved during the five years preceding the submission of the Declaration of Interest and which fall within the Bureau’s remit.

3.6.6.1.2 Individuals shall indicate whether interests declared are “current” (when activities are currently ongoing) or they refer to a “past period” (when they are no longer ongoing but have been completed during the five years preceding the submission of the Declaration of Interest).

3.6.6.1.3 Details on the name of body or organization of relevance for each declared interest shall be given. This is to be interpreted as meaning the full name, location of the seat (town and country) and nature (private or public).

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3.6.6.1.4 Details on the subject matter of each declared interest shall be given, indicating the domain in which the activity is, or was, carried out and clarifying the interest and role of the concerned body or organization in the matter and the role of the concerned person.

3.6.6.1.5 Individuals subject to this procedure shall update and resubmit to the Bureau their Declaration of Interest without delay following any change in their interests.

3.6.6.2 Specific Declaration of Interests

3.6.6.2.1 Each staff shall determine, in line with the applicable the Bureau rules, policies and procedures, where it is deemed necessary to request a Specific Declaration of Interests or a Declaration of non-Conflict of Interest related to an activity to be performed by a Bureau staff or by an external expert within the process he/she is responsible of, and when it is not already covered by the Annual Declaration of Interests.

3.6.6.2.2 The Specific Declaration of Interest shall be filled before the starting of the activity.

3.6.6.2.3 When a staff identifies an activity requesting a specific Declaration of Interests, it shall be added in the register of conflict of interest.

3.6.7 Identifying Conflict Of Interest

3.6.7.1 Staff must ensure that any conflicts between their personal or private interests and their Bureau duties are promptly identified and managed. A conflict may arise if an individual could be influenced, or appear to be influenced, by a private interest or conflict of commitment when carrying out their duties and responsibilities as a staff member of the Bureau.

3.6.7.2 Staff should consider whether a reasonable, disinterested person would think private relationships or interests could conceivably conflict or appear to conflict with the staff member's duties.

3.6.7.3 In the event that there is uncertainty about whether a conflict of interest exists, in accordance with the policy definitions, advice must be sought from the staff member's Director or a Responsible Officer.

3.6.7.4 Disclosures about actual, perceived or potential conflicts of interest must be made as soon as reasonably practicable. The primary obligation of the staff member being to disclose in advance, to the staff member's Manager/Supervisor using the Declaration of interest Form (NSIB.HR.09) at Human Resource and Admin Policy Manual.

3.6.7.5 If a management action beyond registering the disclosure is deemed to be required, this will be advised to the staff member, and an appropriate management option to resolve the conflict of interest will be agreed. Responsible Officers may provide advice on the actions most appropriate.

3.6.7.6 Completed Declaration of Interests will be forwarded to the relevant Director of the relevant Directorate in which the staff member works. The Director will determine whether the procedure to manage the conflict of interest is adequate and will, if necessary, impose additional measures.

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3.6.7.7 A declaration only occurs when submitted on the Declaration Form. The fact that a matter may be known by others, or is considered public knowledge, is no substitute for formal declaration to the Bureau. Where a Director/Supervisor becomes aware of a conflict of interest they are to remind staff of their obligation to submit a Declaration Form.

3.6.7.8 Once management action has been finalized, the completed Declaration Form is to be provided to the Human Resource Director for recording in the appropriate Conflict of Interest Register.

3.6.8 Mechanism to Disclose Existent or Potential Conflict of Interests

3.6.8.1 Disclosure of information

3.6.8.1.1 The identification and handling of conflict of interest as defined in this procedure shall be based on the evaluation of Declaration of Interests submitted by the concerned persons and staff as specified in the present policy.

3.6.8.1.2 The following general principles shall be applicable to all persons subject to the present procedure:

- a) The responsibility for a complete and truthful declaration shall lie exclusively with the person completing the declaration;
- b) Only activities having taken place in the five years preceding the submission of the declaration shall be declared. This shall cover also activities from the close family of the Bureau staff.

3.6.8.1.3 All safety Directors, Head of Departments and investigators shall submit a completed Declaration of interest annually.

3.6.8.1.4 for which the completion of the Declaration of Interest is required is established and published by the Bureau. As a minimum, the list shall include Professional Staff, Investigators and Experts, and any other post that has been established by the Director-General/CEO.

3.6.8.2 Assessment of Declaration and Decision

3.6.8.2.1 First Annual Declaration of Interests

3.6.7.2.1.1 Before the appointment, the first Declaration of Interest shall be screened by the HR Department in coordination with the Head of Department. When a potential or an actual conflict of interest is raised, this shall be highlighted to the Director-General/CEO. A reasoned opinion may be requested from the HR in this context.

3.6.9.2.1.2 The Director-General/CEO may decide to take any measure considered appropriate to ensure the potential conflict of interest does not occur or to remedy to the actual conflict of interest.

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3.6.8.2.2 Yearly review of the Annual Declaration of Interests

3.6.8.2.2.1 The Annual Declaration of Interests of staff members shall be screened by the responsible department manager. When the department manager identifies a potential or an actual conflict of interest, this shall be highlighted to his or her hierarchical superior. If the superior confirms that there is a potential or an actual conflict of interest, he or she shall bring the matter to the attention of the Director-General/CEO. A reasoned opinion may be requested from the Staff Ethical/Disciplinary Committee in this context.

3.6.8.2.2.2 At all stages, the person shall be kept informed of the ongoing assessment of his or her Declaration of Interest. The supervisor may hear the concerned staff in order to facilitate the assessment.

3.6.8.2.2.3 The Director-General/CEO, after having heard the member of staff concerned if necessary, may take any measure considered appropriate to ensure the potential conflict of interest does not occur or to remedy to the actual conflict of interest. The Director may also grant a waiver as per paragraph 3.3.

3.6.8.2.2.4 When, as a result of the procedure above, a staff member is transferred to another Department or Directorate, his or her Declaration of Interest shall be updated and submitted to his or her new head of department for screening.

3.6.8.2.2.5 The procedure laid down above applies to updated Declaration of Interests. Any change regarding interests already declared shall result in a swift update of the Declaration of Interest, which shall be submitted to the responsible department manager without delay. The procedure laid down above applies to updated Declaration of Interests.

3.6.9 Managing Conflict of Interest

3.6.9.1 The management of conflicts of interest will be determined by the relevant senior officer to which the conflict of interest was reported or declared. The options to manage conflicts include:

a) Restrict. Where restrictions are placed on the staff member’s involvement in the matter. Restriction is often the most appropriate management strategy when the staff member can be effectively separated from parts of the activity or process and the conflict of interest is not likely to arise frequently. This means: non-involvement in any critical criteria setting or decision-making role in the process concerned; refraining from taking part in any debate about the issue abstaining from voting on decision proposals; withdrawing from discussion of affected proposals and plans; having restricted access to information relating to the conflict of interest; being denied access to sensitive documents or confidential information relating to the conflict of interest.

b) Recruit. Where a person without Interest (a third party or probity adviser) is used to oversee part or all of the process that deals with the matter. Recruiting strategies are most useful

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where it is not appropriate or desirable for the staff member, as the individual with the conflict of interest, to remove themselves from the decision-making process. This is particularly relevant if the staff member’s particular expertise is necessary and genuinely not easily replaced. Increasing the number of people sitting on decision-making committees to balance the influence of a single member who may have a conflict of interest but who has some special reason to remain on the committee may also be a strategy.

c) Remove. Removal strategies will be most appropriate for ongoing serious conflicts of interest where ad hoc restriction or recruitment of others is not feasible or appropriate. Such strategies aim to remove the staff member, as the individual with the conflict of interest, from all duties related to the conflict of interest for as long as the conflict of interest exists. Removal includes abstaining from any formal or informal discussion about the matter and being removed from the situation where the employee may still exert, or be perceived to exert, a covert influence on decisions or actions taken in the matter.

d) Relinquish. Where the staff member relinquishes the private interest that is creating the conflict. There may be occasions when the staff member’s commitment to their the Bureau role outweighs their attachment to their private interest. They may therefore prefer to relinquish the relevant private interest rather than radically change their work responsibilities or environment.

e) Resign. Where the staff member resigns from their position with the Bureau; this is the most extreme solution to a serious conflict of interest. This would only be relevant where the staff member cannot or will not relinquish their conflicting private interest when changes to their work responsibilities or environment are not feasible and the conflict of interest and its potential or perceived effects are of high risk or high significance.

3.6.10 Monitoring Conflict of Interest

3.8.10.1 All declared conflicts of interest must be reviewed by the staff and their Manager/Supervisor on at least an annual basis to ensure that the information remains correct, and that the management responses continue to be appropriate and effective.

3.8.10.2 Any change in the arrangements (including when the conflict is no longer in place), must be notified immediately to the Director-CEO as the relevant senior officer and an updated Declaration of Interest provided to the Director of Human Resource and Admin to update the conflict-of-interest register.

3.8.10.3 A template form (NSIB.HR.11) for the Declaration of interest register is in Human Resource and Admin Policy manual.

3.6.11 Measures to Avoid Conflict of Interest for Seconded Experts

For the purpose of this policy, the Bureau has identified the following categories of external expert to whom this policy is also applicable as follows:

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3.6.11.1 *Seconded National Expert (SNE)*

3.6.11.1.1 When the Bureau requires an expert from the NCAA to assist it in the conduct of an investigation of aircraft accident or incident, the Director-General/CEO shall make prior arrangement with the identified agency beforehand.

3.6.11.1.2 The Director-General/CEO has entered into memorandum of understanding (MoU) with Nigeria Civil Aviation Authority (NCAA) for secondment of its expert(s) to assist in the conduct of aircraft accident or incident investigation. The MoU contains provisions to ensure that:

- a) The NCAA should provide expert that meets the technical qualification, industry/investigation experience, specialty and training required by the Bureau;
- b) Ensures that the NCAA and the nominated expert does not have potential or real conflict of interest with regards the organizations involved in the occurrence being investigated; and
- c) The expert is relieved from his/her regular official duties with NCAA for the entire duration of his/her participation in the investigation.

3.6.11.1.3 The Investigation Training Coordinator should liaise with the NCAA to obtain list of potential candidates for secondment and enlist them into the Bureau's training plans in order to ensure the NCAA experts maintain proficiency in accident investigation.

3.6.11.1.4 At anytime the need for an expert from NCAA arises, the Director-General/CEO will make a written request to the NCAA indicating the level of expertise required and the identity of the organization(s) and aircraft that are involved in the occurrence under investigation.

3.6.11.1.5 Upon release of the expert by NCAA and arrival to the Bureau, he/she will submit to the Human Resources Department his/her release letter, including statement/ NCAA Declaration Form of the absence of conflict of interest with the duties to be performed at the Bureau.

3.6.11.1.6 The Director of Human Resources and Admin in coordination with the Investigator-in-charge and Director of Engineering or Director of Operations as appropriate shall review the experts resume to ensure the requirements to participate in the investigation and the Bureau's conflict of interest policy has been met.

3.6.11.1.7 The seconded expert shall complete and sign the following documents:

- a) Declaration of Interest Form NSIB.HR.09
- b) Letter of Agreement to participate in the investigation
- c) Investigation participant credential request Form NSIB.01.13 and attach passport photo

3.6.11.1.8 The Director of Human Resources in coordination with the Directors of Engineering and Operations will conduct review and analysis of the above documents. Upon satisfactory outcome of the review, will forward recommendations to the Director-General/CEO for approval.

When approved, a credential together with the letter of agreement detailing rights, responsibilities and obligations is issued to the seconded expert.

3.6.11.1.9 Thereafter, the IIC of the investigation will brief to the secondee on the NSIB Establishment Act, Civil Aviation (Investigation of Air Accidents and Incidents) Investigation, the Bureau's Ethics and Code of Conduct, Investigation Policy and Procedures and other relevant guidance to assist the secondee when participating in the investigation.

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3.6.11.1.10 If at anytime during his/her participation in the investigation, the IIC has concern that the seconded expert is not complying with the terms and conditions of participation in the investigation, or that a conflict of interest situation occurs or becomes apparent, he/she shall be immediately removed from the investigation. The seconded expert shall report to the Director of Human Resources and Administration for disengagement and handover of the Bureau’s documents in his/her possession. The seconded expert is formally returned to NCAA with a request for a replacement, if the need still exists.

3.6.12 Register

A common mechanism for managing potential conflicts of interest is to require certain employees to register their pecuniary and non-pecuniary interests that may in the future conflict with some aspect of their work. This requirement will be restricted to senior management in position of Director and above who are considered to be at higher risk of encountering conflicts. Senior management will update annually their Declaration of Interests Form. The registration or declaration of conflicts of interest does not in itself necessarily resolve the conflict. Additional measures to positively resolve or manage conflicts of interest should also be considered.

3.6.13 Failure to Declare a Conflict of Interest

3.6.13.1 Failing by an employee of the Bureau to comply with the provision of this Procedure, including refusal to take any reasonable action as directed, to resolve a conflict of interest may constitute misconduct or serious misconduct, which may result in disciplinary action or termination of employment.

3.6.13.2 Failing by an external seconded to the Bureau to comply with the provision of this Procedure, including refusal to take any reasonable action as directed, to resolve a conflict of interest may constitute misconduct or serious misconduct, which may result in termination of of the secondment arrangement. In this case, the IIC shall remove the seconded expert from further participation in the investigation and in coordination with the Director -f Human resources report the matter to the Director-General. The Director-General shall immediately submit a written to the donor organization and request a replacement of the seconded expert as soon as practicable.

3.6.14 Training and Information

3.6.14.1 Newly recruited employees and external expert seconded to the Bureau to participate in the conduct of investigation shall be briefed on the Code of Conduct during the induction training.

3.6.14.2 The briefing shall cover all aspects implemented by the Bureau to manage the area of conflict of interest at the organization as defined in this policy.

3.7 SUMMARY

It is the policy of the Bureau and its investigation teams to meet the requirements specific to this chapter to ensure that the sole purpose of investigations is to prevent future accidents. Any judicial or administrative proceedings to apportion blame or liability shall be separate from the

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Bureau's investigations. The Bureau and its investigation teams shall have functional independence in the conduct of an investigation and unrestricted authority over its conduct, with the intent that any appointed investigation team can withstand interference or pressure from any source while guided by the ethics and code of conduct for investigation.

PLANNING

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CHAPTER 4

4.0 PLANNING AND PREPARATION FOR INVESTIGATION

4.1 GENERAL

4.1.1 In order to conduct proper investigations, the managers and Air Safety Investigators of the Bureau must be fully prepared and must have a plan of action before an accident or incident occurs. Pre-investigation planning and preparedness involves several elements, including:

- a) establishing the legislative framework and guidance materials, functional organizational structures, access to sufficient funding;
- b) documented policies, procedures and checklists required for investigation;
- c) define the responsibilities of the investigators;
- d) a plan for sufficient and experienced staffing of key positions on an investigation team, and determining internal competencies and plan to acquire additional resources to fill any identified gaps. It is also important to provide adequate training of personnel and to provide the appointed Air Safety Investigators with the necessary tools, investigation equipment and personal protective equipment in order to meet health and safety requirements;
- e) provide investigation field kits and personal protective equipment,
- f) enter Memorandum of Understanding (MoU) with other Nigerian government and aviation industry organizations, as well as aircraft accident investigation authorities in other States, as a means to obtain assistance in the form of qualified Air Safety Investigators, specialists and facilities when required. It is important to have temporary arrangements in place for the secondment of additional staff from other Nigerian government and industry organizations under some circumstances. Such external experts should be relieved of their regular duties for the duration of the investigation or as applicable, take necessary measures to avoid possible conflict of interests.

4.1.2 Proper planning and preparedness are essential in facilitating the prompt arrival of Air Safety Investigators at an accident site and have considerable bearing on the efficiency of the investigation.

4.2 CRITERIA FOR THE SELECTION, TRAINING, APPOINTMENT AND AUTHORIZATION OF AIR SAFETY INVESTIGATORS

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4.2.1 Selection criteria

4.2.1.1 Investigator qualifications

4.2.1.1.1 It is the policy of the Bureau to follow the guidance contained in ICAO Circular 298 regarding selection, appointment and training of Air Safety Investigators as detailed in the Bureau’s Investigation Training Manual.

4.2.1.1.2 Basic knowledge is important and allows Air Safety Investigators to make the connection between areas of aviation, such as aircraft operations, aircraft maintenance and continuing airworthiness, air traffic management, human factors, cabin safety, etc.

4.2.1.1.3 To be eligible for the function of Air Safety Investigators, the candidate must have at least one of the following qualifications:

- a) senior aviation technician or equivalent;
- b) aeronautical engineer or equivalent;
- c) professional license in aeronautics (aeronautical maintenance technician, technical operations officer, air traffic controller; cabin crew, technical flight crew);
- d) human factors specialist.

4.2.1.2 Experience and technical skills of the Investigator

4.2.1.2.1 The selection criteria for Air Safety Investigators are contained in the Human Resource Policy and Administration Manual.

4.2.1.2.2 While experience is important, it does not necessarily guarantee that the candidate will make a competent investigator. Investigating requires a different set of skills, many of which will be acquired over time. To this end, the Bureau implements its policy, programs and training plans, contained in the Human Resource Policy and Administration Manual.

4.2.1.3 Investigator Attributes

4.2.1.3.1 In addition to technical skills and experience, the interviewer must possess certain personal attributes. Some of its attributes may manifest as observable behaviors attributed to the interviewer’s attitude.

4.2.1.3.2 These qualities include:

- e) integrity and impartiality in recording the facts;
- f) the ability to analyze facts logically;
- g) perseverance in pursuing investigations, often under difficult or trying conditions; And
- h) tact in dealing with a wide range of people who have been affected by the traumatic experience of an aviation accident or incident.

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4.2.1.3.3 In the exercise of his duties, the investigator complies with the Bureau’s ethics and code of conduct contained in the Human Resource Policy and Administration Manual.

4.2.1.4 Responsibility of the Air Safety Investigator

4.2.1.3.4 Since the outcome of an accident/incident investigation is highly dependent on the knowledge, skills and attitude of the investigators assigned to the investigation, they must be able to:

- a) propose to the management of the Bureau the scope of the investigation appropriate to the circumstances of the accident/incident and the lessons that can be drawn from it for the improvement of aviation safety;
- b) apply aircraft accident/incident investigation techniques;
- c) understand aircraft operations and relevant technical areas of aviation;
- d) obtain and manage technical assistance and resources necessary for the investigation;
- e) collect, document and preserve evidence;
- f) identify and analyze relevant evidence to determine causes/contributing factors and, where appropriate, make effective safety recommendations; And
- g) write the final report that meets the requirements in force.

4.2.1.3.5 In accordance with Annex 13 and NSIB (Establishment) Act, the investigators of the Bureau are notably authorized to:

- a) have immediate unrestricted access to the site of the accident or incident as well as to the aircraft, its contents or its wreckage to carry out any useful findings on site and, if necessary, take any measures likely to ensure the preservation of the evidence
- b) have immediate access to the contents of on-board recorders and technical devices recording data, in particular the parameters useful for understanding the causes and circumstances of the accident or incident, and proceed to their use
- c) take, for the purposes of examination or analysis, the debris, fluids, parts, organs, assemblies or mechanisms that they deem appropriate to contribute to the determination of the circumstances and causes of the accident or incident, when no investigation or judicial inquiry has been opened.
- d) proceed, with the agreement of the public prosecutor or the investigating judge, to the removal, for the purposes of examination or analysis, of debris, fluids, parts, organs, assemblies or mechanisms that they consider appropriate to contribute to the determination of the circumstances and causes of the accident or incident, when an investigation or a judicial inquiry has been opened.
- e) meet any person concerned and obtain, without professional secrecy being able to oppose them, communication of any information or any document concerning the circumstances, companies, organizations and equipment in connection with the accident or incident and concerning in particular the construction, certification, maintenance, operation of equipment, preparation of transport, operation, information and control of the transport vehicle(s) involved

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and request the communication of any information or any document of a personal nature concerning the training, qualification, ability to drive personnel or control of these vehicles s.

4.2.1.3.6 Disclosure of certain documents collected for purposes other than accident and incident investigation is prohibited, unless the judicial authority determines that their disclosure outweighs the negative national and international impact that such action may have on this investigation or any future investigation. He coordinates with the judicial authorities when an investigation or judicial information is opened on the same security event.

4.2.1.3.7 The application of the balancing criterion by the Director-General/CEO takes into account the following:

- a) the purpose for which the item was created or produced;
- b) the use that the applicant intends to make of the element;
- c) whether disclosure or use of the material will adversely affect the rights or interests of any person or organization;
- d) whether the person or organization to whom the material relates has consented to the making available of it;
- e) whether sufficient safeguards are in place to limit further disclosure or use of the material;
- f) whether the item has been or can be de-identified, summarized or synthesized;
- g) if the provision of the item is urgent to avoid a serious risk to health or life;
- h) whether the item represents sensitive information or information to which access should be restricted;
- i) if the element reasonably suggests that the accident or incident was caused by an act or omission considered, according to the regulations in force, as equivalent to cases of gross negligence or willful misconduct, or having been carried out with criminal intent.

4.2.1.3.8 During an investigation, the investigator may in particular be assisted by specialists in the following fields:

- a) technical operation of aircraft (ground and flight);
- b) airworthiness of aircraft;
- c) aircraft structure;
- d) aircraft system;
- e) cabin security;
- f) aircraft engine;
- g) air traffic;
- h) meteorology;
- i) air navigation equipment;
- j) human factors;
- k) flight recorders;
- l) aircraft construction;
- m) forensic medicine, aeronautical medicine, pathology;
- n) psychology and social sciences;
- o) communication.

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4.2.2 Training, Appointment and Authorization of Air Safety Investigator

4.2.2.1 General

4.2.2.1.1 The training policy, program and plans and the technical staff training record keeping system are described in the Bureau’s Investigation Training Manual.

4.2.2.1.2 Following their appointment and completion of appropriate training, investigator receives an investigator’s credential. The investigator credential is a property of the Bureau and must be returned when the holder is relieved of his/her investigation duties or is on another assignment that may cause conflict of interest during the investigation.

4.2.2.137 in addition to this manual, the detailed procedures governing the issuing, suspending and withdrawing as well as the method for checking the validity of investigator credential are described in the Human Resource Policy and Administration Manual relating to the accreditation of investigators and participants in the investigation.

4.2.2.2 Investigator Credential

4.2.2.2.1 Requirements for Investigator Credentials

4.2.2.2.1.1 The investigator’s credential allows the investigator to exercise the powers, obligations, responsibilities and duties of investigation provided by the NSIB (Establishment) Act and the regulations in force.

4.2.2.2.1.2 The credential issued to investigators shall:

- a) Make reference to the section of the NSIB Establishment Act that empowers the NSIB and its investigators to have unhindered access and control over aircraft accident/incident sites, wreckage and material evidences.
- b) Display photo of the holder
- c) Validity date
- d) Signature of the approving authority
- e) Name, designation and signature of the holder
- f) Contact information of the issuing authority

4.2.2.2.1.3 Accredited Representatives taking part in an on-site investigation receive credential and a letter of accreditation from the Director-General/CEO, which deals with safety at the accident/incident site and confidentiality obligations.

4.2.2.2.1.4 All participants in the investigation conducted by the Bureau (accredited representatives, technical advisers, observers, etc.) on site shall receive a credential and a letter of agreement to participate from the Director-General/CEO containing their rights and obligations.

4.2.2.2.1.5 There are three categories of investigator credentials:

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- a) Trainee-investigator Credential issued to developmental investigator who is yet to complete the core investigator training courses. However, completion of initial investigators training course suffices for the issuance of the trainee-investigator credential. It is used to provide the trainee access to accident site/ premises for the purpose of OJT;
- b) Investigator Credential issued to trained and qualified investigator; and
- c) Other Credential issued to accredited representative, adviser, observer, expert, seconded expert, etc.

4.2.2.2.1.6 The credential authorizes the investigator to have uninterrupted access to accident site/ premises to perform his/her duties as empowered by the NSIB (Establishment) Act. The Air Safety Investigator should hang the credential on his body that is visible to approaching person.

74.2.2.2.1. Investigator should be readily identifiable to the public, law enforcement officials and employees of other government agencies. They should be provided with appropriate government-issued outerwear identifying them as air safety investigators. They should be provided with an official government-issued photo identification that attests their role as air safety investigators.

4.2.2.2.2 Trainee-investigator Credential

4.2.2.2.2.1 Trainee-Investigator Credential is issued to a trainee-Investigators who is yet to complete the investigator training courses, including Initial and Basic and Advanced aircraft accident investigation training.

4.2.2.2.2.2 Requirements for the acquisition of a Trainee-investigator Credential:

- a) Must be a Bureau’s personnel assigned aircraft accident and incident investigation duties; and
- b) Must have completed Indoctrination and Initial Investigation Training in accordance with the Bureau’s Investigator Training Policy.

4.2.2.2.2.3 Scope of Responsibility:

- a) Assigned to duties of a Trainee -investigator as specified in the Job Descriptions;
- b) Assist investigator in discharging investigation duties;
- c) Perform any other lawful duty assigned and supervised by an Investigator of the Bureau;
- d) Shall be accorded any assistance to facilitate the performance of his/her official duties.

4.2.2.2.3 Colour Features of Trainee-investigator Credential

The color for Trainee-investigator’s Credential shall be mainly **ORANGE** for the **TITLE** and **VALIDITY** sections with features as shown in the template below:

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4.2.2.2.4 Investigator Credential

4.2.2.2.4.1 Investigator Credentials are only issued to Trained and Qualified Investigators.

4.2.2.2.4.2 Requirements for the acquisition of an Investigator Credential:

- a) Must be a Bureau’s personnel assigned aircraft accident and incident investigation duties; and
- b) Must have completed Indoctrination, Initial Investigation Training and Basic Aircraft Accident Investigation Training courses, including On-the-Job-Training (OJT) in accordance with the Bureau’s Investigators’ Training Program.

4.2.2.2.4.3 Scope of Responsibility:

- a) Assigned to duties of an Investigator as specified in the Job Descriptions;
- b) Shall be accorded any assistance to facilitate the performance of his/her official duties;
- c) Perform any other lawful duty assigned by the Bureau.

4.2.2.2.5 Color and Features

The color for Aircraft Accident Investigator credential shall be mainly **RED** for the **TITLE** and **VALIDITY** sections with features as shown below:

4.2.2.2.6 Other Credentials

The Bureau also issues Credentials to other participants of the investigation it conducts such as Accredited Representatives, Advisers, Experts, Specialists, seconded expert, Participants and Observers. The Credential are normally accompanied with the Letters of Acceptance or Agreement. The Credentials should be returned to the Investigator-in-charge (IIC) upon completion of the investigation or when the participation of such holder of the credential in the investigation ends, or no longer required/suspended or terminated.

4.2.2.2.7 Colour Features

The color for other participants’ Credentials shall be mainly **BLUE** for the **TITLE** and **VALIDITY** sections with features as shown below:

4.2.2.2.8 Issuance, Currency, Lost, Stolen, or Damaged, Re-issue and Surrender of Investigator Credential

4.2.2.2.8.1 The Director of Human Resources and Administration is responsible for the issuance, control and overall management of all investigator credential.

4.2.2.2.8.2 The Investigator credential is a one-part credential consisting of the authority and including a photograph, title of the holder, and has signature of the approving authority.

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4.2.2.2.8.3 Upon completion of required training, the applicant completes the Request for Investigator’s credential form marked NSIB.01.13 in this manual, attach supporting documents and through supervisor submits to the Director of Engineering/Operations as the appropriate.

4.2.2.2.8.4 The Director of Engineering or Director of Operations as appropriate endorses the completed form and forward to the Director of Human Resources and Administration.

4.2.2.2.8.5 The Director of Human Resources and Administration reviews recommendations from the Director of Engineering or Director of Operations to ensure eligibility, transparency and fairness of the recommendations.

- a) The Director of Human Resources and Administration forwards to Director-General/CEO for approval.
- b) The Director-General/CEO communicates Approval/Disapproval to the Director of Human Resources and Administration.
- c) The Director of Human Resources and Administration communicates the status of Approval/Disapproval to the Director of Engineering or Director of Operations.
- d) If approved, the Director of Engineering or Director of Operations informs the applicant with a request to report to Human Resources Department to fulfil credential issuance formalities (The Photo shall be in accordance with the approved Bureau’s Credentials format).
- e) The Human Resources Department forwards the printed Credential to the Director of Human Resources and Administration for issuance to the beneficiary staff through the Director of Engineering or Director of Operations.

4.2.2.2.8.6 The applicant after successful completion and approval of credential evaluation form, must display this Credential on his/her person whiles on investigation duties. Should an employee lose his/her credentials, a police report will be required before a new one is re- issued to him/her at his/her own cost.

4.2.2.2.8.7 Investigator Credentials shall remain the property of the Bureau and shall be returned to the Director of Human Resources and Administration when the holder leaves the employment of the Bureau. Further details on Credentials are found in the Bureau’s Human Resources and Administration Policy Manual.

4.2.2.2.9 Currency Requirement

4.2.2.2.9.1 The Investigator Credential shall have a validity period of three (3) years period.

4.2.2.2.9.2 Upon approaching 30 days to expiry, the holder shall complete the Request for Credential Form NSIB.01.13 and submit to the Director of Engineering/ Director of Operations as the appropriate.

4.2.2.2.9.3 The Director of Engineering or Director of Operations will vet the form and endorse and forward to Director of Human Resources and Administration for re-issue of another Credential to the investigator.

4.2.2.2.9.4 The expired/old credential is retained by the Director of Human Resources and Admin.

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4.2.2.2.9.5 The Director of Human Resources shall keep database log to control all credentials issued. The database log identifies every investigator credential issued by number, employee;s name, office, speciality, position, type of credential held, issue date, validity date, status of credential.

4.2.2.2.9.6 in addition, Director of Human Resources shall maintain records for the credentials in a file, including copies of issued/re-issued investigation credentials, completed request forms, etc.

4.2.2.2.10 Lost, Stolen, or Damaged Credentials

4.2.2.2.10.1 The Investigator's Credential is an accountable property of the Bureau and care should be exercised to protect its integrity to prevent physical loss and damage.

4.2.2.2.10.2 However, if a credential is lost or stolen, the holder must notify his or her supervisor and Director of Human Resource and Administration and the nearest Police Station within 48 hours of the incident surrounding the loss or theft. The report should address circumstances surrounding the loss or theft and follow-up actions taken to recover the credential.

4.2.2.2.10.3 A replacement credential is issued once Director of Human Resource and Administration receives notification describing the loss or theft. The issuance of a replacement credential requires the same application process as for an original issuance. Director of Human Resource and Administration will assign a new numbered credential.

4.2.2.2.10.4 In the event of a second or successive occurrence of loss or theft of a credential because of the negligence of the holder, the supervisor will implement actions outlined in the applicable conduct and discipline policy guidelines and procedures.

4.2.2.2.10.5 The need for care in maintaining the integrity of the credential program cannot be overemphasized. In the event more than 5 percent of credentials have been lost or stolen, or if it is discovered by audit that more than 5 percent are unaccounted for, a complete re-issuance of all credentials must be undertaken.

4.2.2.2.11 Re-issue of Credentials

4.2.2.2.11.1 Credentials is reissued when any of the following circumstances exist:

- a) Status change of the holder;
- b) Mutilation or excessive wear of the credential; or
- c) Change in holder's personal appearance.

4.2.2.2.11.2 Issuance of replacement credentials requires the same application procedures as defined for the original issuance and will require endorsement from the immediate supervisor stating the reasons for replacement.

4.2.2.2.11.3 If the credential is reissued for (a), (b), and/or (c) above, the supervisor should present the new credential and retrieve the investigator's old credentials for return to Human Resources Department. This should include a note explaining the reason for the return of the credential.

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4.2.2.2.12 Surrender of Credentials

4.2.2.2.12.1 The credential shall be surrendered to the Director of Human resources and administration for proper disposition under any of the following conditions:

- (a) Termination of employment/ secondment;
- (b) Re-assignment to a position which does not require use of credential;
- (c) Issuance of a revised credential;
- (d) Removal from further participation in the investigation; or
- (e) Damage beyond recognition.

4.2.2.2.12.2 Retirees may request the invalidated credential be returned as a memento by submitting an accompanying request with a specified forwarding address at the time the credential is surrendered. It is important that the request for retention accompany the credential; otherwise, the credential is destroyed upon receipt. Unless invalidated by Human Resources Department, retention of an investigator credential is not authorized.

4.2.2.2.12.3 When appropriately invalidated (canceled), the Investigator’s credential obviously has no official status. Upon request, it can be returned to the authorized holder as a memento and gesture of appreciation on the part of the Bureau. This procedure applies ONLY TO EMPLOYEES WHO LEAVE THE BUREAU IN A RETIRED STATUS.

4.3 MINIMUM QUALIFICATIONS AND EXPERIENCE REQUIREMENTS OF INVESTIGATORS

4.3.1 Background experience

4.3.1.1 In accordance with guidelines provided by ICAO Circular 298, aircraft accident investigation is a specialized task which should only be undertaken by qualified investigators. Since accident investigations will often involve specialized areas, it is important that those selected for training as investigators understand the aviation infrastructure and are able to relate to the many different areas of aviation.

4.3.1.2 As such, the Bureau trains its personnel to be appropriately qualified in the accident investigation techniques required to participate in or to conduct an aircraft accident investigation. When assigned to an accident investigation, such personnel are relieved of their regular duties for the duration of the investigation.

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4.3.1.3 The Bureau requires that potential accident investigators must have considerable practical experience in aviation as a foundation on which to build their investigation skills. This experience can be acquired from civil or military qualification as a pilot, aeronautical engineer or aircraft maintenance engineer. These are the personnel suitable for training as Air Safety Investigators.

4.3.1.4 Employees who lack the aviation knowledge are taken to Nigerian College of Aviation Technology (NCAT) Zaria to acquire the ab-initio aviation knowledge in piloting, aircraft maintenance, air traffic control, etc. Upon completion of their studies in NCAT, the personnel are exposed to practical experience in the industry through attachment program. Pilots/ maintenance engineers are attached to airline operators to undergo line training to an appropriate level. The air traffic controllers are posted to Nigerian Airspace management Agency (NAMA) to acquire skills in air traffic control.

4.3.1.5 The Bureau’s investigators are trained to have a comprehensive understanding of the interrelationship of each of the supporting services that are necessary to operate an aircraft in the aviation environment such that a single investigator can conduct the investigation of an accident involving a general aviation or light aircraft.

4.3.1.6 Since the outcome of an accident investigation is largely dependent upon the aviation knowledge, skills and experience of the assigned aircraft accident investigators, they should have:

- a) an understanding of the depth of investigation that is necessary in order for the investigation to conform with the legislation, regulations and other requirements of the State for which they are conducting the investigation;
- b) a knowledge of aircraft accident investigation techniques;
- c) an understanding of aircraft operations and the relevant technical areas of aviation;
- d) the ability to obtain and manage the relevant technical assistance and resources required to support the investigation;
- e) the ability to collect, document and preserve evidence;
- f) the ability to identify and analyse pertinent evidence in order to determine the causes and, if appropriate, make safety recommendations; and
- g) the ability to write a final report that meets the requirements of the accident investigation authority of the State conducting the investigation.

4.3.1.7 An air safety investigator is desirous to have investigation management qualification and skills in team leadership, relations with numerous State authorities and private organizations, international relations, communication and report writing.

4.3.2 Minimum Qualification and Experience of Investigators

4.3.2.1 Air Safety Officer (ASO) II (Trainee-Position)

AIBSS 08

- a) Entry is by appointment of any candidate with Bachelor of Engineering in relevant fields, BSc Physics/Chemistry/Geography/Mathematics/Meteorology and any other relevant physical sciences; or
- b) Diploma obtained from Nigerian College of Aviation Technology (NCAT) with appropriate specialties.

4.3.2.2 Air Safety Officer (ASO- I) (Trainee-Position)

AIBSS 09

Entry is by:

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- a) promotion of a suitable Air Safety Officer (ASO-II) Trainee after three years on the grade level; or
- b) direct appointment of candidate with Bachelor of Engineering in any relevant field from a recognized University having three (3) years cognate experience; or
- c) Diploma obtained from Nigerian College of Aviation Technology (NCAT) with aeronautical licence (Pilot, engineer, cabin crew, dispatcher, Air Traffic Controller).

4.3.2.3 Senior Air Safety Investigator (ASI-IV)

AIBSS 10

Entry is by:

- a) promotion of suitable Air Safety Investigator (ASI), after three years on the grade level AIBSS 09 and must have successfully completed at least Initial Accident Investigation course; or
- b) direct appointment of a candidate possessing any of the qualifications specified for AIBSS 08 above plus a minimum of seven years post qualification cognate experience; or
- c) direct appointment of a candidate possessing M.Sc. Engineering Degree in any relevant field from a recognized University plus a minimum of three years post qualification cognate experience; or
- d) direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution; or
- e) direct appointment of a candidate possessing aeronautical license (Pilot- CPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and three years experience.

4.3.2.4 Principal Air Safety Investigator (ASI-III)

AIBSS 12

Entry is by:

- a) promotion of a suitable Senior Air Safety Investigator after three years on the grade AIBSS 10. In addition to relevant qualification must have successfully completed Basic Accident Investigation course; or
- b) direct appointment of a candidate possessing any of the qualifications specified for AIBSS 08 plus at least ten years post qualification cognate experience; or
- f) direct appointment of a candidate possessing a relevant M.Sc. Engineering from a recognized University plus seven years cognate experience;
- g) or direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution plus three years cognate experience; or
- c) direct appointment of a candidate possessing aeronautical license (Pilot- CPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and five years experience.

4.2.3.5 Assistant Chief Air Safety Investigator (ASI-II)

AIBSS 13

Entry is by:

- a) By promotion of a confirmed and suitable Principal Air Safety Investigator after three years on the grade level AIBSS 12 In addition to relevant qualification must have successfully completed Basic Accident Investigation course; or
- b) direct appointment of a candidate possessing any of the qualifications specified for AIBSS 08 plus at least twelve years post qualification cognate experience; or
- c) direct appointment of a candidate possessing a relevant M.Sc. Engineering from a recognized University plus 10 years cognate experience; or

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- d) direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution plus seven years cognate experience; or
- e) direct appointment of a candidate possessing aeronautical license Pilot- ATPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and seven years experience.

4.2.3.6 Chief Air Safety Investigator (ASI-I)

AIBSS 14

Entry is by:

- a) promotion of a confirmed and suitable Assistant Chief Air Safety Investigator after three years on the grade level AIBSS 13 plus successful completion of Accident Investigation course and possession of Accident Investigation; or
- b) direct appointment of a candidate possessing a B.Sc. (Hons) in relevant discipline from a recognized University and with minimum of twelve years cognate experience; or direct appointment of a candidate possessing a relevant M.Sc. Engineering from a recognized University plus twelve years cognate experience; or
- c) direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution plus seven years cognate experience; or
- d) direct appointment of a candidate possessing aeronautical license Pilot- ATPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and seven years experience.

4.2.3.7 Assistant General Manager

AIBSS 15

Entry is by:

- a) promotion of a confirmed and suitable Chief Air Safety Investigator after three years on the grade level AIBSS 14. must have successfully completed Advanced Accident Investigation course; or
- b) direct appointment of a candidate possessing a B.Sc. (Hons) in relevant discipline from a recognized University and with minimum of fifteen years cognate experience; or
- c) direct appointment of a candidate possessing a relevant M. Sc. Engineering from a recognized University plus twelve years cognate experience; or
- d) direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution plus seven years cognate experience; or
- e) direct appointment of a candidate possessing aeronautical license Pilot- ATPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and ten years experience.

4.2.3.8 Deputy General Manager

AIBSS 16

Entry is by:

- a) promotion of a confirmed and suitable Assistant General Manager after four years on the grade level AIBSS 15 plus successful completion of Advanced Accident Investigation Course;
- b) direct appointment of a candidate possessing a B.Sc. (Hons) in relevant discipline from a recognized University and with minimum of fifteen years cognate experience; or
- c) direct appointment of a candidate possessing a relevant M. Sc. Engineering from a recognized University plus twelve years cognate experience; or

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- d) direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution plus ten years cognate experience; or
- e) direct appointment of a candidate possessing aeronautical license Pilot- ATPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and ten years experience.

4.2.3.9 General Manager

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Entry is by:

- a) promotion of a confirmed and suitable Assistant General Manager after four years on the grade level AIBSS 16 plus successful completion of Advanced Accident Investigation Course;
- b) direct appointment of a candidate possessing a B.Sc. (Hons) in relevant discipline from a recognized University and with minimum of fifteen years cognate experience; or
- c) direct appointment of a candidate possessing a relevant M. Sc. Engineering from a recognized University plus twelve years cognate experience; or
- d) direct appointment of a candidate possessing Doctorate Degree in the relevant disciplines for AIBSS 08 above from a recognized institution plus ten years cognate experience; or
- e) direct appointment of a candidate possessing aeronautical license Pilot- ATPL, engineer, cabin crew, dispatcher, Air Traffic Controller, etc.)/other aeronautical ratings and ten years experience.

4.4 INVESTIGATION TEAM, GO-TEAM AND 24-HOUR DUTY

4.4.1 Investigation Team

4.4.1.1 The investigation team is put in place by the Director-General/CEO or, where applicable, by the Director of Engineering or Director of Operations in coordination with the General Managers of Engineering and Operations.

4.4.1.2 The composition of the investigation team depends on the type of occurrence, the scope of the investigation, the complexity of the tasks to be performed, the safety lessons that the Bureau intends to draw from the investigation and more specifically the following indicative elements:

- a) the nature of the occurrence;
- b) the number of injured/fatalities;
- c) aircraft weight and type;
- d) the extent of damage to the aircraft, third parties and the environment;
- e) identified and potential safety aspects underlying the occurrence;
- f) likelihood of recurrence, likelihood and severity of adverse consequences;
- g) actual and potential deviations from industry rules, standards, procedures and practices;
- h) the history of accidents and incidents related to this type of flight;
- i) the location of the accident/incident;
- j) weather;
- k) the public interest; and

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- l) the workload of investigators/specialists.

4.4.1.3 The Investigation team for accident involving a light aircraft or serious incident without injuries comprises of the Investigator-in-charge (IIC) and one (1) other Air Safety Investigator. The IIC will be the overall chairman of the team. Bureau's Trainee-investigators (ASOs)/Investigators from another State who are on training will be assigned as members of investigative groups under the supervision of another experienced Safety Investigator, usually a group chairman or IIC.

4.4.1.4 For a major accident involving a large transport aircraft, the investigation team comprises of the IIC and a number of specialists depending on the scope of the investigation and magnitude of the tasks to be performed. The team will in particular consists of all or some of the following persons:

- m) investigators from the Bureau;
- n) accredited representatives and/or their advisers;
- o) advisers (operators, manufacturers, civil aviation authority, etc.).

4.4.1.5 A complete Investigation Team is notably composed of investigators and specialists with particular expertise in:

- a) air traffic;
- b) technical operation of aircraft;
- c) meteorology;
- d) human factors (human performance and limitations);
- e) aircraft structures and systems;
- f) aircraft engines;
- g) aircraft maintenance and continuing airworthiness management;
- h) Survival factors;
- i) Aircraft performance;
- j) flight recorders and
- k) aviation medicine.

Note 1: Bureau's specialists should be the head in each of the groups.

Note 2: Additional groups may be formed to interview witnesses, examine the response of aircraft rescue and firefighting (ARFF) personnel, or other duties, as required to support the investigation.

4.4.1.67 The team may be assisted by other groups of specialists led by investigators from the Bureau for interviewing witnesses and processing relevant information from other entities (search and rescue services, firefighting services, etc.).

Note 3: The investigation team may be initially made up of investigators from the Go-Team and then expanded depending on the information gathered or the progress of the investigations.

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4.4.2 Investigator-in-charge (IIC)

4.4.2.1 Designation requirements

4.4.2.1.1 The Investigator-in-charge (IIC) is selected from among the certified investigators of the Bureau, by the Director-General/CEO or the Director of Engineering/Operations, as the case may be.

4.4.2.1.2 The selection of the IIC takes into account the complexity of the occurrence, the skills, abilities, knowledge, experience of the authorized investigator and the risks of conflicts of interest and the ability to manage an investigation team.

4.4.2.1.3 The investigator-in-charge shall possess team management skills and sufficient ability to read, write, speak and understand the English language for major investigations.

4.4.2.1.4 The investigator-in-charge mandate is only valid for the duration of the investigation. However, during the investigation, the investigator-in-charge may be removed from this function in the event of non-compliance with the requirements in force, resignation or suspension from work within the Bureau.

4.4.2.2 Responsibilities of the Investigator-in-charge

4.4.2.2.1 The Investigator-in-charge is responsible for the day-to-day management and conduct of the investigation assigned to him/her.

4.4.2.2.2 As part of the ongoing investigation, he/she has authority over all members of the investigation team.

4.4.2.2.3 During the planning/pre-deployment phase on site, the investigator-in-charge and Director of Engineering or Operations determine the human, material and financial resources necessary for the investigation and constitute the investigation team under the control of the Director-General/CEO.

4.4.2.2.4 During the investigation phase at the accident/incident site, the investigator-in-charge is responsible for the safety of the members of the investigation team, the conduct and control of the investigation, including defining the scope of factual information to be collected.

4.4.2.2.5 During the later phases of the investigation, when the significance of the established facts is being considered, the Investigator-in-charge consolidates the group/sub-group reports, analyzes the information and writes the final report in coordination with the members of the investigation team.

4.4.2.2.6 The Investigator-in-charge liaises and coordinates investigation activities with other interested parties, recognizes the status of observer/participant and, takes appropriate measures, in the event of the absence of standards, procedures or established instructions, in coordination with the management staff of the Bureau, if necessary.

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4.4.2.3 Qualification Requirements for Investigator-In-Charge (IIC)

4.4.2.3.1 Investigator-in-charge (IIC) for major accident involving large transport aircraft

The Investigator-in-charge (IIC) for major accident involving large transport aircraft must meet the following requirements:

- a) A certified air safety investigator following successful completion of Safety and Accident Investigations progressive training necessary to qualify for appointment as an investigator-in-charge in line with the Bureau’s Investigation Training Manual;
- b) Experience as a specialist group leader/chairman in an investigation of a major accident involving a large transport aircraft;
- c) Experience to direct the investigation in a manner that ensures resources are used to the maximum effect;
- d) Effectively conducted at least two (2) investigations, including completion of the Final Reports on the accidents.

Note.- Any person to be appointed Acting IIC must have met (a) to (c) above and must have completed at least one (1) investigation.

4.4.2.3.2 Investigator-in-charge (IIC) for non-fatal accident involving large transport aircraft

The Investigator-in-charge (IIC) for non-fatal accident involving large transport aircraft must meet the following requirements:

- a) A certified investigator following successful completion of Safety and Accident Investigations progressive training necessary to qualify for appointment as an investigator-in-charge in line with the Bureau’s Investigation Training Manual;
- b) Experience as a specialist group leader/chairman in an investigation of a major accident involving a large transport aircraft;
- c) Experience to direct the investigation in a manner that ensures resources are used to the maximum effect;
- d) Effectively conducted at least two (2) investigations, including completion of the Final Reports on Serious Incidents.

4.4.2.3.3 Investigator-in-charge (IIC) for accident involving small aircraft or Serious Incident involving aircraft of any category must meet the following requirements

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The Investigator-in-charge (IIC) for non-fatal accident involving large transport aircraft must meet the following requirements:

- a) A certified investigator of the Bureau following successful completion of Safety and Accident Investigations progressive training necessary to qualify for appointment as an investigator-in-charge in line with the Bureau’s Investigation Training Manual;
- b) Experience to direct the investigation in a manner that ensures resources are used to the maximum effect;
- c) Effectively conducted at least two (2) investigations, including completion of the Final Reports on Serious Incidents.

4.4.2.3.4 Group Chairman/Leader

The Group Chairman or Group Leader must meet the following requirements:

- a) A certified investigator of the Bureau following successful completion of Safety and Accident Investigations progressive training in line with the Bureau’s Investigation Training Manual;
- b) Participated in a major accident investigation involving a large transport aircraft;

4.4.2.3.5 Criteria for Selection of Seconded Specialists

The candidate for secondment as an investigator to the Bureau from the NCAA or any aviation service provider within the country (Seconded national Expert-SNE) must meet the following qualification and experience requirement prior to being seconded to the Bureau as an investigator:

- a) Qualified Aviation Safety Inspector (Operations, Airworthiness, engineering, Air Traffic Control, etc.), preferably with aircraft or relevant type ratings and/or instructor ratings and level of experience equivalent to the requirements for employment as an air safety investigator;
- b) Attended aircraft accident investigation course at a recognized institution of organization; and
- c) Participated in an aircraft accident investigation.

4.4.3 The Go-Team

The Go-Team is a team of Air Safety Investigators (ASIs) from the Bureau set up to immediately mobilize to the site of the accident/incident in order to assess the initial information essential for taking the decision to investigate and, if necessary, to conduct the investigation.

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The Go-Team is selected from the List of Air Safety Investigators/Specialists maintained up-to-date by the Director of Engineering in coordination with the General Managers of Engineering and Operations. The Director-General forms the Go-Team for each occurrence.

The Go-Team is desirable to be made up of at least three (3) experienced Air safety Investigators from the Bureau comprising of a Pilot, Engineer and an Air Traffic Controller.

4.4.4 24-Hour Duty Officer

4.4.4.1 The 24-Hour Duty Officer is one or more Air Safety Investigators assigned to the 24-Hour Duty regime.

4.4.4.2 The Bureau maintains two (2) Emergency mobile telephone lines (+234807 709 0908 and 0807 709 0909) for receiving notification of occurrence from within and outside Nigeria. The mobile phones are handed to Investigators on Duty (24 -Hour Duty Officer) and rotated among Investigators on a weekly basis. The Mobile Handsets are configured to receive E-Mail messages from info@aib.gov.ng, reporting form submitted through the Bureau’s website and the Bureau’s MobileApp.

4.4.4.3 Each of the two mobile phones (handsets) also contains the contact phones numbers of the of rescue coordination centres, management staff of the Bureau, including the Director-General/CEO, Director of Engineering, Director of Operations, General Manager Engineering, General Manager Operations, General Safety and Security and Officer in-charge of Investigators’ equipment /Kits store and the two Regional Managers.

4.4.4.4 The 24-Hour Duty Officer is in particular responsible for:

- a) receive notifications of aviation incidents/accidents and immediately making entry in log;
- b) collect the relevant information relating to the occurrence (the operator of the aircraft, the type of aircraft, the number of occupants of the aircraft concerned by the accident/incident, the condition of the aircraft, the general description of the accident/incident, the extent of the damage, the dangers at the site of the accident/incident, etc.);
- c) preparing responses to notifications and submit to Director of Engineering or Director of Operations;
- d) notify aviation incidents/accidents to relevant parties;
- e) inform the management staff of the Bureau;
- f) facilitate, if necessary, the departure of the Go-Teams on site (preparation of the necessary documents and equipment).

4.4.4.5 The 24-hour duty officer has access to:

- a) the investigation related documentation of the Bureau in digital format (manual, procedures, checklists, forms,...)
- b) the list of investigators of the Bureau and their contact details;

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- c) through the Librarian and/or General Managers (Engineering/Operations) and Secretary of Regulations Committee, can access to the ICAO portal for ICAO technical documentation;
- d) an internet connection allowing access, on the ICAO website: <https://www.icao.int/safety/aia/Pages/default.aspx>, of the contact details of the accident/incident investigation authorities of the ICAO Member States;
- e) geographical maps, etc.

4.4.4.6 The 24-hour Duty Officer can be contacted using the following contact details, available on the Bureau's website and listed in the accident/incident notification form:

- a) Mobile Phone Emergency: +234 807 709 0908; +234 807 709 0909; and
- b) E-mail: info@aib.gov.ng / commissioner@aib.gov.ng

4.4.5 Deployment of the Go-Team

4.4.5.1 The Go-Team is formed soon after the Bureau had received notification of an occurrence and membership is selected from the list of the Bureau's investigators.

Note. - The Director-General/CEO is responsible for determining if an investigation will be lunched for incidents while taking into consideration of the possible safety lessons to be learned and availability of resources to conduct the investigation.

4.4.5.2 All Air Safety Investigators of the Bureau are on alert 24 hours a day and on standby.

4.4.5.3 The ASIs must organize their affairs so that they can get to the scene of the accident/incident as soon as possible when instructed by the Director-General/CEO or any of the technical Directors as the case may be .

4.4.5.4 They must always ensure that they can be reached at all time.

4.4.5.5 For occurrences during office working hours which happened within the airports environs in Abuja, Lagos, Enugu and Kano airports, the Go-Team is required to arrive at the scene of occurrence within approximately thirty (30) minutes after being informed.

4.4.5.6 For occurrences that happened outside of these areas, the Go-Team is required to arrive the scene within reasonable time, after being informed. Here consideration is given to proximity, mode of transportation available and ease of access. Arrangements are then made by the management staff of the Bureau for their transport to the place of occurrence.

4.4.5.7 For occurrences outside office working hours and regardless of when they are informed of an accident/incident, the Go-Team must be able to arrive at the Bureau's office within approximately one (1) hour after being informed.

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4.4.5.8 However, depending on the place of occurrence and the geographical position of the investigators, a re-composition of the Go-Team may be carried out, with in particular the integration of an investigator closer to the place of occurrence.

4.4.5.9 Pending the arrival of the investigation team at the site of occurrence, the Regional Office investigators located near the place of occurrence may be authorized to go there, as soon as possible, to make the first findings and report on their observations.

4.4.5.10 Before leaving for the site of the accident/incident, the investigator in charge of the Go-Team carries out, as applicable, the following:

- a) contacts the competent local authorities to obtain, if necessary, information related to the occurrence and the site of occurrence and for the preservation of the wreckage and evidences;
- b) performs the initial risk assessment of the accident/incident site based on the available information and determines the measures to be taken for their mitigation;
- c) educate participants of the investigation on safety guidelines;
- d) distributes the roles and functions of each member at the site of the accident/incident;
- e) verifies, on the one hand, that the necessary protective equipment is available and, on the other hand, that the participants have received the required vaccinations and injections;
- f) ensures that field survey equipment is available, accessible and functional;
- g) ensure that the necessary technical and travel documents (passports, visas and vaccination records, etc.) are available and valid/up to date;
- h) ensures that the funds necessary for the mission and the means of travel are available.

4.4.5.11 No member of the investigation team is allowed to speak to the media and all investigation-related questions should be directed to the Investigator-in-charge or the Director of Media Relations of the Bureau.

4.4.5.12 Investigators should be aware that while at the scene, their actions and conversations may be recorded by the microphones and cameras of reporters or bystanders.

4.4.5.13 They should be aware of the need to complete field work quickly and spend as little time as possible on site.

4.4.6 Appointment of Nigeria's Accredited Representative and Advisers

4.4.6.1 Appointment of an Accredited Representative

4.4.6.1.1 If, Nigeria is the State of the Operator or the State Registry of an aircraft involved in an accident or serious incident in another State and:

- a) the aircraft involved in the accident is of a maximum mass of over 2 250 kg when the State conducting the investigation had requested the Bureau to appoint an accredited representative to participate in the investigation; or

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- b) the Bureau had received notification of an accident or serious incident from the State of Occurrence.

The Director-General/CEO shall as soon as practicable but not beyond two (2) days, appoint an accredited representative to participate in the investigation being led by another State.

4.4.6.1.2 The accredited representative would normally be preferably a qualified senior investigator from the Bureau to represent the interests of Nigeria during the investigation led by another State.

4.4.6.1.3 The selection criteria of a suitable candidate should consider the nature, type and complexity of the accident/serious incident to be investigated, knowledge and understanding of the international accident and incident investigation practices, particularly Annex 13.

4.4.6.1.4 The Director-General/CEO should issue a formal letter of appointment to the successful candidate detaining rights and privileges of an accredited representative in accordance with Annex 13.

4.4.6.1.5 The Director-General/CEO should inform the Ministers responsible for civil aviation and the foreign affairs of the appointment of an accredited representative and advisers to represent Nigeria in an investigation conducted by another State, if necessary.

4.4.6.1.6 The name and contact details of the accredited representative (and advisers, if applicable) should be forwarded to the State conducting the investigation stating whether the accredited representative will travel to the site. If the accredited representative intends to travel to the site, the arrival information should also be provided to the State.

4.4.6.1.7 The accredited representative so appointed shall abide by the guidelines on their participation in the investigation conducted by another State.

4.4.6.2 Appointment of Advisers

4.4.6.2.1 if Nigeria is the State of the Operator of an aircraft involved in an accident or serious incident and that an Accredited Representative has been appointed by the Director-General/CEO to participate in the investigation being led by another State, the Director-General/CEO may coordinate with the State conducting the investigation on the need for appointing Adviser(s) to accompany/assist the Bureau's Accredited representative and the kind of technical expertise required to assist the investigation.

4.4.6.2.2 Upon coordination with the State conducting the investigation, the Director-General/CEO should as soon as possible but not beyond two (2) days from receipt of notification, request the airline operator/owner of the aircraft or NCAA and as applicable, to nominate one or more Advisers on the basis of their qualifications and expertise to assist and make the participation of the Bureau's Accredited representative effective in an investigation led by another State.

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4.4.6.2.3 The airline operator/owner of the affected aircraft or NCAA shall be required to within the shortest possible time, not later than three (3) days from receipt of nomination request from the Bureau, to submit the name(s) and qualifications of its proposed Adviser(s) to the Director-General/CEO so as to avoid delay in formation and timely participation of the Bureau's team.

4.4.6.2.4 As soon as the nominees' details have been received by the Bureau, The Director-General or any officer assigned by him/her shall appraise the credentials of the proposed Adviser(s) to ensure they possess the required qualifications and expertise.

4.4.6.2.5 Upon satisfactory assessment of the nominees, the Director-General/CEO should appoint the nominees to serve as Advisers to accompany the Bureau's Accredited Representative to participate in an investigation of accident or serious incident led by another State.

4.4.6.2.6 The Director-General should issue the letter of appointment to the Adviser stating the rights and privileges of an Adviser to accompany the Nigeria's accredited representative to make effective participation in an investigation conducted by another State.

4.4.6.2.7 The name and contact information of the Adviser should added to the information being forwarded to the State conducting the investigation in 4.4.6.1.6 above.

4.4.6.2.8 As soon as Adviser is appointed, the Accredited Representative shall invite the Adviser(s) to the Bureau's office in order to provide briefing on the legislation, Annex 13, his/her rights, obligations, investigation procedures, ethics and code of conduct. The briefing should prepare the Adviser(s) for the tasks ahead to ensure they understand what to do and how to behave during the investigation. The briefing should not take more than eight (8) hour.

4.4.6.2.9 The Advisers so appointed shall be under the supervision of the Accredited Representative and shall abide by the guidelines of their participation in the investigation conducted by another State.

4.4.7 Appointment of Experts

4.4.7.1 In the event of aircraft accident which occurred in another State and in which Nigeria has interest by virtue of its citizens suffered fatalities or serious injuries, the Bureau shall be entitled to appoint an Expert to participate in the investigation in accordance with Annex 13.

4.4.7.2 If the Director-General in coordination with Ministers of Aviation, Health, Foreign Affairs have arrived at a a decision that it is important for Nigeria to participate in the investigation, the Director-General will appoint an experienced medical specialists, preferably a pathologist or a physician who specializes in Aviation Pathology as the Bureau's Expert to participate in the investigation conducted by another State.

4.4.7.3 If circumstances permit, the appointed expert will be accompanied by a senior safety investigator of the Bureau, who possess vast knowledge of international investigations and a Legal officer of the Bureau. An identification specialist or a representative of the Association of the families of the accident victims, if available may be enlisted to accompany the expert.

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4.4.7.4 In this regard, the Director-General will make necessary arrangement to provide to the State conducting the investigation, relevant details of the expert including name, organization, address, by whom he/she will be accompanied and their mandate.

4.4.8 Appointment of Observers/Participants

4.4.8.1 An observer or participant status is a privilege granted by the State conducting the investigation to a person having a direct interest in the investigation, who has the expertise to contribute to achieving the objective of the investigation or investigator who is undergoing training. Among others, the following persons may be granted observer/participant status:

- (a) persons representing a State department or agency,
- (b) the aircraft owner and operator;
- (c) union or employee associations;
- (d) the flight crew involved in the accident.

4.4.8.2 An observer would be a representative of an involved government department or an employee of another State's Accident Investigation Authority, who is authorized by the Director-General/CEO to attend an investigation as an observer as a trainee Safety Investigator on the job or a Safety Investigator to keep currency on Safety Investigation skills.

4.4.8.3 A participant would be a person authorized by the Director-General/CEO to participate in an investigation because in the opinion of the Bureau that person has a direct interest in the subject matter of the investigation and has the expertise to contribute to achieving the Bureau's objective

4.4.8.4 Any State that wishes its investigator to participate as Observer/Participant in an investigation conducted by the Bureau, such State shall make a written request to the Director-General/CEO, stating the names, qualifications and experience of the candidate; and the justification therein.

4.4.8.5 The Director-General may wish to accept or reject the request. If, the Director-General/CEO accepts the request, a letter of appointment shall be issued in the name of the Candidate. In this regard, the Bureau's Letter of Appointment that stipulates the terms and conditions of Observer/Participant status should be signed by the Director-General. Refer to Appendix E for a Template Letters of Appointment and Credentials.

4.4.8.6 Upon arrival of the Observer/Participant, the Investigator-in-charge (IIC) should brief the Observer/Participant of the rights, privileges, limitations and responsibilities attached to participation in the investigation. An Investigation Observer/Participant Credential should be generated with the names and photo of the candidate. The IIC shall then handover the Letter of Appointment and credential to the candidate for signature as an indication of acceptance to participate in the investigation. After completion of the investigation or if the Observer/Participant is withdrawn from participation in the investigation, the holder of the Credential shall return it to the IIC.

4.4.8.7 Copies of the Letters of Appointment and the Credentials issued to the Observer/Participant shall be kept in the investigation file by the investigator-in-charge.

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4.4.4 Qualification Requirements for Certified Air Safety Investigator

4.4.4.1 General Qualification Requirements for all Air Safety Investigators

4.4.4.1.1 The candidate or trainee air safety investigator must have fulfilled the qualification, skills and experience requirements in sub-sections 4.3.2 above.

4.4.4.1.2 In addition, a trainee Air Safety Investigator or Officer must meet the following, but not limited qualification requirements prior to being designated as certified air safety investigator:

- a) Successfully completed theoretical aspects of all the phases of Air Safety Investigator training programme in line with the Bureau’s investigator training manual, specifically the Initial, OJT, Basic and Advanced accident investigation courses;
- b) Successfully completed the On-the-Job-Trainings (OJT) as follows:
 - 1) Participated in completing Initial Notifications to other States and ICAO, where applicable;
 - 2) Participated in gathering evidences following occurrences, including witness interviews, review of personnel and aircraft documents and manuals; supervises component testing and so on;
 - 3) Participated in two field investigative activities as an Observer;
 - 4) Conducted two successful field investigative activities under the supervision of experienced certified air safety investigator(s);
 - 5) Participated in the conduct of analysis of the factual information gathered of occurrences;
 - 6) Participated in the determination of causal and contributory factors to occurrences investigated;
 - 7) Participated in the drafting of safety recommendations; and
 - 8) Participated in writing of Final Reports.

4.4.4.1.3 Upon satisfactory fulfillment of the above requirements, the Director-General/CEO may designate the applicant as a certified air safety investigator by issuing an Investigator’s Credential to the candidate Air Safety Investigator.

4.4.4.1.4 Certified Air Safety Investigator may be sent on attachment to Accident Investigation Authority of another State as an observer or participant status to acquire experience in a major accident investigation or as a form of Re-currency of his/her experience.

4.5 AIR SAFETY INVESTIGATOR TRAINING

4.5.1 It is the policy of Bureau to provide adequate financial resources to ensure appropriate training to the Bureau’s personnel assigned duties relating aircraft accident investigation to the level consistent with international standards and best practices. In particular, the Director-General/CEO has ensured that a training programme be developed (refer to the Investigation Training Manual) in line with the guidance provided in ICAO Circular 298, Chapters 3 and 4, which contains detailed information regarding the training of Air Safety Investigators in four phases:

Phase I: Initial training ;

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Phase II: On-the-job training;

Phase III: Basic aircraft accident investigation course;

Phase IV: Advanced aircraft accident investigation course;

Phase V: Specialty and additional accident investigation training;

Phase VI: Recurrent and Remedial training; and

Phase VII: Management/Leadership training.

4.5.2 In addition, the following training are also included in the training program:

- a) Accident site hazard and awareness;
- b) Use of Investigator kits, tools and Biological hazard protective equipment;
- c) Accident simulations (Drills)/ Crash exercises;
- d) Attachment to accident investigations in other States;
- e) Attendance of safety and accident investigation seminars, workshops, conferences, etc.;
- f) Aviation system/investigation management courses;
- g) Indoctrination training (newly hired);
- h) Crisis management (Next-of-kin, media); and
- i) Fitness and survival training.

4.5.3 The Director-General/CEO has designated a Training Coordinator that is responsible for the day-to-day activities of investigator training program, including developing the annual training plans, managing the implementation of the training plans, updating and keeping training records among others.

4.6 INVESTIGATION EQUIPMENT, FACILITIES AND OFFICE EQUIPMENT

4.6.1 Investigation Equipment

4.6.1.1 As part of its management plan, it is the policy of the Bureau to properly equip its Managers and Air Safety Investigators with appropriate field investigation equipment (tools, survey equipment, marking equipment, etc.), protective equipment (gloves, coverall, boots, safety shoes, etc.) against biological, environmental and natural hazards that may be encountered at accident sites, collective means of communication (telephones, internet, etc.) and transport.

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4.6.1.2 Field investigation materials, common and individual investigation equipment and specific guidelines for their management and safekeeping are contained in the Go-Kit Procedures Manual.

4.6.1.3 The Director-General/CEO is the overall responsible for provision of adequate resources to ensure provision of sufficient and appropriate types of investigation equipment, tools, kits and personal protective equipment.

4.6.1.4 Safety and Security Department of the Bureau is responsible for the acquisition and management of all Air Safety Investigators' kits and equipment in coordination with Director of Engineering and Director of Operations.

4.6.1.5 The General Manager Safety and Security ensures that the equipment is available in sufficient quantity and ready to be deployed to the sites of accidents/incidents whenever necessary and as soon as possible.

4.6.1.6 The Safety Officer in charge of equipment store conducts regular monitoring of the condition, quantity and quality of equipment and materials to ensure the equipment are adequate and functional. The Equipment Store Officer shall maintain up-to-date list of equipment, Go-Bags indicating their quantity, shelf life of items, battery life and location of the equipment.

4.6.1.7 Investigators should sign when collecting and returning investigation materials and equipment.

4.6.1.8 Air safety investigators are regularly made aware of the location and use of investigation equipment and materials as part of the implementation of the training program and during their acquisition or allocation.

4.6.1.9 Each investigator receives an initial allocation of equipment consisting in particular of clothing and personal protective equipment.

4.6.1.10 A Go-Bag/Go-Kit consisting of a minimum of survey equipment and materials suitable for most on-site investigators' trips is prepared in advance and available for the investigators to leave immediately.

4.6.1.11 In addition to the Go-Bag, investigators receive additional investigation equipment and materials determined by assessments conducted prior to their deployment to the site and during the onsite investigation.

4.6.1.12 The accident site risk assessment is carried out before the deployment of the investigators to the site of the accident/incident and once in the field allows the equipment and materials of the investigators to be adapted to the risks identified should have adequate supplies and equipment most appropriate to the territory to be covered (food, water, first-aid kit, camping gear, communication equipment, etc.) and should have a competent guide if it is necessary to enter wild or rugged terrain. They should anticipate the need for special equipment and have ready access to this type of equipment so that there is no delay in procuring it. They should also be familiar with the use of such equipment.

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4.6.1.13 Clothing should be comfortable and afford protection against the conditions or elements that may be encountered. Spare clothing may also be required. The most essential items of personal clothing are good footwear, a windproof and waterproof jacket and trousers, and appropriate headgear. The safety investigator should wear suitable boots which provide protection against the hazards at the accident site. Specifically, the boots should provide protection against crushing and piercing injuries and should be waterproof and oil and acid resistant. Protective items, such as sun block, anti-glare spectacles and insect repellent, should also be available.

4.6.1.13 The stock of material and equipment is kept in a dedicated equipment store at Headquarters and the regional offices, made accessible to the investigators.

4.6.1.14 Air safety investigators should have their investigation field kits and essential personal items packed and ready so that they can proceed without delay to the accident site. Advance consideration should be given to such details as inoculations, travel documents (passport, Visas) requirements and travel facilities of Air Safety Investigators.

4.6.1.15 The investigation field kit should contain sufficient equipment to enable examination of the wreckage, the plotting of impact points and wreckage patterns, parts identification and the recording of observations. Refer to appendix G for the comprehensive list of Air Safety Investigators' equipment, including the Go-Kit, collective tools and Biohazard protective kits and appendix H for the guidance on how to use the personal protective equipment (PPE) against biological hazards at accident sites.

4.6.1.16 The Bureau relies on the assistance from civil and military institutions, police, Accident Investigation Authorities of other States for the timely provision of additional facilities, equipment, and personnel. These include means of transport (helicopters, boats, ships, etc.), research equipment, geographical maps, lifting devices (cranes, bulldozers, etc.), metal detectors, communication equipment and divers. This assistance is governed by signed memorandums of understanding (MoU).

4.6.2 Office Facilities and Equipment

4.6.2.1 The Bureau has its headquarters located at Nnamdi Azikiwe International Airport, Abuja and two regional Offices in Enugu and Kano.

4.6.2.2 The facilities and premises of the Bureau's offices are maintained in good condition to enable investigators to carry out their duties effectively and efficiently.

4.6.2.3 These premises have workstations, computers with internet access, ipads, printers, scanners, photocopiers and mobile telephones. The Bureau also has a fully equipped mobile office which can be deployed to accident site.

4.6.2.4 The technical documentation (legislation, manuals, checklists and forms) is available on Bureau's the website to allow 24/7 access by its personnel.

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4.6.2.5 A Library is available for the referencing of physical and digital documents (aircraft manufacturers’ documents).

4.6.2.6 The Director of Human Resources and Administration ensures that an adequate and conducive working environment is maintained. In particular, he ensures that the lighting, noise and temperature are such that they guarantee the proper execution of the tasks assigned to the personnel and that dust and any other contamination of the air are kept at a minimum level.

4.6.3 Access to Airport Restricted Areas

4.6.3.1 Investigators are given airport passes to enable them have access to restricted areas of the air side in airports where they operate.

4.6.3.2 The General Manager of Safety and Security makes an annual request for the airport access passes to the Airport Managers/Federal Airports Authority of Nigeria (FAAN) as appropriate.

4.6.4 Occupational Health and Safety at the Accident/Incident Site

4.6.4.1 At the scene of the accident/incident, participants in an investigation may be exposed to a wide range of health and safety hazards. These hazards, which result from damage to aircraft structures, systems, components and contents, vary and depend on factors related to the accident/incident scenario (geographic location, weather conditions, environment, safety, etc.). The dangers exposed include Biological hazards (blood borne pathogens), airborne hazards (vapors, smoke, dust from burnt composite materials, etc.), physical hazards (adverse terrain, sharp or heavy objects, unstable wreckage, etc.), dangerous goods (pressurized equipment, radio-active, flammable or toxic materials, etc.), adverse weather conditions, and so on.

4.6.4.2 The blood borne pathogens are viruses, bacteria, and parasites that are present in the blood, tissue, or other body fluids of infected persons. They include, but are not limited to, Hepatitis B and C virus (HBV) and the Human Immunodeficiency Virus (HIV), which causes AIDS disease. Some of these viruses do not die upon contact with oxygen or when the fluids dry out. Studies, in fact, show that certain climatic conditions may prolong the infectiousness of HIV. Those who work in or around the wreckage must use extreme caution to minimize direct contact with blood borne viruses. At a minimum, heavy leather gloves over non-permeable rubber gloves should be used and in some case will be required when touching the wreckage. Under certain conditions, such as within the wreckage where investigators may come into contact with blood or human remains. Full face masks, protective goggles, and disposable overalls and booties shall be worn.

4.6.4.3 All Safety Investigators who work among wreckage or travelling to an area with certain known public health risks or suspected disease are to be given a valid anti-tetanus serum inoculation and hepatitis immunization, as well as necessary personal protective equipment against biological hazards, such as blood-borne pathogens. Records of the immunizations should be maintained for each Safety Investigator.

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4.6.4.4 It is the policy of the Bureau to provide all Safety Investigators with initial and recurrent training on biological hazard protective equipment and procedures (refer to Appendix H for the guidelines on PPE against Biohazard). Records of such training are maintained for each Safety Investigator.

4.6.4.5 Accidents and incidents are apt to occur anywhere: at airports, in mountains, swamps, deeply wooded areas, deserts, etc. Hardships are often encountered in reaching accident sites in remote areas, and it is therefore important that safety investigators be physically fit and that working gear be selected with due consideration to terrain and weather.

4.6.4.6 The deployment of investigation personnel to the site of an accident/incident is conditioned by:

- a) medical fitness;
- b) training on the hazards of the accident/incident site and the inherent risks;
- c) the availability of adequate protective equipment.

4.6.4.7 The General Manager of Safety and Security drew up a non-exhaustive list of the potential dangers of the accident/incident site (See Appendix I for Accident Site Hazard Identification and Risk Assessment Checklist NSIB.01.06).

4.6.4.8 The risks associated with the hazards of the accident/incident site are assessed and mitigation measures determined prior to the start of the Go-Team or investigation team.

4.6.4.9 The risk assessment is carried out using the Accident/Incident Site Risk Assessment Form with the assistance of search and rescue, Airport firefighting services, medical professionals and dangerous goods specialists, as appropriate.

4.6.4.10 The Investigator-in-charge is responsible for health and safety matters at the accident/incident site. He/she shall ensure compliance with the measures in place; this responsibility may be assumed by any other formally designated person.

4.6.4.11 At the site of the accident/incident, he/she regularly updates his risk matrix and organizes meetings with the members of the investigation team and other stakeholders at the site of the accident/incident to deal with questions relating to the management of the risks present at the site. The support of fire department and dangerous goods specialists should be enlisted, as necessary, to evaluate known and/or potential hazards, and to brief the investigation team, as appropriate.

4.6.4.12 During the opening statement, the investigator-in-charge should state that the Bureau will neither assume responsibility for any personal injuries incurred during the course of an investigation by representatives of organizations participating in the investigation as a party or by authorized observer, nor will the Bureau provide PPE to party participants.

4.6.4.13 The assigned Safety Coordinator and/or investigator-in-charge will be responsible for conducting daily safety briefings with all individuals working at the accident site. The investigator-in-

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charge shall monitor to ensure all personnel working at accident site display good conduct, judgment, use appropriate PPE as well as exercise caution.

4.6.4.14 All participants in the investigation should promptly communicate any health and safety concerns at the scene of the accident/incident to the investigator-in-charge so that appropriate action can be taken.

4.6.4.15 The monitoring table for investigator vaccination deadlines is managed by the Director of Human Resources and Administration in coordination with the Director of Engineering and Director of Operations.

4.6.4.16 ICAO Circular 315, *Hazards at Aircraft Accident Sites*, contains detailed guidance on managing occupational health risks in aircraft accident investigation, including the various categories of hazards associated with accident and incident investigation. The Bureau uses the generic operational safety planning guide contained in Chapter 4 of Circular 315, as well as the operational safety plan/site assessment tool contained in Appendix A to Chapter 4 of Circular 315, and the personal protective equipment guide contained in Appendix B to Chapter 4 of Circular 315.

4.6.5 Investigators Field Support Funds

4.6.5.1 In view of the nature and hazards associated with accident/incident investigations and the difficulties in accessing the terrain as may be required, the investigators shall be provided such reasonable financial allowances as may be determined by the Director-General/CEO in addition to their 4.6.5.2 duty tour allowance.

The Director of Engineering and Director of Operations shall in coordination with the Director of Finance and Accounts, ensure the allowances due to investigators are paid promptly.

4.6.6 Travel Arrangements

4.6.6.1 The Bureau has made available sufficient support for much of the initial coordination effort necessary in terms of travel and hotel arrangement to launch the Go-Team. Whenever possible, the entire Go -Team will travel together to the accident site.

4.6.6.2 Adequate operational land vehicles are dedicated by the Bureau for this purpose for use to transport Go-Team and their equipment to accident sites that can be accessed faster by road.

4.6.6.3 The Director of Human Resources and Administration shall ensure the dedicated land vehicles are kept in order and duty drivers ready for deployment at the shortest notice. The vehicles should have visible identification and anti-collision lights installed.

4.6.6.4 If the distance to the site is beyond reasonable driving distance, commercial aircraft will be used to transport the team. Individual team members should make arrangement for their air tickets through the IIC as soon as possible to enable the team travel together.

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4.6.6.5 The investigator-in-charge should make arrangement for the team to stay in the same hotel as well as the arrangement for local transportation logistics from the hotel to the accident site for the entire duration of their stay. The following parameters are taken into account when selecting the place of accommodation for interviewers:

- a) proximity to the site of the accident/incident or where investigation work is being carried out;
- b) the availability and suitability of rooms for all members of the investigation team;
- c) the availability of a meeting room;
- d) the cost of accommodation.

4.6.6.6 The Director-General/CEO will arrange for a charter air transportation, including seeking assistance from the Police Air wing or the military, where necessary. If space on the chartered aircraft is limited, team members should be selected according to the importance of accomplishing their duties during the first hours of the investigation. Give priority to group chairmen whose initial presence at site with the investigator-in-charge is critical. Typically, the structures and systems group chairman is need to ensure oversight of on-site activities and the operations group chairman is needed to interact with airline personnel on site. IIC should ensure that all intended passengers on the chartered flight understand the proper reporting time to appear at the airport.

4.6.6.7 In the event travel outside the Nigeria is required, the administrative formalities (visas, travel documents, accommodation, etc.) necessary to facilitate the travel should be concluded and carried out by the administrative, legal financial and logistics departments respectively as soon as practicable to enable the concerned team members accomplish travel.

4.6.6.8 It is the responsibility of each investigator to keep their travel documents up to date (passport, Yellow card, Covid-19 Vaccination card, etc.).

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CHAPTER 5

5.0 INITIAL NOTIFICATION AND RESPONSE

5.1 GENERAL

This chapter contains policies and procedures pertaining to:

- a) reporting requirements;
- b) initial notification and reporting of aircraft accidents and incidents to civil aircraft that occur in Nigeria or outside;
- c) responses to initial notifications from other States regarding accidents and incidents that occur outside the country but involving interests of Nigeria- registered or operated aircraft); and
- d) delegation in whole or in part of investigations.

Note.— It is the policy of Nigeria and the Bureau to comply with the provisions of Annex 13, Chapter 4 Notification, regarding accidents and incidents occurring in Nigeria. Therefore, not all of the details contained in Annex 13, Chapter 4, are repeated herein.

5.2 REPORTING REQUIREMENTS

5.2.1 Types of Occurrences

The Bureau is particularly concerned by the following occurrences:

- a) accident/ serious incident occurring within or over the territory of Nigeria involving aircraft registered in Nigeria or any ICAO Member State;
- b) accident/ serious incident occurring in another State or non-Contracting State involving an aircraft registered in Nigeria or an aircraft operated by a Nigerian operator or where nationals of Nigeria suffered fatalities or seriously injuries;
- c) accident / serious incident in a non-Contracting State and involving an aircraft registered in Nigeria or operated by a Nigerian operator;
- d) accident / serious incident in international waters or at a place which cannot be established as the territory of a State and involving an aircraft registered in Nigeria or operated by a Nigerian operator.

5.2.2 Obligation to notify

5.2.2.1 Early notification is essential to initiate and organize the investigation. Initial information concerning the facts and circumstances of the occurrence will often be incomplete and erroneous. For

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this reason, early factual information transmitted for alerting purpose must be handled with considerable discretion. Parties notified are to be cautioned about the preliminary nature of the data.

5.2.2.2 The Bureau’s notification and reporting checklist NSIB.01.02 (refer to appendix J2) is an extracted from Annex 13, Attachment B. It specifies the various reporting requirements for different types of accidents and serious incidents. It is the responsibility of the Bureau on behalf of Nigeria to comply with the notification and reporting requirements of Annex 13 (Chapters 4, 6 and 7). All notifications and reports will be forwarded in English language.

REPORTING CHECKLIST			
Notification – accidents and serious incidents			
From	For	Send to	ICAO Annex 13 reference
Bureau (Occurrence within Nigeria)	Accidents/Incidents occurrences: all aircraft	State of Registry State of Operator State of Design State of manufacture ICAO (when aircraft over 2 250 kg or is a turbo-powered aeroplane)	4.1
State of Registry	Domestic and other occurrences (aircraft accidents/incidents)	State of Operator State of Design State of manufacture ICAO (when aircraft over 2 250 kg or is a turbo-powered aeroplane)	4.8

Table 5.1 Reporting Checklist (NSIB.01.02)

5.2.2.3 A link on the Bureau’s website www.icao.int/safety/AIA/pages directs to the ICAO public FSIX website, which contains the updated addresses of aircraft accident investigation authorities of other States. The list and addresses of aircraft accident investigation authorities can also be found in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I *Organization and Planning*, however, the addresses in this manual might not be the most current at the moment. (Chapters 10 and 11 of this manual contain additional reporting requirements).

Note:- A list of “serious incidents” requiring notification is contained in Appendix D of this manual (reference Annex 13, Attachment C).

5.2.2.4 All notifications from the Bureau are made in plain English.



5.2.3.5 Notification of accidents/ incidents addressed to ICAO should be made by email to the address: AIGInbox@icao.int Cc: adrep@icao.int; cstjohn@icao.int or via the following link: https://www.icao.int/safety/Reporting/formapp/index_ml.html.

5.3 NOTIFICATION PROCEDURES TO THE BUREAU AND OTHER STATES

5.3.1 The 24-Hour Duty Regime

5.3.1.1 Immediate notification of accidents/incidents to the Bureau can be done by phone call, email, internet and MobileApp, choosing some of the quickest means available.

5.3.1.2 Written report (filled Accident and Incident Reporting Form (Form AIB.01.00) can be submitted to the Bureau by the aviation organizations concerned who are required by the regulation within 72 hours after the making immediate notification by the quickest means available. A specimen of Accident and Incident Reporting Form in hard copy is sent to:

- a) The Nigeria Civil Aviation Authority
- b) The Nigerian Airspace Management Agency (ATS & Search a Rescue);
- c) Operators/owners of aircraft in Nigeria;
- d) Federal Airports Authority of Nigeria (Aerodrome/airport operators); and
- e) Other service providers.

5.3.1.3 The Nigerian Safety Investigation Bureau maintains a 24-hour-a-day Duty Officer to receive reports of accidents and incidents through two separate emergency mobile lines, in addition to the Command and Control Center, which monitors ATC to aircraft communications on radios. The Duty Officers' hotline mobile phones are configured to receive notifications sent through the e-mail (info@aib.gov.ng), Mobile App for reporting occurrences and the Reporting Form on the Bureau's internet from on the website within the country and from other States.

5.3.1.4 The Duty Officer position roster is rotated among Air Safety Investigators on a weekly basis.

5.3.1.5 In addition to the Duty Officers, The Director-General/CEO, Director of Engineering, Director of Operations, General Manager Operations and other top management staff are enlisted to receive notifications from the Mobile App, Internet Reporting Form and e-mails: info@aib.gov.ng; commissioner@aib.gov.ng. Paper copies of Aircraft Accident/Incident Reporting Form (NSIB.001) are distributed to Federal Airports Authority of Nigeria, Nigerian Airspace Management Agency (ATS providers) and all Aircraft operators/ owners in Nigeria for use to report accidents or incidents.

5.3.1.6 The Director-General/CEO shall ensure that up-to-date contact and address information for reporting of accidents and incidents to the Bureau is made available to the relevant aviation organizations within Nigeria, Air traffic services (ATS) facilities, airport authorities, Police and aircraft operators. The 24-hour contact information for the Bureau is also published on its internet website www.aib.gov.ng for use by domestic and international aviation community to contact the Bureau's Duty Officer for notification of occurrences.

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5.3.1.7 The Bureau also operates a Command and Control Centre (CCC) which is equipped to monitor real-time ATC to Pilot communications, news and social media to ensure information on occurrences of air accidents and incidents are captured on time. The Command and Control Centre calls the emergency numbers whenever they pick communications indicating an aircraft was in distress and also informs the Director-General/CEO about it.

5.3. 1.8 The contact details (address, e-mail and telephone numbers) of the Bureau, including the 24-hour duty officer for receiving aviation accident/incident notifications are published on the Bureau’s and ICAO websites as well as on the Aeronautical Information Publication (AIP), for the aeronautical community. They are also displayed at airport fire terminals and Air Traffic Control Towers.

5.3.1.9 The contact information of the Bureau to be submitted to ICAO should include the following:

- a) Name of the Bureau
- b) Physical address of the Bureau, including Zip/Postal Code, if available
- c) Postal address, if available
- d) 24 Hour Duty Emergency Mobile numbers and telephone number, if available
- e) Email address
- f) Bureau’s website address.

5.3.1.10 If at any time the contact information of the Bureau changes, the Director-General should as soon as practicable, notify the Secretary General of ICAO of the new change(s) and the time the change will take effect. The new contact information should be forwarded through the email: icaohq@icao.int.

5.3.1.11 The Director-General/CEO is responsible to notify the HQ ICAO of the contact information of the Bureau to enable the Bureau receive notifications from other States.

5.3.2 Raising Public Awareness on the Reporting System

5.3.2.1 The need for prompt reporting of occurrences to the Bureau is critical to immediate response of local authorities (fire and police) and the timely arrival of the investigators to secure the site for collection of perishable evidences at accident sites to enable effective conduct of aircraft accident and incident investigation.

5.3.2.2 It is important that the Bureau raises the awareness of the general public and in particular the aviation industry on the means to report occurrences to the Bureau.

5.3.2.3 The Director-General/CEO in coordination with the General Manager of Public Affairs shall organize public awareness activities every year in order to sensitize the general public and aviation community on the aircraft accident and incident reporting system in addition to other critical safety matters.

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5.4 RESPONSE TO NOTIFICATIONS

5.4.1 Domestic Investigations

5.4.1.1 Upon receiving a notification of an occurrence of accident, serious incident or incident, the Duty Officer should ensure that required information has been provided by the reporter and, if necessary, immediately contact the reporting source to obtain additional information to identify organizations involved in the occurrence, to determine who else has been informed of the occurrence, and to determine which actions have already been taken in response to the occurrence. If the reporting source is an accident investigation authority of another State, the Duty Officer should acknowledge receipt by email.

5.4.1.2 The Duty Officer should waste no more time and alert the management of the Bureau by making phone call to the Director-General/CEO, Director of Operations, Director of Engineering and the General Manager Safety and Security in this order of priority. The Director-General should inform the Minister responsible for Aviation as soon as practicable, in the event of a major accident.

5.4.1.3 The Duty should consult and take necessary actions in the *response to notification* section of the Checklist *Initial Actions after Notification* (NSIB.01.05) - refer to Appendix K of this manual. In particular:

- a) Immediately contact the source of the report/notification or any other organization (local authorities, aerodrome operator, etc.) by phone call to ensure the availability of all relevant information about the occurrence;
- b) Coordinate notification of other government agencies and relevant relevant organizations using the list of contacts of organizations and other government agencies.
- c) Contact by phone call (refer to the list of contact of operators) the operator of the aircraft involved in the accident/incident to obtain information on the persons transported and the dangerous goods on board the aircraft, if applicable;
- d) inform the Nigeria Civil Aviation Authority, the search & rescue services, the competent local authorities who could be involved or who have an interest in the occurrence with regard to:
 - 1) the need to secure the occurrence site, aircraft, wreckage and any other related equipment to ensure their preservation, and the need to preserve and photograph any non-durable evidence;
 - 2) the need to preserve all documentation and records related to the occurrence;
 - 3) the type of investigation to be carried out, if known;

5.4.1.4 The Director-General/CEO in coordination with the Director of Engineering and/or Director of Operations should constitute a Go-Team consisting of one or more (depending on the type of the occurrence) Operations (Pilot/Air Traffic Controller) and/or Engineering investigators and designate one of them as the leader (investigatpor-in0charge or designated investigator) for:

- a) an immediate review of the information in the notification to ensure that all the required information has been provided (Appendix L of this manual is an example of the information that should be contained in a notification);
- b) the collection of missing or additional information, as soon as possible;

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- c) the validation of the information collected, to the degree possible;
- d) The preparation towards immediate departure to the accident/incident site for information gathering; and
- e) Carrying out an assessment of the information received and the circumstances of the occurrence to determine the classification of the occurrence (accident, serious incident or incident) and the scope and size of the investigation to be conducted. If the occurrence is an accident or serious incident, the Director-General/CEO shall immediately institute an investigation. If it classified as incident, then it becomes the discretion of the Director-General/CEO to lunch an investigator or relinquish it to Nigeria Civil Aviation Authority.

5.4.1.5 The Duty Officer should, after alerting the Director-General/CEO, immediately start to coordinate the notification of interested parties (use comprehensive list of government agencies, organization and service providers) such as airline operator, other relevant Nigerian government agencies and relevant organizations, such as Nigerian Civil Aviation Authority (NCAA), National Emergency Management Agency (NEMA), Aerodrome Fire Fighting and Rescue Services (AFFRS), Search and Rescue, Police, Road Safety, Nigerian Security and Civil Defence Corps (NSCDC) and any other organization that is expected to be notified of accidents or be present at accident sites. A comprehensive list of these agencies and organizations and their contact information is maintained and updated regularly.

5.4.1.6 As soon as possible, the Go-Team should submit feedback and recommendations to the Director-General/CEO regarding the classification of the occurrence, on the actions to take and lunching of investigation. The Director-General/CEO in coordination with Director of Operations and/or Director of Engineering will assess the recommendations and make decision on whether to institute an investigation and if yes, the decision on the conduct of the investigation of the occurrence.

5.4.1.7 Once the decision to launch investigation has been made by the Director-General/CEO, the composition of the investigation team must be determined immediately. The Director-General/CEO in coordination with Director of Operations and/or Director of Engineering will constitute the investigation team members, including appointment of an Investigator-in-charge (IIC) (or designated investigator as appropriate). An Air Safety Investigator with extensive experience will be appointed as IIC. The investigation team members must prepare for immediate departure to the occurrence site.

Note:- According to the Chapter 5 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Director-General/CEO shall institute investigation of all accidents and serious incidents, however, the Director-General/CEO will decide if the Bureau should institute investigation into an incident depending on the possible lessons to be learned and the availability of resources to conduct that investigation.

5.4.1.8 As the information about the nature of the accident is often incomplete and frequently erroneous at the time of the launch, there may not be sufficient information with which to make a final decision about the composition of the Go-Team. The Director-General/CEO may request a particular specialist to join the Go-Team. If his/her expertise is later considered to be unnecessary, he/she should be released by the IIC. Regardless of the circumstances, accidents involving large transport aircraft or new generation aircraft will normally be staffed with a full Go-Team. Additional groups may be formed to interview witnesses, examine the response of aircraft rescue and firefighting (ARFF) personnel, or other duties, as required to support the investigation. Bureau's specialists head

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each of the groups. IIC will be the overall chairman of the Go-Team. Bureau's Air Safety Investigators in training will be assigned as members of investigative groups under the supervision of another experienced Air Safety Investigator, usually a group chairman or IIC.

5.4.1.9 Each Air Safety Investigator, as well as outside personnel used on a temporary basis, must be fully aware of their duties and responsibilities. All personnel on call should arrange their personal affairs such that they are able to depart to the site of an accident with a minimum of delay. Personnel should always ensure that they can be reached when on call.

5.4.1.10 The Duty Officer, in coordination with the IIC should ensure that the relevant portions of the *Initial Actions after Notification Checklist* (NSIB.01.05) are filled with the required information.

5.4.1.11 The Duty Officer in coordination with the Director of Engineering or Director of Operations and immediately following decision to institute investigation and the appointment of investigation team, should coordinate the notification of other involved States, such as the States of Registry, Operator, Design, Manufacturer, and/or International Civil Aviation Organization, when the aircraft involved in the accident is of maximum mass of 2,250 kg or is a turbojet-powered aeroplane. Notification and reporting to ICAO are also addressed in Chapter 11 of this manual. The notification shall be made with a minimum delay using email. The Duty Officer should use Notification and Reporting Checklist (NSIB.01.02) in appendix J2 and Notification Form (NSIB.01.03) in appendix L for this purpose, including the determination of recipient States.

5.4.1.12 The initial (and the amended initial) notification to other States and ICAO shall contain the following general information, if available:

- a) for accidents the identifying abbreviation ACCID, for serious incidents/incidents SINCID, for incidents INCID;
- b) manufacturer, model, nationality and registration marks, and serial number of the aircraft;
- c) name of owner, operator and Hirer, if any, of the aircraft;
- d) qualification of the pilot-in-command, and nationality of crew and passengers;
- e) date and time (local time or UTC) of the accident or serious incident;
- f) last point of departure and point of intended landing of the aircraft;
- g) position of the aircraft with reference to some easily defined geographical point, and latitude and longitude;
- h) number of crew and passengers; aboard, killed and seriously injured; others, killed and seriously injured;
- i) description of the accident or serious incident and the extent of damage to the aircraft, so far as is known;

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- j) an indication to what extent the investigation will be conducted or is proposed to be delegated by the State of Occurrence;
- k) physical characteristics of the accident or serious incident area, as well as an indication of access difficulties or special requirements to reach the site;
- l) identification of the originating authority and means to contact the Safety Investigator-in-charge and the accident investigation authority of the State of Occurrence at any time; and
- m) presence and description of dangerous goods carried on board the aircraft.

Note. - Absence of complete preliminary information on the accident should not cause delay in notification. Any omitted details and/or other known relevant information shall be dispatched to the States concerned as soon as they are available. T

5.4.1.13 The following is an example of accident notification using Form NSIB.01.03 (see appendix L)

EXAMPLE OF A NOTIFICATION

Information required (Annex 13 paragraph 4.2)	Example
a) for accidents the identifying abbreviation ACCID, for serious incidents INCID	ACCID;
b) manufacturer, model, nationality and registration marks, serial number of the aircraft	Boeing 737-300, Nigeria, 5N-ABC, Serial no. 20280
c) name of owner, operator and Hirer, if any, of the aircraft	Anyone Airlines ltd
d) qualification of the pilot-in-command, and nationality of crew and passengers	Captain, Crew: Nigeria; passengers: unknown
e) date and time (local time or UTC) of the accident or serious incident;	7 th October 1983
f) last point of departure and point of intended landing of the aircraft	Lagos/ MMA- Abuja/ ABV
g) position of the aircraft with reference to some easily defined geographical point, and latitude and longitude ¹	12 km south of kabba, 7° 49'27"N, 6° 04'41"E, elevation 2200 m
h) number of crew and passengers; aboard, killed and seriously injured; others; killed and seriously injured; ²	6 crew and 57 passengers aboard: all fatally injured; others: none;
i) description of the accident or serious incident and the extent of damage to the aircraft, so far as is known;	Aircraft collided with mountain side in the Lokoja area. Aircraft destroyed by fire
j) an indication to what extent the investigation will be conducted or is proposed to be delegated by the State of Occurrence;	Full investigation by the Nigerian Safety Investigation Bureau- Nigeria
k) physical characteristics of the accident or serious incident area, as well as an indication of access difficulties or special requirements to reach the site	Mountainous area, difficult access, thick forest, wild animals
l) identification of the originating authority and means to contact the Safety Investigator-in-charge and the accident investigation authority of the State Occurrence at any time, and	Nigerian Safety Investigation Bureau, Murtala Muhammed International Airport, Ikeja- Lagos, Nigeria. For additional information, contact the following telephone numbers: +234 807 709 0900, +234 807 709 0909, and e-mail address: Director-General@NSIB.gov.ng , info@NSIB.gov.ng
m) presence and description of dangerous goods carried on board the aircraft	None

Table 5.2 Example of a completed Notification Form NSIB.01.03

1. It may be useful to indicate the altitude of the accident site, if known.

¹ It may be helpful to provide the elevation of the accident site, if it is known.

² It is useful to first provide the number of persons aboard (crew, passengers) and then the injuries they sustained



2. *It is useful to first indicate the number of people on board (crew, passengers) and then their injuries.*

5.4.1.14 The Duty Officer should input the preliminary information obtained from the reporting source and the airline operator involved in the occurrence into the initial Notification Form (NSIB.01.03) and to ensure that the information contained in the notification form is accurate and complete. The Duty Officer should also prepare transmittal letters for forwarding the initial notification forms to the States concerned. The transmittal letters shall invite the recipient States to appoint their accredited representatives to participate in the investigation.

5.4.1.15 The Duty Officer should submit the completed initial notification form and the draft transmittal letters to the Director of Engineering or the Director of Operations as the case may be for approval.

5.4.1.16 The up-to-date addresses and contact information of the accident investigation authorities of other States are found by clicking the link: www.icao.int/safety/AIA/pages on the Bureau's website. If notification to ICAO is required, then forward the notification to ALGInbox@icao.int Cc: adrep@icao.int; cstjohn@icao.int or via the following link: https://www.icao.int/safety/Reporting/formapp/index_ml.html.

5.4.1.17 The Duty Officer should as soon as the approval is obtained, forward the approved initial notification form with transmittal letters to the States identified in paragraph 5.4.1.10 and ICAO without much further delay by using email.

Note:- Lack of complete information at the early stage of the investigation should not prevent forwarding of the initial notification to the States concerned. When new details or more accurate information of the occurrence becomes available, the Duty Officer in coordination with the IIC should revise the notification form and resubmit to the States concerned as soon as possible.

5.4.1.18 The The Duty Officer should hand over the the notification documents and other information gathered to the investigator-in-charge. The IIC should make copies of the initial notification forms (including revised notification if applicable) and the associated transmittal letters, any acknowledgement of receipt of the notifications and further correspondences from the recipient States and shall keep them in the investigation files. The investigation file shall be updated as more information is gathered until the completion of the investigation and publication of the final report.

Response to Notification of Occurrence involving Nigerian registered/operated aircraft when State of Occurrence is not Aware

5.4.1.19 When an accident, serious incident or incident to be investigated occurs abroad to an aircraft registered in Nigeria or operated by a Nigerian operator and the State of Occurrence is not aware of it, the Duty Officer shall, in coordination with the Director of Engineering or Director of Operations forward notification of such occurrence to:

- a) the State of Design;
- b) the State of Manufacture;

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- c) the State of Occurrence; and
- d) ICAO, when applicable.

5.4.1.20 The procedures in 5.4.1.10 through 5.4.1.17 above should be followed for this notification.

Response to Notification of Occurrence involving Nigerian registered aircraft Outside the Territory of any State

5.4.1.21 When an accident, serious incident or incident to be investigated by the Bureau occurs to an aircraft registered in Nigeria in a non-contracting State, or outside the territory of any State, the Duty IIC shall in coordination with the Director of Engineering or Director of Operations forward notification of such accident or incident to:

- a) the State of Design;
- b) the State of Manufacture;
- c) the State of the Operator; and
- d) ICAO, when applicable.

5.4.1.22 The procedures in 5.4.1.10 through 5.4.1.17 above should be followed for this notification.

5.4.2 Institution, Conduct and Delegation of Investigation

5.4.2.1 Decision to Launch and Conduct an Investigation

Pursuant to chapter 5.1 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, in compliance with Article 26 of the Convention on International Civil Aviation, the Director-General/CEO shall automatically open an investigation in the event of an accident and serious incident occurring in or over Nigerian territory.

The Director-General/CEO may also institute investigations into incidents based on the probable scope of the investigation, the scale of the tasks, the lessons to be learned for aviation safety, but also takes into account the following factors:

- a) the number of injured;
- b) the type of aircraft;
- c) previous accidents of this type;
- d) the place of the accident;
- e) the extent of damage to the aircraft or ground;
- f) Impact on environment;
- g) public interest; and

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h) Investigators' workload.

5.4.2.1.1 Determination/ Classification of Occurrence to an Accident

5.4.2.1.1.1 For an occurrence to be classified as an aircraft accident, the following condition must be fulfilled:

- a) a person is fatally or seriously injured as a result of:
 - i. being in the aircraft, or
 - ii. direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
 - iii. direct exposure to jet blast,

except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or

- b) the aircraft sustains damage or structural failure which:
 - i. adversely affects the structural strength, performance or flight characteristics of the aircraft, and
 - ii. would normally require major repair or replacement of the affected component,

except for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome); or

- c) the aircraft is missing or is completely inaccessible.

5.4.2.1.1.2 For statistical uniformity only, an injury resulting in death within thirty days of the date of the accident is classified, by ICAO, as a fatal injury.

5.4.2.1.1.3 Guidance for the determination of aircraft damage is as follows:

- a) If an engine separates from an aircraft, the event is categorized as an accident even if damage is confined to the engine;
- b) A loss of engine cowls (fan or core) or reverser components which does not result in further damage to the aircraft is not considered an accident;
- c) Occurrences where compressor or turbine blades or other engine internal components are ejected through the engine tail pipe are not considered accidents;

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- d) A collapsed or missing radome is not considered an accident unless there is related substantial damage in other structures or systems;
- e) Occurrences of missing flaps, slats and other lift augmenting devices, winglets, etc., that are permitted for dispatch under the configuration deviation list (CDL) are not considered accidents;
- f) Retraction of a landing gear leg or wheels-up landing, resulting in skin abrasion only, when the aircraft can be safely dispatched after minor repairs or patching, and subsequently undergoes more extensive work to effect a permanent repair, would not be classified as an accident;
- g) If the structural damage is such that the aircraft depressurizes, or cannot be pressurized, the occurrence is categorized as an accident;
- h) The removal of components for inspection following an occurrence, such as the precautionary removal of an undercarriage leg following a low-speed runway excursion, while involving considerable work, is not considered an accident unless significant damage is found;
- i) Occurrences that involve an emergency evacuation are not counted as accidents unless someone receives serious injuries or the aircraft has sustained significant damage.

Note 1.— Regarding aircraft damage which adversely affects the structural strength, performance or flight characteristics, the aircraft may have landed safely, but cannot be safely dispatched on a further sector without repair.

Note 2.— If the aircraft can be safely dispatched after minor repairs and subsequently undergoes more extensive work to effect a permanent repair, then the occurrence would not be classified as an accident. Likewise, if the aircraft can be dispatched under the CDL with the affected component removed, missing or inoperative, the repair would not be considered as a major repair and consequently the occurrence would not be considered an accident.

Note 3.— The cost of repairs, or estimated loss, such as provided by insurance companies may provide an indication of the damage sustained but should not be used as the sole guide as to whether the damage is sufficient to count the occurrence as an accident. Likewise, an aircraft may be considered a “hull loss” because it is uneconomic to repair, without it having incurred sufficient damage to be classified as an accident.

5.4.2.1.1.4 An aircraft is considered to be missing when the official search has been terminated and the wreckage has not been located.

5.4.2.1.2 Determination/ Classification of Occurrence to a Serious Incident using Risk Analysis

5.4.2.1.2.1 The term “serious incident” is defined as an incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an Unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.

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5.4.2.1.2.2 There may be a high probability of an accident if there are few or no safety defences remaining to prevent the incident from progressing to an accident. To determine this, an event risk-based analysis (that takes into account the most credible scenario had the incident escalated and the effectiveness of the remaining defences between the incident and the potential accident) can be performed as follows:

- a) consider whether there is a credible scenario by which this incident could have escalated to an accident; and
- b) assess the remaining defences between the incident and the potential accident as:
 - i. effective, if several defences remained and needed to coincidentally fail; or
 - ii. limited, if few or no defences remained, or when the accident was only avoided due to providence.

5.4.2.1.2.3 Consider both the number and robustness of the remaining defences between the incident and the potential accident. Ignore defences that failed, and consider only those that worked and any subsequent defences still in place.

Note 1.— The most credible scenario refers to the realistic assessment of injury and/or damage resulting from the potential accident.

Note 2.— Defences include crew, their training and procedures, ATC, alerts (within and outside the aircraft), aircraft systems and redundancies, structural design of the aircraft and aerodrome infrastructure.

5.4.2.1.2.4 The combination of these two assessments helps to determine which incidents are serious incidents:

		b) Remaining defences between the incident and the potential accident	
		Effective	Limited
a) Most credible scenario	Accident	Incident	Serious Incident
	No accident	Incident	

5.4.2.1.2.5 The incidents listed in Appendix D of this manual are examples of what may be serious incidents. However, the list is not exhaustive and, depending on the context, items on the list may not be classified as serious incidents if effective defences remained between the incident and the credible scenario.

Note 1.— The most credible scenario refers to the realistic assessment of injury and/or damage resulting from the potential accident.

5.4.2.1.2.6 Assessment of the outcome of the analysis:



a) if the outcome of risk analysis indicates a serious incident (Cat 1 “Minor”), the decision is simple, an Annex 13 investigation must be opened.

b) For a non-serious incident (Cat 2), the Director-General/CEO may decide to open an investigation if:

- 1) He/she finds that there are lessons to be learned by conducting the investigation; and
- 2) Are there several parties involved in the occurrence (airline, ATS, manufacturer, airport, etc.)?
- 3) Is this a recurring event?
- 4) Does the occurrence present unusual/ priority challenge to the Bureau?
- 5) is there heightened media attention to the occurrence (high profile personality involved)?

5.4.2.1.2.7 The output of Cat 2 investigation would normally be a safety Bulletin which does not require full Annex 13 final report.

5.4.2.1.2.8 Upon completion of the analysis of the event and classification into accident, serious incident or incident, the, the leader of the Go-team will submit report with recommendations to the Director-General/CEO for a decision on whether to launch an investigation or not.

5.4.2.1.2.9 When the Director-General/CEO, in coordination with the Director of Operations or Engineering, decides to open an investigation, an investigation team is set up. He draws up the investigation team designation memo containing the names and designation of the investigation team, including the designation of investigator-in-charge.

5.4.2.1.2.10 The established investigation team may, where appropriate, be different from the intervention team (Go Team) initially deployed to site following receipt of notification. In such a case, the leader of the Go-Team hands over instructions and documents relating to the occurrence to the investigator-in-charge.

5.4.2.1.2.11 The Director-General/CEO may also consider:

- a) Request for assistance from other Accident Investigation Authorities the investigation services of other States for assistance, on the basis of reciprocal agreements;
- b) delegate all or parts of the investigation to another State's investigation authority, or to an RAIO, if the circumstances of the occurrence warrant.

5.4.2.2 Extent and Scope of the Investigation

5.4.2.2.1 General

5.4.2.2.1.1 It is essential that the magnitude of the tasks and the scope of the investigation be assessed at an early stage so that the size of the safety investigation team can be planned, and the appropriate expertise can be acquired for the investigation. To achieve its purpose, the investigation should be properly organized, carried out, coordinated and supervised by qualified technical personnel.

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5.4.2.2.1.2 Based on the assessment of the information contained in the notification and any other information available, the Director-General/CEO or any officer assigned by him/her must first decide on the type and scope of investigation and appoint the Investigator-in-charge, depending on the circumstances of the accident and the safety lessons that the Bureau expects to draw from the investigation for the improvement of safety. The scope of the investigation and the size and composition of the investigation team would be decided by the:

- a) injuries, deaths and damage to equipment, third parties and the environment;
- b) identified and potential safety issues underlying the accident/incident;
- c) the likelihood of recurrence, the probability of adverse consequences, and the severity of adverse consequences;
- d) accident and incident history related to the type of operation, size and type of aircraft, the operator, manufacturer, and regulator; and
- e) actual and potential deviations from industry safety and operational regulations, standards, procedures and practices.

5.4.2.2.1.3 The Investigator-in-charge then becomes directly responsible for organizing the investigation team and for assigning responsibilities to its members.

5.4.2.2.1.4 Throughout the investigation, the Investigator-in-charge will manage the progress of the investigation. Specifically, the Investigator-in-charge must review the evidence as it is developed and make decisions that will direct the extent and depth of the investigation. It should be recognized that the precise extent and depth will be contingent upon the nature of the occurrence and, possibly, upon the availability of investigative resources.

5.4.2.2.1.5 Similarities between occurrences may tempt the unwary to arrive at premature conclusions. It is imperative that each investigation be approached individually based on the circumstances of the occurrence. Based on the evidence uncovered by the on-site investigation, it may be possible to eliminate certain areas from possible causal consideration at a fairly early stage during the investigation. As the investigation progresses, however, the need for extensive studies in one or more particular fields might become evident. It should be noted that this later statement or the various sections of this manual that follow are not intended to convey the impression that extensive technical studies need to be performed in every investigation or that every investigation needs to cover every aspect of the aircraft and its operation.

5.4.2.2.2 Determining the Scope of Major Accident investigations

5.4.2.2.2.1 In a major accident investigation, a substantial team of investigators is usually necessary to cover all aspects of the occurrence. The Investigator-in-charge should establish working groups, as required, to cover various functional areas of the investigation. Normally, safety investigators from the Bureau will head the various working groups. The membership of such groups may include, as appropriate, other safety investigators from the Bureau, from the investigation authorities of the States involved in the occurrence, as well as experts from the operator and the manufacturers of the aircraft, Powerplant and accessories, who can contribute their technical knowledge and experience to the investigation. The number of groups, and the number of personnel assigned to each group, will

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depend on the type and complexity of the accident. Refer to section 8.2. in Chapter 8 of this manual for detailed major investigation management process.

5.4.2.2.2 Nothing precludes using the major accident investigation procedures for the investigation of serious incidents or accidents involving a small aircraft.

5.4.2.2.3 In some investigations, the apparent causes/contributing factors may become evident early in the investigation. In such situations, the subsequent prime investigative effort may then be channeled to good effect into a relatively narrow but specialized area. Nevertheless, it will still be necessary to investigate all factors that might have contributed to the accident and to eliminate those factors that did not. In situations wherein the causes are not readily apparent, the safety investigator must progress steadily through all aspects of the occurrence, and this type of situation may require substantive effort of many groups of investigators working in a balanced and coordinated manner.

5.4.2.2.3 Determining the Scope of Smaller Investigations of Incidents and Accidents

5.4.2.2.3.1 In the case of incidents and non-major accidents, the investigative effort required in terms of manpower and resources may be proportionately smaller than that required for a major accident. In such situations, the smaller investigation might be handled by one or two investigators. One group of investigators can be assigned responsibilities normally assigned to two or more groups, or alternatively, one trained investigator can conduct the investigation assisted by one or more subject-matter experts.

5.4.2.2.3.2 Most investigations into serious incidents may be conducted by a small investigation team. Notwithstanding, this does not preclude investigating a serious incident using a larger investigation team and following the guidance for major investigations contained in section 8.2.1 in Chapter 8 of this manual.

5.4.2.2.3.3 Even in small investigations, the degree of individual effort and diligence in accurately recording the facts and developing the analysis and conclusions must be of the same high standards as for major accident investigations.

5.4.3 Delegation of the Investigation (in Whole or in Part)

5.4.3.1 Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, section 5.5, provide provision states that the Director-General/CEO the whole or any part of an investigation of an accident or incident may be delegated by the the Director-General/CEO to another State or to a regional accident and incident investigation organization (RAIO), based on mutual arrangement and consent. In such a case, the Director-General/CEO shall facilitate the investigation carried out by that State in a best ways possible. The general spirit of Annex 13 is cooperation between States during investigations. Hence, timely communications, sharing of information, and sharing of investigative tasks between States using the authority to delegate the whole or part of any investigation foster such cooperation. It is the policy of the Bureau to comply with this spirit of cooperation.

5.4.3.2 The Director-General/CEO may consider delegating all or parts of the investigation to another State's investigation authority or an RAIO, to facilitate the conduct of an investigation where Nigeria is

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the State of Occurrence and the aircraft involved is operated, registered, designed and/ or manufactured by one or more other States;

5.4.3.3 The Director-General/CEO may consider delegating the supervision of the testing of aircraft components to the accident investigation authority of another State, when said tests must be carried out in facilities/laboratories outside of Nigeria;

- a) The Director-General/CEO takes care, as far as possible, not to carry them out in the facilities/laboratories of the manufacturer of the aircraft or aircraft components, to avoid conflicts of interest (real or perceived).
- b) If it happens that the only appropriate technical knowledge or tools are in the facilities/laboratories of the manufacturer, the work is carried out under the supervision of one or more investigators.

5.4.3.4 The Director-General/CEO may may delegate performance of flight recorder read-out and analysis to facility in another State when the Bureau’s flight recorder laboratory lacks the capability to perform the read-out and analysis of certain flight recorders. The Head of the Bureau’s Transportation Safety Laboratory shall identify recorders installed in aircraft generally operating in Nigerian airspace and determine the ones the laboratory lacks capability for their read-out and analysis and to ensure the list is periodically updated. In such case, the Head of the Transportation Safety Laboratory will forward to the Director-General/CEO the list containing details of the flight recorders and addresses of the laboratories that have read-out capability. the that the Director-General/CEO in coordination with the Bureau’s Legal Adviser will make prior arrangements (such as signed memorandum of understanding - MoU) with the identified accident investigation authorities of other States that have the required capabilities to ensure immediate read-out of such flight recorders is carried out without much delay.

5.4.3.5 In this regard, the Bureau has a signed MoU with BEA of France, AIB of Saudi Arabia, understanding with UK AAIB, US NTSB and Singapore TSB.

5.4.3.6 The Director-General/CEO may consider delegating all or part of the investigation to another State’s investigation authority or to an RAIO, when the aircraft registered in Nigeria having sustained in-flight damage or in-flight injuries lands in another State.

5.4.3.7 For occurrences in which Nigeria is the State of Occurrence, and involving aircraft operated, registered, designed and/or manufactured by other State(s), the Director-General/CEO may consider delegating the whole or parts of the investigation to an aircraft accident investigation authority in another State or to an RAIO, in order to facilitate a timely investigation. For example, for aircraft component examinations that must be conducted at facilities outside of Nigeria, the Director-General/CEO may delegate the oversight of the examinations to the accident investigation authority in another State. Whenever possible, the facility should not be the manufacturer, in order to avoid a real or perceived conflict of interest. However, there may be times when the only appropriate expertise or tooling will be at the manufacturer’s facility, so it will be necessary to ensure the Bureau’s Safety Investigator supervision of the work.

5.4.3.8 For occurrences over international waters involving in-flight damage or in-flight injuries to occupants of Nigerian-registered aircraft that lands in another State, the Director-General/CEO may

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delegate the whole or part of the investigation to the other State, or to a regional investigation organization, upon mutual arrangement and consent.

5.4.3.9 For occurrences in which Nigeria is the State of Occurrence, and request is received from the State of Registry, or State of Operator, or State of Design, or State of Design that the wreckage, its contents and any other evidence remain undisturbed pending inspection by an Accredited Representative of the requesting State, the Bureau shall take all necessary steps to comply with such request to the extent possible, provided that the wreckage and perishable evidences are secured to prevent destruction by persons, animals, fire, rain, wind or other causes.

5.5 RESPONSE TO NOTIFICATION RECEIVED FROM ANOTHER STATE

5.5.1 Upon receipt of an initial notification from another State about an accident or incident that occurred outside of Nigeria involving the country's interests (Nigerian -Registered or -Operated aircraft), the Duty Officer shall ensure all the required information has been provided to determine who and what organizations may have been involved in the occurrence, to determine who else has been informed of the occurrence, and to determine which actions have already been taken in response to the occurrence. He/she should immediately inform the Director-General/CEO.

5.5.2 if the aircraft involved was operated by a Nigerian operator, then the Duty Officer shall immediately call the contact person designated by the operator (refer to the list of operators) to obtain information on whether dangerous goods was on board the aircraft involved in the occurrence. If dangerous goods was on board the aircraft, the Duty Officer shall request detailed information from the operator, including the nature, identification, marking, quantity, packaging, location and documentation of the dangerous goods on board the aircraft.

5.5.3 The Duty Officer shall request the operator to call back/ email to provide feedback with the requested information in an expedited manner in order enable timely forwarding of the response to the State conducting the investigation without much delay. if no response is received from the operator after a reasonable time, the Duty Officer shall place a reminder call and if difficulty is faced, he/she should seek to speak to the operators' senior management personnel, preferably the manager responsible for operations.

5.5.4 As soon as a response is received from the operator that indicates dangerous goods were on board, the Duty Officer shall forward reply to the State conducting the investigation an acknowledgement of receipt of the notification and include the information on dangerous goods to the Investigator-in-charge of the State conducting the investigation using email and follow it with a phone call to confirm receipt of the Bureau's response.

5.5.5 The Director-General/CEO will inform the interested parties within the country (airline operator, NCAA, Ministry of Foreign Affairs and other relevant organizations) without much delay.

5.5.6 Within 48 hours following receipt of notification from another State, the Director-General/CEO shall appoint Bureau's Accredited Representative (ACCREP) to participate in the investigation of accident to an aircraft of a maximum mass of over 2 250 kg, when requested to do so by the State conducting the investigation, regardless of whether the Bureau's ACCREP will travel to that State or

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not. The ACCREP would be preferably a qualified senior investigator from the Bureau and who understands the international accident and incident investigation practices, particularly Annex 13, to represent the interests of Nigeria during the investigation led by another State. Refer to section 4.4.6 of this manual for the appointment of ACCREP and Advisers.

5.5.7 Upon coordination with the Investigator-in-charge of the State conducting the investigation of the type of specialists needed to be appointed as Adviser(s), the Bureau’s ACCREP should recommend to the Director-General//CEO on the matter. The Director-General/CEO should request the airline operator involved and the NCAA (if required) to propose Advisers (specialists), who shall be technical specialists to assist the Accredited Representative. The advisers from the Bureau, the NCAA and the airlines operator shall be responsive to the leadership of the ACCREP.

5.5.8 The ACCREP shall forward to the State conducting the investigation, the names and contact details, as well the expected date of arrival, if the ACCREP and his team will travel to the State of Occurrence. Advanced consideration should be given to passport requirement and travel facilities. Air Safety Investigators should always ensure that their investigation kits and essential personal items are ready for deployment.

5.5.9 The Accredited Representative will forward email to the Operator using the template letter (refer to Appendix E) to obtain information on the flight, the crew and the aircraft involved in the accident or serious incident. The ACCREP shall package all the information gathered from the operator and shall forward it to the investigator-in-charge of the State conducting the investigation as soon as practicable.

5.5.10 The ACCREP will maintain a record of transmissions of notifications sent, responses received, and any follow-up correspondences in a file opened for that investigation.

5.6 GUIDANCE ON CONDUCTING FLIGHT RECORDER REPLAY AND ANALYSIS AT FACILITIES OF OTHER STATES

5.6.1 General

5.6.1.1 The Bureau has its Transportation Safety Laboratory for the read-out, replay and analysis of flight recorder recordings, including the transcribing of Cockpit Voice Recorders (CVR). However, the Bureau’s transportation safety laboratory lacks capability in the case of the following:

- a) Recorders that are of a type that requires additional expertise or equipment (such as Russian-built flight recorders);
- b) Recorders that sustain severe damage in such a way that they cannot readily be read out at its laboratory, or
- c) Memory Devices installed on aircraft engines or systems.

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5.6.1.2 In this case, the Head of Bureau's Transportation Safety Laboratory shall make a comprehensive list of the capabilities of the laboratory, He/She should identify flight recorders and other memory devices installed on aircraft that operate within Nigerian airspace of which the laboratory lacks capability to read-out and replay. Thereafter, the Head of the laboratory will identify a number of read-out and analysis facilities with capabilities that are lacking in the Bureau's laboratory but available in other States in order to advise the Director of Operations.

5.6.1.3 The Director of Operations shall review the list and in coordination with the Bureau's Legal Adviser put together drafts of memorandum of understanding (MoU) between the Bureau and the other States accident investigation authorities and forward the drafts to the Director-General/CEO for consideration .

5.6.1.4 The Director-General shall initiate contact with the heads of the accident investigation authorities identified in the draft MoUs so that the MoUs are signed as soon as practicable as a prior arrangement to ensure timely read-out and analysis of recordings of the flight recorders and memory devices to enable early read-out and analysis of the flight recorder recordings when the need arises.

5.6.1.5 The Legal Adviser is responsible for follow-up and distribution of the copies of the signed MoUs to the user departments/personnel, including the Director of Operations. The Legal Adviser is the custodian of all MoUs entered by the Bureau and is responsible for their implementation.

5.6.1.6 When the need arises, the Director of Operations shall ensure that the flight recorders/memory devices are taken to the selected read-out facility as soon as practicable.

5.6.1.7 As a means of prior arrangement to ensure timely read-out and analysis of flight recorders/memory devices to a facility outside the country, the Director-General shall give utmost priority to undertaking the read-out and analysis of the flight recorders by providing the needed financial resources to either hand-deliver the flight recorders or to ship the flight recorders/ memory devices to the read-out facility. All necessary transport and logistic arrangements shall be readily available.

5.6.1.8 All Air Safety Investigators and Transport Lab specialists shall make efforts to obtain multiple entry visas to major countries as part of readiness to travel to other States at short notice

5.6.1.9 It is preferable that the IIC and a flight recorder specialist travel with the flight recorders and be physically present during the entire process of the read-out and analysis. However, if the IIC or the flight recorder specialist, for lack of visas or lack of qualified personnel or other administrative reasons, is unable to travel to the facility to be present during the read-out of the flight recorders, the Director of Operations shall ship the flight recorders/memory devices to the read-out facility in another State and request that an investigator of the Accident Investigation Authority of that State be present during the process.

5.6.1.10 It is imperative that judicial proceedings do not impede timely readout and analysis of flight recorder recordings. Therefore, the Director-General/CEO shall ensure prior arrangement is made through the instrument of MoU to establish cooperation with the judicial authorities in the event of conduct of parallel investigations, including determining custody of the flight recorders, the need to

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speedily carryout the read-out and analysis of the flight recorders or to ship the flight recorders to a facility in another State for read-out and analysis without much delay.

5.6.1.11 Overall, the Director-General/CEO shall ensure that neither administrative, financial nor judicial processes impede the timely read-out and analysis of the flight recorders.

5.6.2 Initial Response

5.6.2.1 The IIC shall ensure that flight recorders are immediately located and retrieved from the wreckage/ site as early as possible after the accident, be placed in appropriate containers and kept in a secured place. The IIC shall make immediate arrangement for the flight recorder specialist to transport the flight recorders to the Bureau’s Transportation Safety Laboratory in Abuja for read out. Refer to the Bureau’s Transportation Safety Laboratory Policy and Procedures Manuals.

Note; Early identification of problem areas can affect the investigation at the accident site where evidence is sometimes transient. Early identification of problem areas may also result in immediate safety recommendations which may be necessary to prevent a similar occurrence.

5.6.2.2 In some cases, the recorder may need to be taken to its manufacturer for read-out. In such cases, the work will normally be supervised by Bureau’s Safety Investigator, or a Safety Investigator from another State to ensure that there is no real or perceived conflict of interest.

5.6.3 Choice of facility

5.6.3.1 To ensure early read-out and analysis of the flight recorders, the Director of Operations should ensure that the choice of read-out facility is be governed by the following factors:

- a) proximity and ease of transportation/shipping to the State where the facility is located. Personnel with entry Visas should be given priority consideration.
- b) availability of slots at the read-out facility to enable read-out and analysis within shortest time upon notice by the Bureau. In this regard, the Director of Operations should make calls to ascertain the availability of the slots.
- c) Facilities for the read-out of flight recorders should have the ability to:
 - 1) Disassemble and read-out of the flight recorders that have sustained substantial damage;
 - 2) Playback the original recording/memory module without the need for the use of a manufacturer’s copy devices or the recorder housing that was involved in the accident or incident;
 - 3) Manually analyse the raw binary waveform from digital tape flight data recorders;
 - 4) Enhance and filter voice recordings digitally by means of suitable software; and



- 5) Graphically analyse data, derive additional parameters not explicitly recorded, validate the data by cross-checking and use other analytical methods to determine data accuracy and limitations.

5.6.4 Participation by the State of Manufacture (or Design) and the State of the Operator

5.6.4.1 The Investigator-in-charge (IIC) should note that the State of Manufacture (or State of Design) has airworthiness responsibilities and the expertise normally required to read out and analyse flight recorder information. Since flight recorder information can often reveal airworthiness problems, the IIC is expected to give early prior notice to the accredited representative of the State of Manufacture (or State of Design) about the location of the readout facility and the date of commencement of the readout to enable travel arrangement. The IIC should extend invitation to the ACCREP to be present when the flight recorder read-out and analysis are being conducted in a State other the State of Manufacture (or the State of Design).

5.6.4.2 The IIC should also note that State of the Operator has regulatory responsibilities regarding the flight operation and can provide insights into operational issues which may be specific to the operator. Since flight recorder information can reveal operational problems, the IIC is expected to give early prior notice to the Accredited Representative of the State of the Operator about the location of the readout facility and the date of commencement of the readout to enable travel arrangement. The IIC should extend invitation to the ACCREP to be present when the flight recorder read-out and analysis are being conducted.

5.6.5 Recommended Procedures for the Flight Recorder Read-Out

5.6.5.1 The flight data recorder and the cockpit voice recorder should be read out by the same facility, because they contain complementary data which can help validate each recording and aid in determining timing and synchronization.

5.6.5.2 The flight recorders should not be opened or powered up and original recordings should not be copied (particularly not by high-speed copy devices) prior to the read-out because of the risk of damage to the recordings.

5.6.5.3 In accordance with Annex 13, the State which provided significant information/ facility is entitled to appoint an accredited representative to participate in the portion of the investigation relevant to their contribution. In this regard, the Director-General/CEO should ensure that the State which provides the facility at which the flight recorders are read out is invited to appoint accredited representative and should be given an opportunity to comment on the draft Final Report in order to ensure that the characteristics of the flight recorder analysis have been taken into consideration.

5.6.5.4 The IIC should note that the facility at which the flight recorders are read out may require the expertise of the aircraft manufacturer and the operator in order to verify the calibration data and validate the recorded information. Thus facilitating the participation of the State of Design, State of Manufacture and State of the Operator.

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5.6.5.5 The IIC in coordination with the Bureau’s flight recorder specialist should ensure to leave the original recordings, or a copy of them, with the read-out facility until the investigation is completed, in order to facilitate the timely resolution of additional requests or clarifications, providing that the facility has adequate security procedures to safeguard the recordings.



CHAPTER 6

6.0 INVESTIGATION POLICIES AND PROCEDURES

6.0.1 Accident investigation is a systematic process whereby all of the possible causes of an adverse event are evaluated and eliminated until the remaining causes are identified as applicable to that investigation. Furthermore, during the investigation, if other deficiencies are identified that were not part of this accident, the safety investigation team should note them and provide this information to the applicable authority, even though it may not become part of the official investigation report. Although many accidents appear to be similar to others, this may be misleading. Therefore, it is imperative that safety investigators keep an open mind so as not to focus on one aspect and thus overlook another. Because accidents are infrequent, safety investigators must take every opportunity to obtain training with air carriers, military, aircraft manufacturers and other accident investigators so as to retain currency and acquire the best methods for investigation. Many large air carriers and aircraft manufacturers have established accident investigation resources that should be consulted in support of periodic training. Air carriers and aerodromes conduct periodic emergency exercises, and these also provide an opportunity for the accident investigators to utilize these scenarios for training. In the event of an actual accident or serious incident, these relationships will be useful to the safety investigators in efficiently determining the causes.

Investigation of accidents consists of three phases:

- a) collection of data;
- b) analysis of data; and
- c) presentation of findings.

6.0.2 The initial phase of the investigation process should focus on defining and obtaining data relevant to the accident. In particular, highly perishable data should be given priority. Data collection will often develop into an on-going process as more is learned about events surrounding the accident. Therefore, data collected early in the investigation may be combined with other data collected at later stages as a method of reaffirming and validating possible contributing factors. Types of data to be collected include:

- a) accident particulars;
- b) meteorological;
- c) technical; and
- d) human factors.

6.1 GENERAL

6.1.1 This chapter of the manual contains general policies and procedures of the Nigerian Safety Investigation Bureau that are consistent with the requirements and guidance provided by ICAO, as well as the best practices of the accident investigation authorities in some other States. The Nigerian safety Investigation (Establishment) Act 2022 and the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, provide the legislative and regulatory basis for the policies and procedures contained herein. Many of the following policy and procedural matters are taken directly from ICAO

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documents and have been accepted by the Bureau as its own. Refer to the Bureau's Flight Data Recorder Policy and Cockpit Voice Recorder Policy documents for details on flight recorders.

6.1.2 It is the policy of the Bureau to institute an investigation into the circumstances of all aircraft accidents and incidents falling under the authority and responsibilities entrusted to it by the government. Such investigations should be conducted in accordance with the provisions of Annex 13 and Nigerian laws and regulations.

6.1.3 The Bureau will be involved in civil aircraft accident/incident investigation in the following circumstances:

- a) Where the accident or serious incident occurs within the territory of Nigeria irrespective of the nationality of the aircraft;
- b) Where the accident or serious incident occurs in another State or non-Contracting State involving a Nigerian registered aircraft or an aircraft operated by Nigerian Air Operator, and the State of Occurrence is conducting an investigation of the occurrence by providing all information required and appointing Accredited Representative and advisers. If Nigeria, having suffered fatalities or serious injuries to its citizens, the Bureau may appoint an expert to participate in the investigation;
- c) Where the accident or serious incident occurs in any non-Contracting State and involves a Nigerian registered aircraft or aircraft operated by Nigerian Operator, and the non-contracting State involved does not intend to conduct an investigation in accordance with Annex 13, Nigeria will institute an investigation;
- d) Where the accident or serious incident involves a Nigerian registered aircraft or an aircraft operated by a Nigerian Operator and the investigation has been delegated to Nigeria by another State by mutual arrangement and consent;
- e) Where the accident or serious incident occurs in international waters or at a location which cannot be definitely established as being in the territory of any State and involves Nigerian registered aircraft. If Nigeria is the State of the Operator and the State of registry is conducting an investigation into the occurrence, the Bureau will appoint Accredited Representative and advisers;

6.1.4 It is the policy of the Bureau to determine the extent of the investigation and the procedures to be followed in carrying out such an investigation, depending on the lessons it expects to draw from the investigation for the improvement of safety. The scope and complexity of the investigation and the size and composition of the investigation team should be influenced by the following factors, among others:

- a) injuries, deaths and damage to equipment, third parties and the environment;
- b) identified and potential safety issues underlying the occurrence;
- c) the likelihood of recurrence, the probability of adverse consequences, and the severity of adverse consequences;

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- d) accident and incident history related to the type of operation, size and type of aircraft, the operator, manufacturer, regulator, etc.; and
- e) actual and potential deviations from industry safety and operational regulations, standards, procedures, and practices.

6.1.5 It is the policy of the Bureau to conduct investigations and complete reports for all accidents and incidents, including the type of serious incidents listed in Annex 13, Attachment C (Refer to appendix D of this manual). It may also conduct selected investigations of other incidents not listed in Annex 13 if it finds that certain safety lessons can be learned from investigating the circumstances of the incident.

Note. – The Bureau has an arrangement (MoU) with the Nigeria Civil Aviation Authority (NCAA) to be notified of all occurrences (accidents and incidents), including air traffic and mechanical failure incidents, so that the Bureau can determine if it should conduct an independent investigation. Most of the incident notifications are generated by the NCAA mandatory occurrence reporting (MOR) system.

6.1.6 Upon notification of an occurrence, the Director-General/CEO or any officer assigned by him/her will immediately constitute a team of expert-investigators to conduct preliminary assessment of the occurrence to determine if it falls within the jurisdiction of the Bureau as follows:

- a) if the occurrence is classified as a Serious Incident or an incident to be investigated
- b) if the occurrence is classified as a fatal or non-fatal accident.

The Director-General/CEO or any officer assigned by him/her will institute an investigation, appointing the investigation Go-Team, including appointing an IIC and additional experts, as required. The appointed experts will be comprised of aircraft accident investigation specialists, who have adequate expertise, training, and experience to ensure a thorough investigation.

6.1.7 The Bureau may consider calling upon an aircraft accident investigation authority of another State for assistance on the basis of mutual agreements. The Bureau may further consider proposing the delegation of the whole investigation or parts thereof to an aircraft accident investigation authority in another State, or a regional accident investigation organization, should the circumstances of an occurrence so warrant.

6.1.8 If during the course of an investigation, the Bureau becomes aware of, or suspects, unlawful interference (sabotage or other crime), the IIC shall inform the Director-General through the Head of Security and Safety of the Bureau, who in turn will immediately notify the Head of Aviation Security of the Nigerian Civil Aviation Authority (NCAA), being the appropriate authority of aviation security in Nigeria and the Inspector General of Police using the most suitable and quickest means available. This should be done in coordination with the Director-General/CEO and the Bureau’s Legal Adviser. The Bureau will continue the safety investigation to the extent necessary, parallel with any criminal investigation will furnish requested assistance to judicial authorities and will complete a Final Report of the occurrence, in accordance with Annex 13, keeping in mind continued cooperation with the judicial authorities. The IIC should explain the Bureau’s procedures and the criticality of preserving and documenting certain forms of evidence. If any problems are encountered in this type of accident investigation, the Bureau’s Legal Adviser should be consulted.

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6.1.9 If an accident/incident occurrence being investigated by the Bureau has a flight data recorder (FDR) or cockpit voice recorder (CVR), or both, it will make immediate arrangements to recover and protect the flight recorders. The Bureau will carry out the read-out of the recorders as soon as practical at its Transportation safety laboratory. Should the Bureau face difficulty in conducting the read-out at its laboratory, it will make necessary arrangement to carry out the read-out at an appropriate flight recorder read-out facility. It is essential that flight recorders be read out as early as possible after an accident. Early identification of problem areas can affect the investigation at the accident site where evidence is sometimes transient. Early identification of problem areas may also result in urgent safety recommendations which may be necessary to prevent a similar occurrence. Refer to the Bureau's FDR and CVR Policy Manuals.

6.1.10 Should the recorders sustain damage in such a way that they cannot readily be read out at the chosen facility, or are of a type that requires additional expertise or equipment (such as Russian-built flight recorders), the Bureau will seek expert assistance consistent with the provisions of Annex 13. In some cases, the recorder may need to be taken to its manufacturer for read-out. In such cases, the work will normally be supervised by the Bureau's Safety Investigator, or a Safety Investigator from another State to ensure that there is no real or perceived conflict of interest.

6.1.11 The Bureau will also consider electronic equipment other than flight recorders, which may contain valuable information related to the accident. Such equipment includes as quick access recorder (QAR), full authority digital engine control (FADEC), health and usage monitoring system (HUMS), satellite navigation units (e.g. global positioning system (GPS), Global Navigation Satellite System (GLONASS), ground proximity warning system (GPWS), terrain awareness and warning system (TAWS), flight management system (FMS), ATC Radar). Analyses of these units can significantly help the investigation, especially in the absence of information from the flight recorders. In addition, the Bureau may consider seeking expert assistance from the relevant States of Manufacture.

6.1.12 The Bureau will complete, publish and publicly release a Final Report of the investigation in accordance with Annex 13 requirements, consistent with the complexity and safety issues involved in the occurrence. When safety deficiencies are identified during the course of an investigation, the Bureau will encourage relevant organizations (airlines, airports, manufacturers, regulators, ICAO, when ICAO documents are involved, etc.) to take immediate safety action to prevent recurrence. If necessary, the Bureau will issue safety recommendations to the organization(s) in a position to take safety action. Chapter 10 of this manual contains further details about the report writing and safety recommendations.

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6.2 RIGHTS, AUTHORITY AND OBLIGATIONS OF SAFETY INVESTIGATORS

The Nigerian Safety Investigation Bureau's Safety Investigators have the following rights and authority, which are consistent with Nigeria's obligations under Annex 13:

- a) Unhampered access and control over an aircraft accident site and any wreckage thereon.
- b) Unhampered access and control over all relevant accident/incident investigation materials, evidence, documents, etc., including air traffic service (ATS) recordings and recorders.
- c) The right to conduct detailed examination and testing of relevant material/evidence without delay or interference.
- d) The right and obligation not to disclose certain records for purposes other than accident and incident investigation, unless the appropriate authority for the administration of justice determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigation. Such records include:
 - 1) all statements taken from persons by the Safety Investigators during the course of the investigation;
 - 2) all communications between persons having been involved in the operation of the aircraft; medical or private information of persons involved in the accident or incident;
 - 3) cockpit voice recordings and transcripts from such recordings;
 - 4) recordings and transcriptions of recordings of air traffic control units;
 - 5) cockpit airborne image recordings and any part or transcripts from such recordings;
 - 6) opinions expressed in the analysis of information, including flight recorder information; and any record not relevant for analysis of the accident or incident.

6.3 INVESTIGATION OPERATIONS

The Nigerian Safety Investigation Bureau's personnel and the Safety Investigators have the following rights, authority, and obligations:

- a) Call on the services of local police or other authorized persons to ensure protection of the aircraft accident site, including the aircraft and its contents, until such time as the Bureau and the appointed Safety Investigators are able to directly take over custody and security of the aircraft and its contents.

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- b) Ensure that the aircraft, its contents, and other relevant evidence remain undisturbed, to the extent possible, until arrival and inspection by an Accredited Representative, if requested to do so.

Note.— Nothing in this provision precludes the Bureau from instituting an investigation, and if for unforeseen reasons, the aircraft, etc. must be moved or otherwise disturbed pending the arrival of an Accredited Representative, the activities involved should be documented by photographs and other appropriate means.

- c) Ensure, in the event of an occurrence to be investigated, that all Air Traffic Services (ATS) communications recordings, radar data, and documents associated with the flight are secured for safekeeping.
- d) Permit Accredited Representatives of the following States to participate in any investigation:
- 1) The State of Registry;
 - 2) The State of the Operator;
 - 3) The State of Design;
 - 4) The State of Manufacture; and
 - 5) Any other State that on request provides information, facilities or experts.
- e) Permit advisers assisting Accredited Representatives to participate in an investigation to the extent necessary in order to make the participation by the Accredited Representatives effective.
- f) Permit participation of experts (within the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, paragraph 5.19.7) from States having suffered fatalities or serious injuries to their citizens. Such experts should be permitted to:
- 1) Visit the scene of the accident;
 - 2) Have access to the relevant factual information, which is approved for public release by the State conducting the investigation, and information on the progress of the investigation; and
 - 3) Receive a copy of the Final Report.

Note.— Experts appointed under the provisions of Annex 13, paragraph 5.27, are not necessarily permitted to participate in the actual investigation; rather, they are provided limited access (cited above) related to the circumstances pertaining to the death or injury of citizens from their State(s). Likewise, experts should be permitted to assist in the identification of victims and in meetings with survivors from their respective States.

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- g) Entitle Accredited Representatives under the control of the IIC to participate in all aspects of the investigation, in particular to:
- 1) Visit the scene of the accident;
 - 2) Examine the wreckage;
 - 3) Obtain witness information and suggest areas of questioning;
 - 4) Have full access to all relevant evidence as soon as possible;
 - 5) Receive copies of all pertinent documents, including reports on examinations of components or studies performed within the framework of the investigation;
 - 6) Participate in read-outs of recorded media;
 - 7) Participate in off-scene investigative activities, such as component examinations, technical briefings, tests and simulations;
 - 8) Participate in investigation progress meetings including deliberations related to analysis, findings, causes and safety recommendations; and
 - 9) Make submissions in respect of the various elements of the investigation.
 - 10) Advisers assisting the ACCREP shall be permitted under the ACCREP's supervision, to participate in the investigation to the extent necessary to enable the ACCREP to make their participation effective.

Note 1.— Nothing precludes the Bureau from extending participation beyond the entitlements enumerated above.

- h) Invite participation of the operator in the investigation, when neither the State of Registry nor State of the Operator appoints an Accredited Representative.
- i) Invite participation of the manufacturer(s) (type design and/or final assembly of the aircraft) in the investigation, when neither the State of Design nor the State of Manufacturer appoints an Accredited Representative.
- j) Call on the best technical expertise available from any source to supplement its investigative staff, should the need arise.
- k) Protect evidence and maintain custody of the aircraft and its contents for a period of time necessary to conduct the investigation, including protection from further damage, access by unauthorized persons, pilfering or deterioration. See Appendix F for detailed procedures.
- l) Photograph and document evidence of a transitory nature by appropriate means to preclude loss of evidence.

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- m) Test and examine aircraft components, which could possibly cause damage to the components during these tests and examinations.
- n) Coordinate between the Bureau and judicial authorities to ensure that the sole purpose of the investigation is for accident prevention purposes, and to ensure that any judicial or administrative proceedings to apportion blame or liability are separate from the Annex 13 investigation.
- o) Ensure that autopsy examinations, as well as toxicological tests, are carried out for crew members and passengers for medical investigation purposes. Medical examinations also should be carried out on surviving flight crew, passengers and aviation personnel involved in the occurrence, such as air traffic controllers, if deemed necessary by the IIC.
- p) For investigations being conducted by other States, provide the State conducting the investigation with:
 - 1. (in all cases) all relevant information requested by that State; and
 - 2. (in all cases) information about an aircraft that prior to the occurrence of an accident or incident has used or normally would use the facilities or services of Nigeria. For example, flight crew and aircraft maintenance records, ATS recordings, meteorological information, etc., related to the occurrence should be provided to the State conducting the investigation.
- q) Appoint an Accredited Representative from the Bureau in the case of an accident involving an aircraft of a maximum mass of over 2 250 kg, when specifically requested to do so by the State conducting the investigation.

Note.— Such an appointment does not necessarily require that the Bureau’s Accredited Representative travel to the accident site; however, the Accredited Representative is required to fulfill the obligations contained in Annex 13 by providing whatever assistance is required.

- r) Prevent disclosure of information by the Accredited Representative appointed by the Bureau and by Nigerian advisers on the progress and findings of an investigation, without the express consent of the State conducting the investigation.

Note 1.— Because the responsibility for release of information on the progress and findings of the investigation rests with the State conducting the investigation, the Bureau will ensure that its staff and any advisers from Nigeria abide by this requirement.

Note 2.— Nothing in this requirement precludes, or should delay, the release of information for the purpose of accident prevention (issuance of safety recommendations); however, such release should be coordinated with the State conducting the investigation.

- s) For accidents involving death or serious injury to Nigerian citizens that occur in other States, Nigeria will appoint an expert, possibly from the Bureau, in accordance with the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, paragraph 5.19.7, to:

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- 1) visit the scene of the accident;
 - 2) have access to the relevant factual information, which is approved for public release by the State conducting the investigation, and information on the progress of the investigation; and
 - 3) receive a copy of the Final Report.
- t) Reopen an investigation if new and significant evidence becomes available, or if significant errors were made in the original analyses that would compromise the findings.
 - u) Make public the facts, conditions, and circumstances during the course of an investigation with the view toward informing the travelling public and preventing future occurrences.
 - v) Identify safety deficiencies during the course of investigations and in the Final Report of the investigation with the view toward promoting safety actions by addressing the recommendations to appropriate authorities, agencies, and organizations charged with aviation safety.

6.4 COORDINATION AND COOPERATION WITH JUDICIAL AUTHORITIES

6.4.1 Section 41 of the Nigerian Safety Investigation Bureau (Establishment Act) defines the rights and responsibilities of the Bureau to have immediate and unrestricted access to all relevant evidence without requiring prior consent from judicial authorities or other government agencies. The Bureau is aware that transportation occurrences may be subject not only to a technical investigation but also to some form of judicial, regulatory, labor, occupational health and safety, environmental protection, administrative and/or disciplinary inquiries.

6.4.2 In order to ensure that the technical accident investigation procedures are not constrained by these types of processes, and NSIB (Establishment) Act, Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, and perhaps MOUs specify the procedures to be followed in order to keep the technical investigation separate from these other proceedings. The legislation (NSIB Act and the regulations) makes it clear that accident prevention is the sole objective of the technical investigation and emphasize that it is not the role of the Bureau to apportion blame or liability.

6.4.3 The NSIB (Establishment) Act provides that the Bureau shall have investigative priority over the investigation of transportation occurrences involving civil aircraft. The provision states that where in the course of an investigation, the Bureau determines that circumstances reasonably indicate that the occurrence may have been caused by an intentional criminal act, the Bureau shall relinquish investigative priority to the Nigeria Police. However, the Bureau and the other government agencies involved in the investigation shall take all reasonable measures to ensure that activities with respect to the transportation occurrence are coordinated to achieve the aims of the safety investigation.

6.4.4 Where conflicting interests arise between the Bureau and an agency of government as to coordination of activities related to a transportation occurrence, the requirements and interests of the

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Bureau and any agreement entered into pursuant to regulations made under the Act, shall take precedence to the extent of the conflict.

6.4.5 The NSIB (Establishment Act and the regulations also provided that the following privileged information and records shall not be made available for purposes other than accident or incident investigation, unless the Federal High Court, being the competent authority determines that their disclosure or use outweighs the likely adverse domestic and international impact such action may have on that or any future investigations:

- a) cockpit voice recordings and airborne image recordings and any transcripts from such recordings; and
- b) records in the custody or control of the accident investigation authority being:
 - i) all statements taken from persons by the accident investigation authority in the course of their investigation;
 - ii) all communications between persons having been involved in the operation of the aircraft;
 - iii) medical or private information regarding persons involved in the accident or incident;
 - iv) recordings and transcripts of recordings from air traffic control units;
 - v) analysis of and opinions about information, including flight recorder information, made by the accident investigation authority and accredited representatives in relation to the accident or incident; and
 - vi) the draft Final Report of an accident or incident investigation.

6.4.6 The Investigator-in-charge shall ensure that these records are only included in the Final Report or its appendices when pertinent to the analysis of the accident or incident, and those parts of the records not relevant to the analysis shall not be disclosed. This is essential since information contained in these records, which includes information given voluntarily by persons interviewed during the investigation, could be utilized inappropriately for subsequent disciplinary, civil, administrative and criminal proceedings. If such were the case, people would, in future, be reluctant to openly disclose information to investigators, which would impede the investigation process and seriously affect flight safety.

6.4.7 To give effect to the provisions of the NSIB (Establishment) Act and the regulations, the Director-General should make prior arrangements with the judicial authorities and any other government agency that might have interest in the activities related to the transportation occurrence for coordination and cooperation to guarantee the separation of the technical investigation from any other investigation.

6.4.8 The prior arrangement should be in the form of a memorandum of understanding (MoUs) between the Bureau and the identified agencies. The Legal Adviser (LA) of the Bureau is responsible for the identification of authorities and agencies concerned and the drafting of the preliminary texts of the MoUs.

6.4.9 The LA shall also be responsible for the coordination meetings between the Bureau and identified authorities and agencies that are subject of the MoUs.

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6.4.10 The MoUs shall be based on the principles and guidelines contained in appendices to chapter 2 of ICAO Doc 9756 Part I *Manual of Aircraft Accidents and Incidents Investigation - Organization and Planning*.

6.4.11 In particular, the MoU with judicial authorities shall specify the coordination and cooperation mechanism to ensure separation of the technical investigation from any parallel investigation to be conducted by the judicial authorities to ensure neither judicial processes, administrative proceedings nor disciplinary processes hinder timely retrieval, read-out and analysis of the flight recorders. The modalities for the custody and transportation of the recorders from the accident site to the facility where read-out and analysis is to be conducted shall be established in the MoU.

6.4.12 In addition, the MoU shall contain mechanisms for balancing test to ensure the privileged information and records identified in 6.5.5 of this section are not disclosed to the public or used for purposes other than accident or incident investigation, including the conditions under which such documents or information can be disclosed such as in camera or closed proceedings limited to the parties involved.

6.5 PARTICIPATION IN AN INVESTIGATION CONDUCTED BY ANOTHER STATE

6.5.1 General

6.5.1.1 When an aircraft accident or serious incident occurs in another State, involving aircraft registered in Nigeria or operated by an Operator certified by Nigeria, the Bureau, in accordance with Annex 13, is entitled to appoint an Accredited Representative (ACCREP) and one or more Advisers to participate in that State's investigation. By the same token, the accident investigation authority of that State may request the Bureau to appoint an ACCREP and Advisers.

6.5.1.2 The most important responsibility of the ACCREP is to provide constant and effective coordination between the accident investigation authority and the various interested parties in Nigeria - that is to ensure that new developments in the investigation are rapidly brought to the attention of the appropriate parties concerned with those developments. The ACCREP can be extremely useful in bringing the safety issues to the surface, and obtaining consensus on the analysis, findings and any proposed safety actions, if warranted. It must be remembered that in many cases, the ACCREP may be the most experienced person of the group. Typically, Preliminary Reports which bring strong dissenting opinions and responses from interested parties can usually be traced back to a less than ideal or required coordination on the part of the ACCREP.

6.5.1.3 The following phases cover both situations where the ACCREP may or may not be proceeding to the accident site. It is by no means exhaustive, but is intended to make the investigator aware of the basic investigative and administrative details that will enable him/her to start on the right foot.

a) Prior to departure:

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- i) Get passport and visa requirement issues sorted out right away.
- ii) If possible, verify if your cellular phone will function where you are going. Your cellular may not work in certain countries/States.
- iii) Liaise with the Travels Unit to begin flight booking arrangements.
- iv) Take a laptop computer; ensure it contains all necessary contact lists, forms, manuals.
- v) Bring a digital camera, and know how to use and download pictures to e-mail.
- vi) As a minimum, your field kit should contain the following: tape recorder & tapes, USB drives/portable drives, business cards, ICAO Annex 13 document, hard paper copies of various key forms.
- vii) Bring appropriate clothing for the occasion; research on the internet the weather for the next week. Consider bringing one or more bio-hazard kits with you.

b) Field investigation phase:

- i) Remember that when you are the Accredited Representative, you are working for the IIC
- ii) Use standard ICAO investigation principles as required. Gather as much factual information as possible. Take ample notes. Record this data in the occurrence file.
- iii) Review Annex 13 Chapter 5 for the entitlements of Accredited Representatives and Advisers.
- iv) Be aware of the sensitivity of collecting and transmitting data to/from Nigerian entities. You require the IIC's permission before you release any information related to the occurrence. In particular, be conscious of Article 5.26 of ICAO Annex 13 related to release of information on the progress and findings of the investigation.
- v) Send a daily report to Director-General, if appropriate.
- vi) Ensure advisers (if appointed) understand their responsibilities to provide formal reports to the investigative authority through you. This does not mean hindering their ability to work directly with the IIC, on or off site, for daily/routine investigative work.
- vii) Ensure Advisers keep you abreast of uncovered issues which may affect the operation or certification of the aircraft. Advise the regulator of such without delay.
- viii) The ACCREP may be requested by the State of Occurrence to provide factual reports and copies of your notes. Ensure that you only include validated factual information in these reports.
- ix) The ACCREP may be requested to provide a report containing analysis. Because what you provide will be considered as the official Bureau's position on an issue, your documented analysis is to be reviewed by Bureau's Headquarters before it is released to the State conducting the investigation.
- x) Be aware that all email correspondence with the IIC/investigative authority will be public and may be included in an appendix to the final report.

c) Follow-on duties:

- i) The ACCREP may be requested by the State of Occurrence to assist in the analysis portion of the report, and in some cases, may be involved in the drafting of analysis, findings and causes. Because what you provide will be considered as the official position on an issue, your documented analysis is to be reviewed by Bureau's Headquarters before it is released to the State conducting the investigation. It is equally important to provide your advisors the opportunity to comment on such a report.
- ii) Keep abreast of findings, safety issues/deficiencies and planned safety action by the investigating authority, and close the loop with the NCAA and all government entities involved.
- iii) Ensure Advisers' reports are forwarded to the IIC. You can ask that these be sent through you, but you do not have the authority to demand it.



d) Investigation Reports:

- i) Ensure that the IIC is aware that, in accordance with the provision of ICAO Annex 13, your government expects to have an opportunity to comment on his investigation report prior to the report being made public. Also inform the IIC that you would like to involve affected local entities in this review.
- ii) Some States release a Preliminary Report which contains factual information about the occurrence, and request comments from the Accident Representative. The Accident Representative is authorized to make representation directly to the IIC on the accuracy of this factual information.
- iii) When requested to comment on the draft Final Report or any other report containing analysis:
 - Unless prohibited by the IIC, consult with all involved entities.
 - Prepare comments and forward them to the Directors of engineering and Operations.
 - The Director-General will sign the response letter.

e) End of Investigation:

- i) Ensure that a complete occurrence file is sent to Bureau's Headquarters records.
- ii) Ensure that all required information is entered into the database

6.5.2 Responsibilities of the Accredited Representative (ACCREP)

6.5.2.1.1 The ACCREP represents the Nigeria during an investigation conducted by a third State on an occurrence involving interest of Nigeria, in accordance with Annex 13 to Convention on international civil aviation.

- a) Advises Director-General/CEO in the constitution of the Nigeria's team of the participants (Technical advisers, experts, etc) in the investigation;
- b) Advises Director-General/CEO on the need to go to the accident/incident site;
- c) ensure liaison and coordination between the investigator-in-charge (IIC) of the investigation, the Director-General/CEO and the other interested parties from Nigeria (specialists, Advisers from the operators, NCAA, etc.);
- d) advise and assist the investigator-in-charge in organizing and conducting the safety investigation;
- e) participate in the different phases of the safety investigation;
- f) provide the investigator-in-charge with all available information relevant to the investigation (information relating to the aircraft concerned which, before an accident or incident, normally used or should have used the facilities or services within Nigeria; the recordings from the flight

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recorders or the recorders in question when the aircraft concerned by the accident or serious incident lands within Nigeria; information on the organizations whose activities may have had a direct or indirect impact on the operation of the aircraft involved in an accident or incident; etc.);

- g) manage Advisers and ensure their proper conduct during the investigation;
- h) identify potential conflicts and participate in their resolution;
- i) monitor the progress of the investigation;
- j) coordinate consultation of the investigation report with interested parties within Nigeria ;
- k) monitor the implementation of the safety recommendations of the investigation report.

6.5.2.1.2 The deployment and traveling of ACCREP and the team to the accident site depends in particular on the following:

- a) the nature of the occurrence;
- b) the place of occurrence;
- c) the climatic conditions/ geographical features of the location;
- d) the extent of the damage to the aircraft or the ground; and
- e) the results of the safety risk assessment.

6.5.2.1.3 When the Director-General/CEO decides not to send representatives to the State of Occurrence or the State conducting the investigation, the accredited representative participates in the investigation remotely by providing the assistance required.

For the start-up of the accredited representative and his team, the following administrative tasks are necessary:

Tasks	Responsible Office
Approving the letter of accreditation	Director-General/CEO
Sending the letter of accreditation to the accident investigation authority of the State conducting the investigation	Director of Operations / Director of Engineering
Contacts with the Ministry of Foreign Affairs	Director-General/CEO / Minister of Aviation
Contacts with the Embassy of Nigeria/ Investigator-in-charge for information on visas that may be required and other entry requirements	Director-General/CEO/ Director of Engineering/ Director of Operations / Accredited representative
Ticket purchase, hotel reservation, financial resources and preparation of travel documents and investigation	Director-General/CEO / Technical administrator / Director of Human Resources and administration

6.5.2.4 The accredited representative carries out, on the basis of the relevant information collected from the investigator-in-charge, in particular, a risk analysis to identify the dangers and the measures to mitigate the inherent risks. It identifies the personal protective equipment needed for participation in the investigation.

6.5.2.5 As soon as the team is formed (investigators and advisers or experts), before departure, the accredited representative must organize a meeting to:

- a) Review Annex 13 provisions
- b) Mention ethics and code of conduct/ conflict of interest principles



- c) recall the organization of the investigation;
- d) specify and distributes the roles and functions of each member;
- e) specify the confidentiality instructions;
- f) specify the rules to be applied with regard to exchanges with foreign authorities;
- g) specify the need to exchange all available information within the team;
- h) specify the safety instructions on the site.

6.5.2.2 Interaction of Accredited Representative with Local Authorities of the State Conducting the Investigation

6.5.2.2.1 The accredited representative represents the interest of Nigeria abroad and should have the same level of information as the investigator-in-charge of the State conducting the investigation;

6.5.2.2.2 The accredited representative should provide all the assistance required and must provide the investigator-in-charge with all information requested or useful for the investigation (relevant elements and files relating to the flight, the crew, the aircraft, the maintenance of the aircraft, the operation of the aircraft, etc.).

6.5.2.2.3 The accredited representative should report directly to the State Investigator-in-Charge who leads the investigation and does not lead any group.

6.5.2.2.4 The accredited representative should be the liaison between the investigator-in-charge and the advisors appointed by the Director-General/CEO.

6.5.2.2.5 The accredited representative and the technical team should comply with instructions and plans of the IIC.

6.5.2.2.6 When the standards applied for the conduct of the investigation by the other State are different from those of Annex 13, the accredited representative must report this to the Director-General/CEO so as to determine the course of action to be taken.

6.5.2.3 Instructions in case of disagreement

6.2.2.3.1 The success of the mission of the investigation team of the Bureau depends on the level of collaboration and trust established with the investigator-in-charge. All misunderstandings identified and must be cleared up. For example, they may relate to causes or the relative importance of contributing factors.

6.2.2.3.1 In the event of disagreement, the accredited representative asks the investigator-in-charge to avoid addressing the advisers of the Bureau. This request is not intended to limit or control access to information but to avoid poor coordination, particularly during the consultation phase of a draft final report. When this makes it possible to simplify exchanges, the accredited representative gives his consent to direct communications nevertheless being established, provided that he remains in the information loop.

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6.5.2.4 Actions in the State of occurrence

6.5.2.4.1 It can be difficult to adapt to the cultural specification of the State of occurrence, in particular those linked to the pace of investigation activities. The accredited representative and the members of the team must show patience and tolerance.

6.5.2.4.2 As soon as he/she arrives on site, the accredited representative must make himself/herself available to the investigator-in-charge. He/she is required to introduce his/her team and recall the function and role of each, in particular of the advisers.

6.5.2.4.3 Depending on the organization of the investigation, the accredited representative may, with the agreement or at the request of the investigator-in-charge:

- a) Avail investigators, advisers and experts in investigation into groups or sub-groups;
- b) provide direct or indirect technical assistance through its advisers;
- c) suggest investigative acts or directions (the accredited representative must not attempt to impose his/her vision or his/her methods);
- d) request meetings;
- e) provide the investigator-in-charge with a contribution report on the activities carried out by his team before returning to Nigeria. This report is strongly recommended because it can avoid any ambiguities about the findings made on site.

6.5.2.4.4 The accredited representative contacts the diplomatic representation (embassy or consulate) present in the State of occurrence, if necessary. This contact can facilitate interaction with the host government and resolve any logistical difficulties, if necessary.

6.5.2.4.5 In accordance with the provisions of Annex 13, the communication of information relating to the investigation is the sole responsibility of the investigator-in-charge. It is up to the accredited representative, in coordination with the management staff of the Bureau (Director-General/CEO, Director of Engineering and Director of Operations), to channel, or even contain, the requests for communication made by the Nigerian officials.

6.5.2.4.6 The accredited representative systematically refuses, unless expressly agreed otherwise by the accident investigation authority of the State conducting the investigation, any communication with the local media or judicial authorities and refers them to the investigator-in-charge of the State conducting the investigation.

6.5.2.5 Return Actions in Nigeria

Upon returning to Nigeria, the accredited representative:

- a) Submits to the management of the Bureau (Director-General/CEO, Director of Engineering and Director of Operations) a comprehensive report of the participation of the accredited representative and the country's team in the investigation;

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- b) Opens a file for the keeping records of all the correspondences and activities related the participation of the accredited representative and the team, including reports of all the associated activities, consultation, publication of final report and safety recommendation follow-up, if available.
- c) continues to ensure the interface between the experts and the investigator-in-charge by providing technical notes to answer the questions posed by the investigator-in-charge;
- d) facilitate, if necessary, the visit of the team conducting the investigation to the Nigeria for the purpose of investigation.

6.5.2.6 Comments on the Draft Final Report

6.5.2.6.1 The provisions of Annex 13 provide for the accredited representative to be consulted by the investigator-in-charge on the draft final report.

6.5.2.6.2 The accredited representative sends the draft investigation report received from the State conducting the investigation to each of the advisers, specifying that he/she will draft the observations/comments to the investigator-in-charge.

6.5.2.6.3 The observations presented by the advisers are examined during a meeting between the accredited representative and the team of investigators of the Bureau . The advisers are informed of the final decisions (taken into account or not).

6.5.2.6.4 After receiving the observations and comments from the advisers and following his meeting with the Bureau’s investigators, the accredited representative draws up a summary in the below table of comments from the Bureau on the draft investigation report . This table has three (03) parts in the form of a three-column table, presented as follows:

Paragraph or part of the report subject to comments	Observations or comments	Possible drafting proposal
This part contains the observations supported by the accredited representative and from the advisers or from the	This part contains the observations proposed by the adviser but which the accredited representative does not support because he considers that they fall outside his field of action.	This part contains, if necessary, the observations with which the accredited representative does not agree. A wording indicates the reasons.
	These observations are transmitted for consideration to the investigator-in-charge, clearly specifying their origin.	These observations are re-transmitted as they are to the investigator-in-charge, specifying the origin.



6.5.2.7 Participation In the Investigation as an Expert

6.5.2.7.1 When Nigerian nationals are counted among the number of fatalities or seriously injured in an incident or accident occurring abroad, the Head of the Director-General/CEO, in coordination with the Ministry of Foreign Affairs participating in the assistance of Nigerian victims abroad, informs the State conducting the investigation of the names of the experts and their contact details, as well as the probable date of arrival on the site.

6.5.2.7.2 In accordance with paragraph 5.27 of Annex 13, experts appointed by Nigeria are authorized to:

- a) visit the scene of the accident;
- b) assist in the identification of victims and interviews with survivors who are its nationals;
- c) access all information that [Republic X] approves of public disclosure, as well as information on the progress of the investigation;
- d) receive a copy of the final report.

6.5.2.7.3 The Director-General/CEO should coordinates the issuance of accreditation to the expert appointed by the state who is conducting the investigation (issuance of the letter of agreement, etc.).

6.5.2.7.4 The travel arrangement should be expedited to facilitate early arrival of the expert and his/her team to the State of Occurrence by the Head of Travels Unit.

6.5.2.7.5 In the spirit of Annex 13, the Bureau's expert shall be entitled to:

- a) visit the scene of the accident;
- b) have access to the relevant factual information approved for public release by the State conducting the investigation and information on the progress of the investigation;
- c) assist in the identification of the victims;
- d) attend meetings with Nigerian survivors of the accident; and
- e) receive a copy of the Final Report.

6.5.2.7.6 Before leaving for the accident site, the Bureau's expert should:

- a) consult with the Investigator-in-charge to determine what arrangements may have been concluded with the coroner,
- b) the attorney-general or the police;
- c) conclude an agreement with medical authorities on the time and method of recovering human remains, autopsies and physical examinations of surviving crew members;
- d) attend the Investigator-in-charge's pre-departure briefing; and
- e) submit all original documents to the Administration Coordinator.

6.5.2.7.7 After arrival at the accident site, the expert should:

- a) contact the local coroner or appropriate medical authority to determine the progress at the accident site;
- b) conduct a preliminary survey of the accident site in order to get a feel for the dynamics of the accident;
- c) attend the Investigator-in-charge's organizational meeting;

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- d) obtain the passenger manifest;
- e) collaborate with the coroner and police authorities in the identification of victims;
- f) as appropriate, assist in providing victim identification information such as wallets, clothing, jewellery, age, sex, face, complexion, color of hair and eyes, height, weight, dental records, scars, growths, skeletal deformities, medical disorders, tattoos, blood group, identification tags and medical files;
- g) consult with medical authorities regarding the location and time of autopsies; and
- h) advise coroner or attorney general of tests required on remains, including human fluids and tissue specimen requirements.

6.5.2.7.8 The expert should submit comprehensive report to the Director-General/CEO upon completion of the mission.

6.5.2.7.9 All correspondences and reports of the participation of the expert and the team should be kept in a file opened for this investigation.



CHAPTER 7

7.0 ACTIONS AT THE ACCIDENT SITE

7.1 GENERAL

7.1.1 Liaison with other Authorities

7.1.1.1 The Nigerian Safety Investigation Bureau has arrangements (MoUs) with other agencies and authorities in Nigeria to prepare for the eventuality of an aircraft accident (see Appendix C). Detailed information concerning the role and responsibility of each agency, for each type of emergency, is contained in the ICAO *Airport Services Manual* (Doc 9137), Part 7 *Airport Emergency Planning*. Although that manual deals primarily with accidents at or near an airport, the role and responsibility of each agency outlined therein may also apply to accidents elsewhere.

7.1.1.2 Victim identification is the responsibility of the coroner and medical officials, the Nigerian Police and the victim identification team. Medical personnel, such as pathologists and forensic dentists, should be aware of what is expected of them in the event of an aircraft accident, including autopsies and toxicology examinations. The Bureau has coordinated its needs in advance with the medical specialists in order to facilitate these arrangements.

7.1.1.3 Notification of next of kin is a sensitive task that must be planned and undertaken with great care in order to avoid anomalies, such as multiple or erroneous notifications. In Nigeria, the notification of next of kin is a *police, airline or medical examiner* task. The ICAO *Policy on Assistance to Aircraft Accident Victims and their Families* (Doc 9998) and the *Manual on Assistance to Aircraft Accident Victims and their Families* (Doc 9973) and ICAO Circular 285 *Guidance on Assistance to Aircraft Accident Victims and their Families* provides further guidance in this regard.

7.1.1.4 Although it is recognized that the circumstances surrounding each accident are different, the importance of proper planning and establishing good liaison with other authorities, particularly the police, the fire department, and the search and rescue services, cannot be overemphasized.

7.1.1.5 The Bureau will rely on assistance from other civil and military organizations to provide facilities, equipment and additional personnel, i.e. helicopters, heavy lifting and moving gear, metal detectors, communication equipment, and divers. It is important that heavy salvage equipment, such as cranes, bulldozers, or lifting helicopters, are readily available. In some cases, a full-scale expedition may have to be organized, requiring additional transportation, food, lodging, etc.

7.1.2 Initial Actions at the Accident Site

7.1.2.1 The fire department and the police will probably be the first authorities to arrive at an aircraft accident site. It is therefore important to enlist the cooperation of these authorities in order to ensure security and control of accident sites and cooperation during investigations. It is essential that vital

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evidence is not lost through interference with the aircraft wreckage in the early phases of an investigation. The fire department and the police should be aware of what is expected of them in the event of an aircraft accident. The Bureau is responsible for coordinating its needs in advance with relevant search and rescue organizations. Plans and arrangements for the following essential tasks are in place so that they can be accomplished without delay:

- a) notification to the rescue coordination center (Annex 12 - *Search and Rescue* refers);
- b) notification to the Bureau and other authorities, as necessary;
- c) securing the aircraft wreckage from fire hazards and further damage;
- d) checking for the presence of dangerous goods, such as radioactive consignments or poisons being carried as freight, and taking appropriate protective action;
- e) placing guards to ensure that the aircraft wreckage is not tampered with or disturbed;
- f) taking steps to preserve, through photography or other appropriate means, any evidence of a transitory nature, such as ice, snow or soot deposits; and
- g) obtaining the names and addresses of all witnesses whose testimony may assist in the investigation of the accident.

7.2.2 Apart from these arrangements, the wreckage should be left undisturbed, to the extent possible, until the arrival of the investigation team. It has been emphasized to the police and the rescue services that the bodies of persons killed in an accident involving a large aircraft should, where practicable, be left *in situ* for examination and recording by the police victim identification team. There may also be times when, for crash worthiness/survival investigation purposes, it may be appropriate for the deceased to be left *in situ* until viewed and documented by the Bureau's investigation team. Similarly, personal belongings should remain untouched as their location may assist in the identification of the victims. In general, disturbance of the wreckage should be limited to that necessary to rescue survivors, extinguish fires and protect the public.

7.2 RESCUE OPERATIONS

7.2.1 The primary concern of the first persons to arrive at the site of an aircraft accident is to rescue and aid survivors and protect property within the means available. Persons who are involved with the extrication of victims from aircraft wreckage should, at the earliest opportunity, record their observations regarding the location in the aircraft where the survivors were found and what portions of the wreckage had to be moved during the rescue.

7.2.2 If circumstances permit, the bodies of persons killed in the accident should be left as found until their location and condition are recorded, photographs are taken and a chart is made indicating their location in the wreckage. If bodies are located outside the wreckage, their location should be marked by a stake with an identifying number. A corresponding label should be attached to each body stating

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where it was found. The careful recording of these data is essential to the identification of bodies and also provides information which may assist in the accident investigation.

7.2.3 In the event that bodies have been removed from the aircraft wreckage before the arrival of the aircraft accident Safety Investigators, it is important to establish whether or not a record, as set out above, has been maintained. If not, the rescue personnel should be interviewed in order to establish such a record.

7.2.4 The Bureau's Safety Investigators should determine if there has been any disturbance of the wreckage during the rescue operations and should record any such disturbance.

7.2.5 Upon completion of the initial rescue operation, rescue personnel should exercise as much care as possible to ensure that their movements do not destroy evidence which may be of value to the investigation. For example, once the survivors have been rescued and the fire risk has been eliminated as far as practicable, movement of ambulances and fire vehicles should not be permitted along the wreckage trail.

7.3 PROTECTION OF EVIDENCE, CUSTODY AND REMOVAL OF WRECKAGE

7.3.1 Security at the Accident Site

7.3.1.1 When notified of an accident, the IIC or the designated accident site safety and security coordinator should immediately verify that arrangements have been made to ensure the security of the wreckage. This is usually arranged through the police, but in some cases, military personnel or specially recruited civilians may be employed.

7.3.1.2 Before investigation work commences at the accident site, the cargo manifest must be checked to ensure there are no hazardous materials in the consigned cargo.

7.3.1.3 When it is suspected that the aircraft may have carried dangerous cargo such as radioactive consignments, explosives, ammunition, corrosive liquids, liquid or solid poisons or bacterial cultures, special precautions should be taken to station the guards at a safe distance from the wreckage. This is particularly important if a fire has occurred because it tends to disperse the contaminants. Signs indicating a potentially dangerous area should be posted until experts, in consultation with the designated Bureau's site safety and security coordinator have thoroughly evaluated the danger involved.

7.3.1.4 Upon arrival at the accident site, one of the first tasks of the Safety Investigators is to review the security arrangements. The guards should be thoroughly conversant with their duties, which are to:

- a) protect the public from the hazards in the wreckage;
- b) prevent disturbance of the wreckage (including bodies and contents of the aircraft);
- c) protect property; and



- d) admit to the accident site only persons authorized by the Bureau; and
- e) protect and preserve, where possible, any ground marks made by the aircraft.

7.3.1.5 Clear and specific instructions should be given by the Bureau's IIC or accident site safety and security coordinator to those guarding the wreckage site of the need for authorized persons to have proper identification. In the case of major investigations, this should be accomplished through the issuance of photographic identification badges or some form of security pass to all authorized persons. The use of armbands or jackets that show affiliation and duty may be acceptable.

7.3.1.6 If the wreckage has not been scattered, effective security can be achieved by roping off the area. However, if there is a long wreckage trail, the task of securing the site may be formidable and many guards should be required in a wide perimeter.

7.3.1.7 The police can be of considerable assistance in liaising with the local population, particularly with regard to locating outlying pieces of wreckage. While persons living in the neighbourhood should be encouraged to report the discovery of pieces of aircraft wreckage, the importance of leaving these pieces undisturbed should also be impressed upon them. Collecting outlying pieces of aircraft wreckage and arranging them into neat piles alongside the main wreckage are sometimes done with good, but misguided, intentions. With no record of where such pieces were found, their value to the investigation is diminished. Similarly, the removal of pieces of aircraft wreckage by souvenir hunters must be prevented.

7.3.1.8 The aircraft wreckage should be guarded until the IIC is satisfied that all evidence at the site has been gathered. The IIC should review the situation periodically and arrange for the progressive release of guards as appropriate.

Note. With regard to paragraphs 4.6 and 4.7 of this manual, consideration should be made at all times by the IIC for the protection of Safety Investigators at the accident site (reference to ICAO Circular 315 Hazards at Aircraft Accident Sites)

7.3.2 Removal of Wreckage and Personal Effects

Notwithstanding the requirement to preserve evidence, the Director-General or IIC may permit the removal of or interference with the wreckage as may be necessary for the following purposes:

- a) extricating persons or animals;
- b) removing any mail, valuables or dangerous goods carried by the aircraft for the purpose of preservation;
- c) preventing destruction by fire or other cause;
- d) preventing any danger or obstruction to the public, air navigation or other transport; or

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- e) if the wreckage is in water, the aircraft or its contents may be removed to such extent as may be necessary for bringing the wreckage or its contents to a place of safety

Note.- Goods or passenger baggage or any other property removed from the wreckage shall be under the custody of police officer in-charge at the site.

7.3.3 Securing Flight Recorders, ATS Recordings and Flight Documents

7.3.3.1 The Investigator-in-Charge (IIC) shall ensure the immediate retrieval, preservation and safe keeping of flight recorders if installed on the aircraft, Air Traffic Services (ATS) recordings (communications, data recordings, flight plan, etc.) and other documents associated with the flight are secured and placed in safe keeping as soon as possible (refer to the Checklist Initial Actions following a Notification NSIB.01.05).

7.3.3.2 Prior arrangements by the IIC such as appropriate boxes/containers should be in place to immediately obtain and place in safe keeping all of the aircraft operator’s documentation associated with the aircraft, the flight crew and the flight operation.

7.3.3.3 The Director of Operation in coordination with the Legal Adviser Arrangements should be made with the aviation meteorology authorities to obtain a special weather report as soon as they become aware of an aircraft accident.

7.3.3.4 The IIC in coordination with the chairman of the systems group should ensure arrangements are made with fuel companies to obtain fuel samples from stocks or refueling points.

7.3.3.5 The IIC in coordination with the chairman of engineering group shall ensure all evidence of a transitory nature of the wreckage should be preserved through photography, video or other appropriate means.

7.3.3.6 The Director of Operations shall ensure that damaged flight recorders and recorders recovered from water are handled with the best practice against further damage. The Data frame layout shall be obtained from the operator of the accident aircraft to enable proper readout of flight data recorder.

7.4 WRECKAGE IN THE WATER

7.4.1 Initial Actions

7.4.1.1 As soon as it has been determined that the wreckage is in water, efforts must be made to obtain the best technical expertise available. The Bureau will call upon the services of the Nigerian Navy and other organizations and resources with specialized expertise from outside of the country to ensure that the aircraft wreckage under water is found and recovered as necessary in a timely manner.

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As part of its contingency planning for an accident in the water, the Nigerian Safety Investigation Bureau has pre-arranged agreements (MoUs) with relevant organizations and States to obtain the necessary specialized assistance. (Refer to appendix C to this manual).

Note.— Experience has shown that the search for and the recovery of the aircraft wreckage under water is a specialized task requiring experienced personnel and specialized equipment. Specialized agencies should be consulted early to avoid unnecessary delays in locating and recovering the flight recorders and the aircraft wreckage from under water.

7.4.1.2 If the water is shallow (less than 60 m (196 ft)), divers can be effective for search and recovery of the wreckage; however, mapping of the wreckage using side-scanning sonar may need to be used to ensure the safety of the divers. If the wreckage is located in deep water, or conditions make it difficult to use divers, use of the following equipment may be considered:

- 1) underwater equipment used to locate the underwater locating beacons (ULB) on the flight recorders; underwater videos and cameras;
- 2) side-scan sonar equipment; and
- 3) manned or unmanned submersibles (remotely operated vehicles (ROVs)).

7.4.2 Decision to Recover the Aircraft Wreckage

7.4.2.1 The circumstances and location of an accident should determine whether salvage of the aircraft wreckage is practicable and necessary. In most cases, the aircraft wreckage should be recovered, if it is considered that the evidence it might provide would justify the expense and effort of a salvage operation. If the aircraft wreckage is likely to contain evidence significant to air safety, the Bureau will provide the impetus needed to ensure that action is promptly taken to recover the aircraft wreckage. Such action includes obtaining the necessary funding and specialized equipment and personnel for the tasks.

Note.— The Bureau has established contingency plans with the government to obtain immediate supplemental funding to begin a search and recovery operation for wreckage under water.

7.4.2.2 There have been several instances where aircraft wreckage has been successfully recovered from deep water. Such recoveries necessitated expensive salvage operations lasting several months, but the results exceeded expectations, and the evidence obtained from the aircraft wreckage established the causes and contributing factors of the accidents and led to accident prevention measures.

7.4.3 Aircraft Wreckage Distribution

Once the aircraft wreckage has been located, a chart plotting the wreckage distribution should be prepared. In shallow waters, divers can achieve this. In deep waters, side-scan sonar and underwater

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video cameras from remotely operated submersibles may be used. The state of the various pieces of aircraft wreckage, their connection by cables or tubes, the cutting of these connections for the salvage operations, etc., should be recorded before lifting the various pieces of aircraft wreckage from the bottom. Usually, the divers are not experienced in aircraft accident investigation and, therefore, detailed briefings will be necessary.

7.4.4 Preservation of the Aircraft Wreckage

7.4.4.1 The rates at which various metals react with salt water vary considerably. Magnesium components react quite violently and, unless recovered within the first few days, may be completely dissolved. Aluminum and most other metals are less affected by immersion in salt water. However, corrosion will rapidly accelerate once the component is removed from the water, unless steps are taken to prevent this from occurring.

7.4.4.2 Once the aircraft wreckage has been recovered, the components should be thoroughly rinsed with fresh water. It may be convenient to hose the aircraft wreckage as it is raised out of the sea prior to it being lowered onto the salvage vessel. Freshwater rinsing does not stop all corrosive action. When large aircraft are involved, it may not be practicable to take further anti-corrosion action on large structural parts. However, all components that require metallurgical examination will require further preservation. The application of a water-displacing fluid should provide additional corrosion protection; fracture surfaces should then be given a coat of corrosion preventive substances such as oil or inhibited lanolin.

7.4.4.3 When organic deposits, such as soot deposits or stains, require analysis, organic protective substances should not be used. Freshwater rinsing should be employed followed by air drying. When the component is completely dry, it should be sealed in a plastic bag with an inert desiccant such as silica gel.

CAUTION: UNDER NO CONDITIONS SHOULD AN ATTEMPT BE MADE TO REMOVE OR TO PLAY A TAPE FROM AN FDR OR CVR IN THE FIELD. THE DATA COULD BE ERASED OR DAMAGED.

7.5 PROCEDURES FOR HANDLING FLIGHT RECORDERS

7.5.1 Flight recorders must be handled in accordance with the Bureau’s flight recorder policy documents.

7.5.2 Protect the recorder from strong magnetic fields. It is important to remember that an X-ray transmitter at an airport security station may damage the data. If a recorder, tape or solid-state memory unit is mailed, please mark the package

“SENSITIVE FLIGHT RECORDING WITH CRITICAL DATA. DO NOT EXPOSE TO X-RAY RADIATION OR MAGNETIC FIELDS”.

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7.5.3 Do not open the recorder and do not allow anyone to remove the tapes or solid-state memory unit under any circumstances. If the recorder is dry and undamaged, use a shipping container obtained from the operator involved in the accident or incident, if possible. Otherwise, package it carefully for shipment, unless it is to be hand-carried; it is not necessary to package an undamaged recorder for hand-carriage.

7.5.4 If the case is broken, do not remove the tape or solid-state memory unit from the device. Wrap the entire recorder and its contents in polyethylene or similar material or heavy paper before packaging for shipment.

7.5.5 If the tape reels or solid-state memory boards are separated from the unit, wrap them in polyethylene or paper before applying sealing tape. Never apply sealing tape directly to the recording medium. Do not remove the recording medium from the reels or enclosure.

7.5.6 If the recording is a tape and it is found separated from the recorder, try not to wrinkle or crease it. Carefully wrap it on a spool or cardboard tube or something similar. Wrap this in polyethylene or paper and pack it carefully. Enclose all fragments of tape, no matter how small. Never pack the tape randomly into a box or container. Data are easily degraded; creases and wrinkles can cause electronic noise and permanent data loss.

7.5.7 If the flight recorders are found in water, they should not be dried, but should be kept immersed in fresh or distilled water until the assigned flight recorder specialist assumes responsibility for them.

7.5.8 The Bureau never permits flight recorders that have been submerged in water to dry out before reaching the recorder laboratory in order to prevent damage to the recording media. Ship them to the laboratory whilst immersed in the fresh or distilled water in watertight containers.



CHAPTER 8

8.0 ORGANIZATION AND MANAGEMENT OF THE INVESTIGATION

8.1 GENERAL

8.1.1 To achieve its purpose, an investigation must be properly planned and managed. This includes identifying the essential points of the investigation, the responsibilities of the members of the investigation team and the qualifications required. The main parts of an investigation must be planned so that the members of an investigation team are aware of their various tasks and have the appropriate qualifications to perform them. The plan must also recognize that these tasks should be coordinated by the IIC, who is the leader of the team.

8.1.2 When a large aircraft is involved, a sizeable team of Safety Investigators, set up in specialized groups, is necessary to properly cover all aspects of the investigation. In some investigations, the areas on which the investigation should focus will become evident at an early stage, and the main investigation effort can then be effectively channeled into these relatively specialized areas. Nevertheless, it is still essential that Safety Investigators progress systematically through all aspects of the accident. Whether or not the causes of an accident are apparent, the investigation will determine any underlying systemic factors that may have contributed to the accident or its aftermath as well as any non-causal deficiencies that could contribute to future accidents or their aftermath.

8.1.3 In the case of accidents involving small aircraft, the investigation effort is proportionately smaller. The functions are still the same, but the work is undertaken by one or two Safety Investigators or, alternatively, by a Safety Investigator and a specialist qualified in a particular aspect that requires expert examination. Again, it is stressed that even when small aircraft are involved, Pre-investigation planning and use of investigation checklists are essential.

8.2 THE INVESTIGATION MANAGEMENT SYSTEM

8.2.1 Organization of an Investigation

8.2.1.1.1 Certain aspects of an accident/incident may focus the initial attention of investigators. In conducting the investigation, they strive to cover all areas of investigation, including those that do not seem essential to them.

8.2.1.1.2 In particular, they identify potentially underlying systemic factors. Similarly, they study the deficiencies that had no direct influence on the event but that could contribute to future accidents or their consequences.

8.2.1.1.3 To help investigators in this process and thus cover all the elements and factors that can be studied during an investigation, three (03) themes are defined:

- a) **AIRWORTHINESS ;**

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- b) **TECHNICAL OPERATION;** and
- c) **HUMAN FACTORS.**

8.2.1.1.4 Each of these themes covers specific areas:

AIRWORTHINESS	TECHNICAL OPERATION	HUMAN FACTORS
<ul style="list-style-type: none"> - Site/wreck - Structure - Embedded systems - Engines - Flight recorders - Aircraft performance - Maintenance and record 	<ul style="list-style-type: none"> - Technical operation of the aircraft - Meteorology - Air navigation and aerodrome - Survival - Witnesses 	

8.2.1.1.5 This organization is valid regardless of the category of the investigation and complies with that recommended in ICAO document 9756.

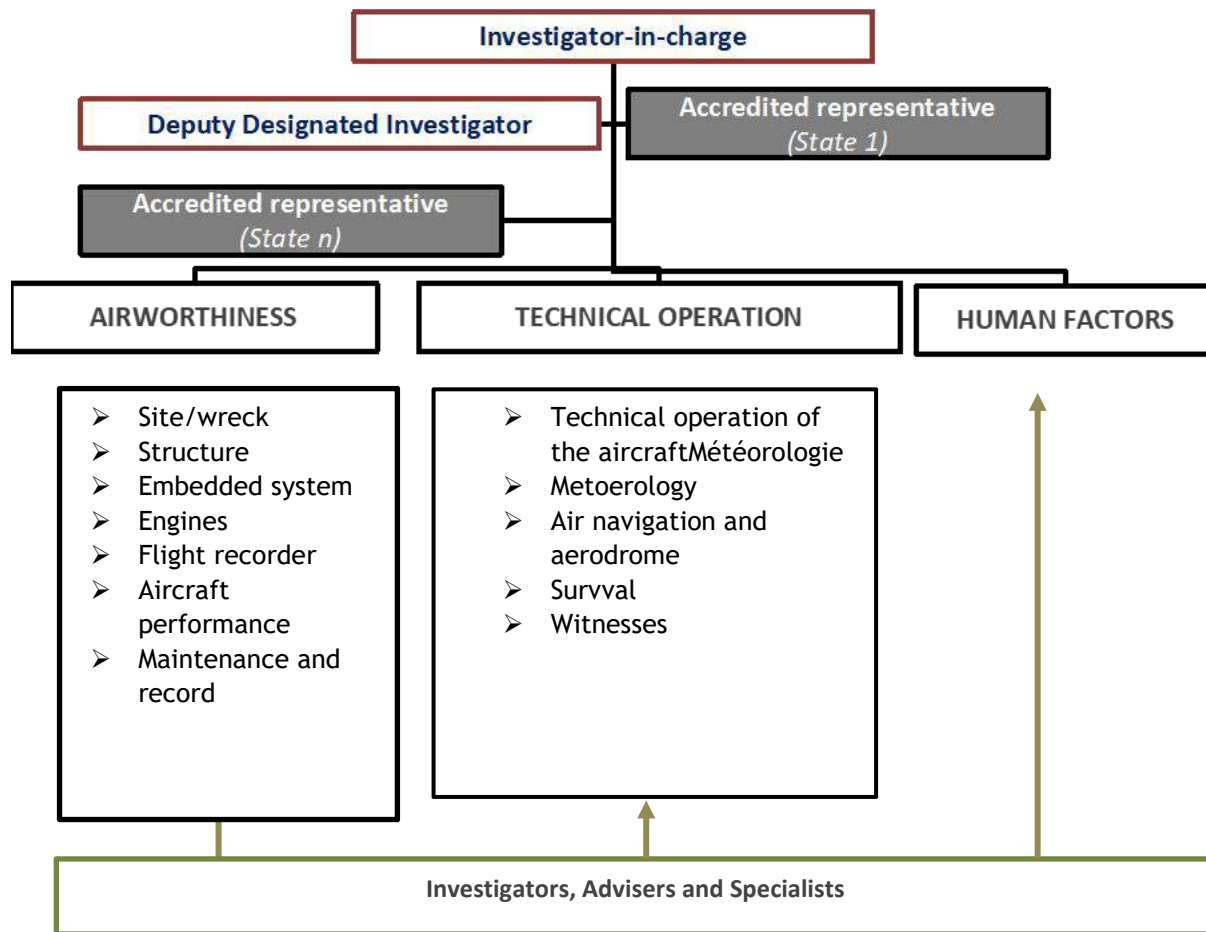
8.2.1.1.6 The organization and management of the investigation is the responsibility of the investigator-in-charge .

He is a member of an investigation team which may initially include a Go-Team and later be supplemented by other investigators, advisers or specialists depending on the needs and the scope of the investigation.

8.2.1.1.7 The investigation team can thus:

- a) be reduced to the designated investigator and one or two other investigators : they must address the three (03) investigation topics;
- b) be made up of several people : the investigation team is divided into investigation groups, each covering a particular investigation theme, or even into investigation sub-groups corresponding to the areas associated with each theme (site/wreck sub-groups, maintenance, engine, structure for the AIRWORTHINESS group, for example).

8.2.1.1.8 The investigation team is then organized as follows:



8.2.1.1.9 Thus, depending on the category of the investigation:

- c) each theme can be managed by a different person;
- d) the same person can manage several themes;
- e) each theme is managed within the framework and formalism of a investigation group;
- f) an investigation group can be made up of investigation sub-groups (eg: the meteorology, air navigation, survival sub-groups for the TECHNICAL OPERATION group);
- g) the formation of an investigation group may change depending on the progress of the investigation.

8.2.1.1.10 With the exception of the HUMAN FACTORS theme, the other two themes (AIRWORTHINESS and TECHNICAL OPERATION) can be addressed from the start of the investigation.

Note: To avoid any ambiguity in this manual, groups of investigations are denoted in capital letters and sub-groups of investigations in lower case.



8.2.1.2 Establishment of the investigation group

8.2.1.2.1 An Investigation group is made up of one or more people. The composition of the group or sub-group may also change depending on the progress of the investigation.

8.2.1.2.2 Whenever possible, investigation unit/sub-group leaders are experienced investigators from the Bureau. When several people are part of an investigation group, it can be made up of:

- a) a group leader, an investigator from the Bureau;
- b) one or more investigators from the Bureau, assisting the investigation group leader and who may assume the role of leader of the investigation group's sub-groups;
- c) advisers and/or specialists.

8.2.1.2.3 The mandates of the groups/sub-groups are established by the investigator-in-charge.

8.2.1.2.4 Throughout the investigation, the list of documents to be collected is used by the investigation team to collect relevant information. It is forwarded by the investigation team to the organizations involved in the occurrence.

8.2.1.2.1 Objectives of groups and subgroups

8.2.1.2.2 Airworthiness Group

The AIRWORTHINESS Group includes the following subgroups:

- a) Site/wreck;
- b) Structure ;
- c) Embedded systems ;
- d) Engines ;
- e) Flight recorders;
- f) Aircraft performance;
- g) Maintenance and record.

(a) SITE/WRECK SUB-GROUP

This subgroup aims to:

- carry out a briefing with the participants in the investigation (operators, manufacturers) to frame the prerogatives of the sub-group;
- a) with the designated investigator or his delegate, assess the risks, ensure the security of the site and the preservation of the clues;
 - b) draw up a distribution plan (mapping) of the wreckage, debris and marks relating to the event. The distribution of parts must be accompanied by their identification when possible.
 - c) determine a probable final trajectory, depending on the angle and altitude of the aircraft at impact;
 - d) determine a probable final trajectory, depending on the angle and altitude of the aircraft at impact;



- e) determine the energy level of the impact according to the damage, taking into account the environment;
- f) carry out a set of basic examinations on the wreckage:
 - verification of the presence of all the main parts of the aircraft (case of breakage in flight);
 - enumeration of flight surfaces and observation of their condition, in particular surfaces linked to flight controls;
 - verification of the connections between the surfaces and the controls in the cockpit;
 - examination of tanks and liquid samples (fuel, possibly hydraulic fluids, lubricants);
 - preliminary examination of the engine and its direct environment: cone, propeller, cowlings, connections to the controls, electrical harnesses, lubrication, air and fuel supply circuits;
 - detailed examination of the cockpit: position of controls, switches and selectors, alarm panels and on-board instruments.
- g) record information relating to in-flight collisions or ruptures;
- h) identify and document traces of fire (in flight or post impact).

After the first examinations and before the recovery of the wreckage and the debris, the parts presenting an interest and being able to be the subject of additional examinations must be preserved and protected. Depending on the case, a sample may be necessary.

This group also aims to direct and implement search operations at sea if necessary. It must also recover all or part of the wreckage. The search, identification, recovery and retention of flight recorders is a priority as soon as the aircraft is located.

(b) STRUCTURE SUB-GROUP

This subgroup aims to:

- a) confirm the identification of the wreckage and parts of the wreckage in coordination with the Site/Wreckage sub-group;
- b) assess the energy levels and accelerations encountered during impact;
- c) look for parts of the aircraft (except engines) which, unrelated to the impact:
 - show signs of damage;
 - would not be positioned correctly; Or
 - would be missing.
- d) provide for the movement and storage of the wreckage with a view to examinations;
- e) organize and/or carry out examinations of the parts and elements sampled in order to determine the type or types of failure in order to assess whether the failures observed result from faulty design, production, maintenance actions or impact;
- f) assess the need for a 2D, 3D or virtual reconstruction of the aircraft.

(c) EMBEDDED SYSTEMS SUBGROUP

This subgroup aims to:

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- a) review avionics systems;
- b) retrieve and use all of the recorded information relating to the operation of the aircraft systems;
- c) analyze the information retrieved in order to verify whether the aircraft and/or equipment has operated as designed (“as per design”);
- d) when a fault is identified on one of the systems examined, collect feedback from similar events and study the safety analyzes carried out with a view to certification.

Studying the operation of aircraft systems may lead the sub-group to question the production and design processes and check the regulations applicable to aircraft equipment.

(d) ENGINES SUB-GROUP

This subgroup aims to:

- a) study on site the elements relating to the engines, APU, accessories and fuel system (with the exception of the computers) in order to gather the elements likely to explain a contribution of the powerplant to the event;
- b) carry out a set of basic examinations on the wreckage:
 - examine the tanks and take samples of liquids (fuel, possibly hydraulic liquids, lubricants);
 - carry out the preliminary examination of the engine and its direct environment: cone, propeller, cowlings, connections to the controls, electrical harnesses, lubrication, air and fuel supply circuits;
- c) assess and if possible explain the level of power available at impact;
- d) participate in the engine debris distribution plan;
- e) organize and/or carry out laboratory examinations of the samples taken.

(e) FLIGHT RECORDERS SUB-GROUP

This sub-group aims to exploit:

a) Parameter recorder data:

- define the methodology to be used for the recovery of recordings;
- provide all groups and investigation participants with validated data sheets and listings;
- draw up the list of alarms, alerts and fault messages recorded and check their consistency.

b) voice and video data:

- define the methodology to be used for reading the recorders;
- validate the retrieved records;
- produce a transcription of exchanges and communications;
- develop a chronology of alarms and identify them;
- carry out the acoustic analysis work and study the various signals recovered (spectral analysis, identification of the various noises, identification of the people heard or present in the cockpit, etc.).

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The participants in the production of a transcription are designated by the investigation management team. Transcription can be done with the support of certain advisors. Calling a translator may be necessary.

(f) AIRCRAFT PERFORMANCE SUBGROUP

This subgroup aims to:

- a) determine the trajectory of the aircraft and carry out trajectographies on the basis of all the information collected by the other sub-groups/investigation groups, in coordination with the investigator-in-charge/deputy-investigator-in-charge and the group leaders (choice of time range, elements to be included on the trajectography, base maps, etc.);
- b) study the situation and behavior of the aircraft in relation to the certified flight envelope (maneuverability, flight qualities - static and dynamic stability);
- c) perform the calculations necessary to study the behavior of the aircraft in relation to its environment and the actions of the crew (calculation of braking performance, quantification of turbulence, aerodynamic loads, etc.);
- d) if necessary, produce an animation based on the work of other sub-groups.

In most cases, this work requires the participation of the aircraft manufacturer. The investigation team will therefore have to estimate the level of involvement that should be asked of the latter so as not to sacrifice the independence of the work to guarantee its accuracy.

(g) MAINTENANCE AND RECORD SUBGROUP

This subgroup aims to:

- a) determine recent maintenance actions likely to have had an impact on the event;
- b) collect and study all maintenance documentation relating to the aircraft and its components. The depth of research will depend on the nature of the recent maintenance and a potential link with the event.
- c) check the adequacy of the maintenance methods with the regulations as well as the methods and the conformity between the programs applied and those planned;
- d) interview maintenance, continuing airworthiness management and quality assurance personnel;
- e) check the training of maintenance personnel.

The main points to be analyzed include:

- ❖ the history of the structure, engines and propellers and equipment. This shall include any failure or maintenance operation related to these components;
- ❖ the aircraft file:
 - application of airworthiness directives;
 - repair or maintenance performed in accordance with applicable regulations and procedures as well as common practice;
 - application and monitoring of the approved maintenance program;
 - maintenance program procedures in accordance with State of Registry regulations.

8.2.1.2.3 Technical Operation Group

The TECHNICAL OPERATION group includes the following sub-groups:

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- a) Technical operation of the aircraft;
- b) Meteorology;
- c) Air navigation and aerodrome;
- d) Survival;
- e) Witnesses .

(a) AIRCRAFT OPERATIONS SUBGROUP

The purpose of this sub-group is to collect factual information relating to the course of the flight and the activity of the crew members (before, during and after the occurrence).

This includes :

- a) information concerning the interactions of the crew with its environment;
- b) the actions (or inactions) noted during the events that led to the occurrence;
- c) flight preparation;
- d) the experience and qualifications of the crew members as well as their education and training;
- e) supervision of the operator by the supervisory authority;
- f) operator's organization.

(b) METEOROLOGY SUB-GROUP

The purpose of this sub-group is to collect all the relevant meteorological information for the investigation and must therefore include data, observations and forecasts, both at surface and altitude, and in-flight reports.

He must examine the conditions encountered but also the flight preparation elements.

This sub-group is also responsible for examining, if necessary, the equipment and/or means that have provided meteorological information. Its members must coordinate with the TECHNICAL OPERATIONS sub-groups and the Flight Recorders and Site/wreck sub-groups for on-site weather conditions.

(c) AIR NAVIGATION AND AERODROME

The terms of reference of the sub-group must take into account the air navigation service provider, the operators and the characteristics of the aerodrome.

This subgroup aims to collect and examine:

- a) recordings of radar data, radio communications (telephone or frequency) in coordination with the AIRWORTHINESS group;
- b) operation of navigation aids, communication equipment, radars;
- c) airport or aerodrome information;
- d) the organization of any organization related to air navigation.

The sub-group also aims to trace the course of the flight and air navigation operations from the information provided by the air navigation services.

(d) SURVIVAL SUBGROUP

The purpose of the Survival sub-group is to collect all the factual information relating to:

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- a) search and rescue;
- b) medical aspects;
- c) aspects of survivability;
- d) escape cabin safety;
- e) help.

This part of the investigation should be carried out in close collaboration with the HUMAN FACTORS group and the Technical Operation, Structure and Embedded Systems sub-groups.

(e) WITNESSES SUBGROUP

The Witnesses subgroup aims to contact and interview all survivors of the flight, as well as all persons who may have seen or heard part of the flight, or who may have knowledge about the flight or the weather conditions at the time of the accident / incident.

The "questionnaire for persons on board the aircraft" is used to collect information from the crew and passengers.

The statements collected are recorded in the document entitled "transcription of statements".

Its members must coordinate with the HUMAN FACTORS group and the sub-groups of the TECHNICAL OPERATION group.

8.2.1.2.4 HUMAN FACTORS Group

The HUMAN FACTORS group aims to:

a) to document the facts likely to be used for specific studies:

- incapacitation of the crew;
- fatigue ;
- stress, emotional load;
- spatial disorientation;
- CRM (crew resource management);
- Some ergonomic aspects.

b) where appropriate, to conduct or supervise these studies.

The group is led by a Bureau's investigator . Participants can come from:

- a) companies concerned by the event (operator, maintenance organization, ATS organization, ATO);
- b) counselors ;
- c) Medical/Health specialists (doctors, consultants, academics, etc.).

The studies decided upon may be subcontracted to external laboratories or organizations. The members of the HUMAN FACTORS group can, if necessary, take part in the interviews conducted in the other investigation groups.

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8.2.1.2.5 List of Actions and Tasks of Investigation Groups and Sub-groups

8.2.1.2.5.1 Accident investigation management can be greatly facilitated if the IIC uses a flow chart (Figure 8-7) with a number of events (refer to Figure 8-8). Each event has a corresponding descriptive phrase. The flow chart allows the Air Safety Investigators to ensure that the essential sequence of events is followed. Appendix M to this manual contains an “Investigation Event Checklist (NSIB.01.07) and Investigation Event Task-Assignment Chart (NSIB.01.10)” specifically intended to aid accident investigation management by documenting the various stages of the investigation. This Event checklist should be used as a tool to manage the various investigation steps to be taken to complete the investigation. It is a tool only and can be supplemented by other materials.

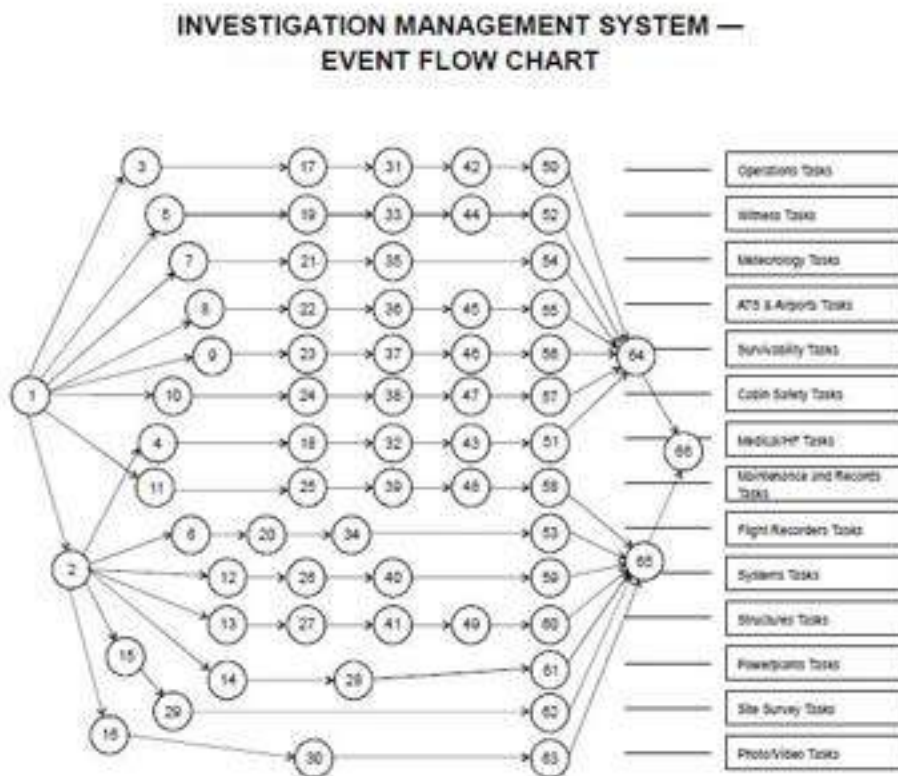


Figure: 8-0-7: Investigation Management System Events Flow Chart



INVESTIGATION MANAGEMENT SYSTEM EVENTS

- | | |
|---|--|
| 1. Initial response | 34. Analysis of flight recorders data |
| 2. Initial actions at the site | 35. Interviews (Meteorology) |
| 3. Secure flight operations documents | 36. Interviews (Air Traffic Services and Airport) |
| 4. Human remains recovery | 37. Rescue operations |
| 5. Eyewitness interviews | 38. Cabin condition |
| 6. Flight recorder recovery | 39. Interviews (Maintenance and Records) |
| 7. Secure weather documents | 40. Interviews (Systems) |
| 8. Secure air traffic services and airport documents | 41. Crashworthiness |
| 9. Search and rescue operations | 42. Aircraft performance |
| 10. Secure pertinent cabin documents | 43. Autopsies |
| 11. Secure maintenance documents | 44. Pre-interviews (Eyewitnesses) |
| 12. Examination of systems | 45. Navigation aids and airport status |
| 13. Examination of structures | 46. Firefighting operations |
| 14. Examination of engine(s) and propeller(s) | 47. Interviews (Cabin crew and passengers) |
| 15. Initial survey of the accident site | 48. Maintenance management |
| 16. Site photography (Phase 1) | 49. Wreckage reconstruction |
| 17. Review of operations documents | 50. Analysis and report of Operations Group |
| 18. Crew member medical examinations | 51. Analysis and report of Medical/Human Factors Group |
| 19. Plot flight path | 52. Analysis and report of Witness Group |
| 20. Read-out of flight recorders | 53. Analysis and report of Flight Recorders Group |
| 21. Review of weather documents | 54. Analysis and report of Meteorology Group |
| 22. Review air traffic services and airport documents | 55. Analysis and report of ATS and Airport Group |
| 23. Evacuation operations | 56. Analysis and report of Survivability Group |
| 24. Review pertinent cabin documents | 57. Analysis and report of Cabin Safety Group |
| 25. Review of maintenance documents | 58. Analysis and report of Maintenance and Records Group |
| 26. Examination and testing (Systems) | 59. Analysis and report of Systems Group |
| 27. Fire and explosion | 60. Analysis and report of Structures Group |
| 28. Examination and testing (Powerplants) | 61. Analysis and report of Powerplants Group |
| 29. Wreckage distribution plotting | 62. Analysis and report of Site Survey Group |
| 30. Site photography (Phase 2) | 63. Analysis and report of Photo/Video Group |
| 31. Flight crew members interviews | 64. Operations analysis and findings |
| 32. Victim identification | 65. Technical analysis and findings |
| 33. Interviews of next of kin | 66. Report of the Investigator-in-charge |

Figure: 8-0-8: Investigation Management System Events

In order to maintain a certain homogeneity between the **investigator-in-charge** and the foreign accredited representatives, the actions or tasks likely to be carried out for the associated groups or sub-groups are contained in the list of actions and tasks of the investigation groups and sub-groups in accordance with Part II of the ICAO document 9756. Certain tasks are not the responsibility of the Bureau such as tasks in No. 4, 9 and 32).



INVESTIGATION EVENT TASK-ASSIGNMENT CHART

Investigation Group	Assigned Events							
Administration Support								
Head Office Coordinator								
Media Coordinator								
Site Safety								
Investigator-in-charge								
Deputy Investigator-in-charge								
Operations								
Aircraft Performance								
Human Factors								
Medical and Pathology								
Witness								
Flight Recorders								
Meteorology								
Air Traffic Services								
Airports								
Survivability								
Cabin Safety								
Maintenance and Aircraft Records								
Systems								
Structures								
Crashworthiness								
Powerplants								
Site Survey								
Photo/video								

Figure: 8-0-9: Example of a blank Investigation Management System Task-Assignment Chart



ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT FIELD, 1000 0001 101, ABUJA, NIGERIA

Investigation Event Task-Assignment Chart

Investigation Group	Assignment Dates									
	1	2	3	4	5	6	7	8	9	10
Administrative Support										
Head Office Coordinator										
Media Coordinator										
Site Safety Coordinator		2								
Investigator-in-Charge	1	2						04	07	08
Deputy Investigator-in-Charge								04	07	08
Dynamics	3	17	21		20					
AIRCRAFT PERFORMANCE				42						
HUMAN FACTORS	4	18	22	48	21					
Medical and Pathology										
Weather	5	19	23	44	21					
FLIGHT RECORDS	6	20	24		22					
Meteorology	7	21	27		24					
All Traffic Services	8	22	28	47	27					
Airports										04
Survivability	9	23	27	48	28					07
Operational Safety	10	24	28	47	27					04
Maintenance and Airport Records	11	25	29	48	28					07
Subsidiary	12	26	30		29					07
STRUCTURE	13	27		49	30					07
Ordnance/Weapons										07
Powerplants	14	28								07
Site Survey	15	29								07
PROSECUTOR	16	30								07

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Figure: 8-0-10: Example of a filled Major Investigation management System Event Task-Assignment (NSIB.01.10)

8.2.1.2.5.2 Each event checklist should be used in conjunction with Engineering Guidance Materials, Operations Guidance Materials, the Major Accident Investigation Guide contained in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part II; and the specific investigation task materials (checklists) contained in Doc 9756, Part III, and tailored to the particular accident circumstances. Since the investigation tasks may differ due to the circumstances of the accident, the checklists should be reviewed to ensure that the tasks are appropriate to the organization and conduct of the accident investigation. Arranging the activities and tasks into checklists allows the IIC to clearly indicate what has been accomplished and what is to be accomplished by the Air Safety Investigators and the various groups during the investigation. It also makes it easier for the IIC to provide direction and guidance to those persons who are participating in an investigation for the first time and who may require specific advice. The checklists, aside from being part of the investigation management system, establish some order in what is often a confusing situation.

8.2.1.2.5.3 The group chairpersons are responsible for completing the investigation tasks using their relevant checklists in order to fulfill their various tasks. Therefore, the group chairpersons must be knowledgeable about the investigation management system and the tasks their groups are required to carry out. They should be well aware that the outlined tasks are not necessarily exhaustive and that particular circumstances may warrant revision of tasks. When using the checklists, it is desirable that the Air Safety Investigators take note of the completion date of each task, any further action required or anything of significance associated with a particular task. Regardless of how much planning goes into the preparation of the checklists, there will inevitably be cases in which the outlined tasks will have to be adapted to the particular circumstances of the investigation.



8.2.1.2.5.4 The checklists help the group chairpersons organize the work of their groups, and provide the IIC with a tool to monitor progress. At the daily progress meetings, the Air Safety Investigators should report which tasks on their checklists have been completed since their last report, and the IIC should record that progress on the flow chart. The advantage of this system is the ease with which the progress of the investigation can be reported to headquarters from the accident site and the fact that the flow chart at headquarters can be updated to reflect the current status of the investigation.

8.2.1.2.5.5 The investigation management system is one of the fundamental tools to be used in a major investigation, and an Air Safety Investigator who is likely to be appointed IIC or group chairperson of a major investigation should be familiar with this system prior to attempting to use it in the field. The effectiveness of the system is directly related to how well each Air Safety Investigator adheres to the flow chart and the checklists.

8.2.1.2.5.6 It is the policy of the Bureau to use the investigation management system during the conduct of its investigations.

8.2.1.3 Categories of Investigation

There are two categories of investigations:

a) Category 1 investigation (CAT 1) , known as Annex 13 investigation:

Investigations of accidents, serious incidents or incidents with preparation of a report in Annex 13 format including all or parts of the sections.

Category 1 investigations can be “ major ” or “ minor ”. The difference lies in the composition of the team and its organization (refer to chapter 6.2.7 and 6.2.8 of Annex 13). A major investigation involves accident of a large or complex aircraft which should require a large team of Air Safety Investigators in order to conduct the investigation in the most effective and expeditious way.

b) Category 2 investigations (CAT 2) , known as non-Annex 13 investigations:

When the Director-General determines that there is safety lesson to be learned, he/she may institute investigation of circumstances of incidents (minor incidents) or when a similar incident keep recurring involving the same aircraft type, or the same operator or at the same aerodrome. However, the conduct of the such investigation does not require full Annex 13 or follow Annex 13 format of final report. The investigation is conducted by a designated air safety investigator assisted by one or two air investigators. The output of such investigation is usually a Safety Bulletin.

8.2.1.3.1 Category 1 "Major" Investigation

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8.2.1.3.1.1 Composition of the Investigation Team

8.2.1.3.1.1.1 The investigation team is formed as soon as possible and includes where possible:

- a) a designated investigator;
- b) a deputy investigator-in-charge;
- c) survey group leaders, possibly sub-group leaders;
- d) investigators working in the investigation groups and associated sub-groups;
- e) advisers or experts.

8.2.1.3.1.1.2 This team usually includes Go-Team members. The concept of investigation team must remain throughout the investigation, from the first acts of investigation until the publication of the final report.

8.2.1.3.1.1.3 The definition of roles and the distribution of functions and tasks are as follows:

a) INVESTIGATOR-IN-CHARGE:

- in agreement with the management staff of the Bureau and in coordination with the deputy investigator-in-charge, divides the investigators of his team into the various investigation groups and sub-groups;
- ensures the organization and management of the investigation, with regard to planning, meeting deadlines, in particular for the validation of investigation reports (preliminary report, interim statement and final report);
- adjusts and coordinates with the heads of the investigation groups, the predefined mandates of each of its groups;
- updates a list of the names of the participants in the investigation and notifies them in writing of their confidentiality obligations related to the security investigation;
- liaises and coordinates with all the organizations involved in the investigation (accredited representatives, advisers, observers, etc.). Accredited representatives remain directly attached to the investigator-in-charge and can have access to information from all groups, even if they belong to one of these groups.
- coordinates with judicial authorities;
- organizes progress meetings with all participants in the investigation (investigators from the Bureau, accredited representatives and advisers);
- is responsible for preparing the draft final report, based on the reports of the fact-finding groups.

b) DEPUTY INVESTIGATOR-IN-CHARGE:

- deputizes for the investigator-in-charge if necessary;

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- organizes coordination meetings with the heads of investigation groups and the investigator-in-charge (depending on the latter's workload);
- updates the list of investigative actions to be taken;
- in coordination with the investigator-in-charge, produces with the group leaders, the Analysis, Conclusions and Recommendations parts of the Reports;
- performs any other duties assigned to it by the Investigator-in-charge.

c) INVESTIGATION GROUP LEADER (OR SUB-GROUP IF NECESSARY)

- participates with the Investigator-in-charge (and/or the Deputy Investigator-in-charge) in the development and updating of the terms of reference of the investigation group/sub-group;
- coordinate the implementation of the actions of the investigation group/sub-group;
- produces the reports of the investigative group/sub-group;
- produced with the designated investigation and the assistant designated investigator, the Analysis, Conclusions and Recommendations parts of the Reports.

d) ACCREDITED REPRESENTATIVE OF A THIRD STATE

The participation of an accredited representative in an investigation conducted by the Bureau gives him/her the right to participate in all aspects of the investigation, under the supervision of the investigator-in-charge, and in particular to:

- visit the site of the accident/incident;
- examine the aircraft, its components or the wreckage;
- propose topics for questions and elicit information from witnesses and suggest areas of questioning;
- free access to all useful information for the technical investigation
- receive copies of all relevant documents;
- participate in the playback of recordings;
- participate in off-site accident or incident investigation activities, such as item reviews, technical briefings, tests and simulations;
- participate in meetings on the progress of the investigation and in particular in the deliberations relating to the analysis, the conclusions, the causes, the contributing factors and the safety recommendations;
- make suggestions about the various elements of the survey;
- receive a copy of draft preliminary reports, final reports and interim statements.

e) EXPERTS

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Experts appointed by any State that has a special interest in an accident/incident due to fatality or serious injury suffered by its citizens will have the right to appoint an expert who will be accompanied by a pathologist and/or a relative of the victims and will have the right to:

- visit the accident site;
- assist in the identification of victims and interviews with survivors who are its nationals;
- access all information that Director-General approves for public disclosure, as well as information on the progress of the investigation;
- receive a copy of the final report.

d) OBSERVERS

The Director-General/CEO in coordination with the investigator-in-charge may authorize designated military personnel, representatives of other public administrations or representatives of foreign governments to participate in the investigation as observers. Training and familiarization with the Bureau's investigative process are the sole purposes of observer status.

Observers must have no personal interest in the investigation and are only permitted access to those parts of the investigation deemed appropriate by the Investigator-in-charge.

Observer status is coordinated and approved in advance. Although monitors can work with any of the investigative groups, they are under the general authority of the investigator-in-charge and only receive factual information on a **need to know** basis. Restrictions on the public release of accident/incident information apply to all observers.

8.2.1.3.1.1.4 An investigation plan (timeline) must be drawn up for each investigation. It includes the timeline of the various investigation groups/sub-groups as well as the identified specificity (deadlines, for example) related to the investigation. It is validated by the Director-general/CEO, the Director of Engineering or Director of Operations.

- INVESTIGATION MANAGEMENT TEAM

8.2.1.3.1.1.5 The investigation management team is the hard core of the investigation team. It is made up of the investigator-in-charge, the deputy investigator-in-charge and the group leaders. It helps the investigator-in-charge to:

- a) lead and direct the investigation;
- b) write the investigation report(s);
- c) define and update the mandates of each group of investigations.

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8.2.1.3.1.2 Meetings

8.2.1.3.1.2.1 INITIAL INVESTIGATION TEAM MEETING

An internal meeting at the HQ must be held, if possible before the departure of the Go-Team. This meeting led by the investigator-in-charge must be quite short (30 minutes max) and aims to remind:

- a) the role and objectives of each member of the survey team;
- b) the roles and status of accredited representatives, advisers and observers;
- c) the importance of cooperation, coordination and communication within the investigation team;
- d) safety aspects at the site of the accident/incident.

8.2.1.3.1.2.2 INITIAL MANAGEMENT MEETING

8.2.1.3.1.2.2.1 During the [first week] of the occurrence, the Director-General/CEO organizes an initial meeting with all the relevant management personnel and the designated investigator to brainstorm on the investigation activities (and the alternatives with the advantages and disadvantages), evaluate them and make appropriate decisions.

8.2.1.3.1.2.2.1.2 The meeting should cover:

- a) the purpose of the survey;
- b) possible outcomes;
- c) cost and funding estimates required;
- d) whether to delegate the investigation of the occurrence;

8.2.1.3.1.2.2.1.3 It should decide on the investigation plan - WHO, WHAT, HOW, WHERE, WHEN will it be ready/finalized with timeline and milestones.

8.2.1.3.1.2.3 ON-SITE ORGANIZATIONAL MEETING

8.2.1.3.1.2.3.1 After the initial visit and a walking survey at the scene of the accident/incident, the first management action that the Investigator-in-Charge should take is to hold an “ organizational meeting ”.

8.2.1.3.1.2.3.2 As the official opening of the investigation into an aviation accident/incident, the organizational meeting has several objectives. It facilitates :

- a) sharing of preliminary accident/incident information;
- b) introducing each survey participant and identifying those who can participate;
- c) organizing participants into inquiry groups and sub-groups;
- d) the establishment of rules of conduct for the investigation; And
- e) to indicate the safety and health instructions at the site of the accident/incident.

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8.2.1.3.1.2.3.3 If search and rescue operations are still in progress, the investigator-in-charge identifies a representative from the Bureau to remain on site while he holds the planning meeting.

8.2.1.3.1.2.3.4 The organizational meeting is held as soon as possible within [24 hours] of the event depending on the arrival of the representatives of the investigation stakeholders (accredited representatives, advisers, observers).

8.2.1.3.1.2.3.5 If some of these participants are not yet present, the investigator-in-charge ensures that they are informed as soon as possible of the points raised during the meeting, in particular the roles and functions of the air safety investigators from the Bureau who are taking part in the investigation.

8.2.1.3.1.2.3.6 Prior to the meeting, the Investigator-in-charge prepares a summary of the topics to be discussed at that meeting.

8.2.1.3.1.2.3.7 During the meeting, after introducing himself, the investigator-in-charge:

- a) ask journalists, insurers, lawyers and all other people who are not technically qualified or necessary for the investigation (for example, an airline accountant) to leave the room;
- b) distributes the attendance list for each person to complete and sign and ensures that business cards (or equivalent information) have been collected;
Photocopying the maps and distributing copies to investigation participants will allow participants to stay in contact with each other after the on-site phase is over.
- c) introduce the representatives of the Bureau;
After this presentation follows that of the other people present in the room, their organization and their position within it.
- d) specifies the purpose of this meeting, which aims to explain the organization and investigation procedures and to assign specialists to the investigation groups/sub-groups.

8.2.1.3.1.2.3.8 Preliminary information on the accident/incident is presented to the participants. They provide information on:

- a) the operator;
- b) aircraft type and registration number;
- c) type of flight, origin and intended destination;
- d) the number of dead and injured (or best known information to date);
- e) the condition and location of crew members;
- f) the extent of damage to the aircraft; And
- g) other information deemed relevant (e.g. hazmat considerations and site of occurrence considerations).

8.2.1.3.1.2.3.9 After providing the above preliminary information, the Investigator-in-charge will provide a brief overview of the Bureau's investigation policies and procedures relating to the investigation. This presentation provides information on:

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- a) the role and functions of air safety investigators ;
- b) the role and functions of international investigation participants (accredited representatives and technical advisers);
- c) the investigation process;
- d) organizing the survey team into investigation groups and sub-groups;
- e) the roles of group and sub-group leaders;
- f) the qualifications of personnel to be involved in the investigation;
- g) identification of investigation group and sub-group leaders;
- h) the constitution of the groups and sub-groups of the investigation;
- i) the elements expected of the participants during the period of on-site and off-site activities;
- j) dissemination of information among investigation participants;
- k) the publication of information on the investigation;
- l) site safety and security;
- m) meetings during the investigation.

8.2.1.3.1.2.3.10 The investigator-in-charge closes the organizational meeting by indicating the time of the next meeting.

8.2.1.3.1.2.4 INVESTIGATION PROGRESS MEETINGS

8.2.1.3.1.2.4.1 The investigator-in -charge holds regular progress meetings with all the participants in the investigation. They allow him to oversee the progress of the investigation and provide the necessary leadership and guidance.

Whenever possible, progress meetings start late enough for participants to clean up after spending time on site, but early enough for everyone to eat dinner afterwards and get enough rest for the next day's activities.

Generally, 6:00 p.m. is a good time to start the first progress meeting. As participants become fatigued and stressed during the field survey phase, progress meetings should be scheduled earlier as the fieldwork progresses.

8.2.1.3.1.2.4.2 During each progress meeting,

- a) the investigator-in-charge:
 - calls the groups to order and asks journalists, lawyers and any other unauthorized persons to leave the premises;
 - distributes the list of participants and asks those who are new to the survey to stand up and introduce themselves, along with their organization and role in it. During the first meetings, all participants must identify themselves at the start of the meeting. All new people acceptable to the Investigator-in-charge and Group Leaders are

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assigned to Investigation Groups and Subgroups. This coordination is carried out before the start of the progress meeting.

b) Each group/sub-group leader summarizes all the work done by his/her survey group/sub-group during the day and provides guidance on the next day's activities.

8.2.1.3.1.2.4.3 Relevant documents distributed to other participants will not necessarily be read during the progress meeting.

a) Group/sub-group leaders should be prepared to answer any questions regarding their respective areas of responsibility.

Each group/sub-group leader's report lasts between 5 and 10 minutes, unless it is absolutely necessary to communicate more of the facts to the audience.

Questions or discussions on the presentations of the group/sub-group leaders should be limited to factual elements.

Analytical questions to group/sub-group leaders about the implications of their findings are not permitted. Progress meetings are not used to discuss the causes of accidents/incidents.

b) the investigator-in-charge:

- provides a brief overview of the activities performed by the Flight Recorder Group (FDR and CVR), as well as other groups/sub-groups, working at Bureau's Headquarters or elsewhere.

He/she establishes communication with personnel based at the HQ or other site before the start of the progress meeting.

When communication means permit, members of the groups/sub-groups, working at the headquarters or in another location, can participate online in this meeting and present the work in progress.

- takes notes during presentations by group/sub-group leaders.

Bureau's management staff and in subsequent briefings with staff working away from the accident site.

- schedule the progress meeting for the following evening once the presentations of the group/sub-group leaders have been completed and the comments of the participants have been made.
- reminds participants not to discuss the survey in public places or in places where their conversations can be overheard.



8.2.1.3.1.2.4.4 After several days of work, the groups/sub-groups will begin to present less information. Some groups/sub-groups have completed their activities and will need to be released by the Investigator-in-charge.

8.2.1.3.1.2.4.5 The Investigator-in-charge terminates progress meetings and concludes field activities, when he determines that little new information remains to be obtained from the remaining groups.

8.2.1.3.1.2.4.6 During the last progress meeting, the investigator-in-charge:

- a) informs participants of the progress of the investigation;
- b) notifies of any follow-up activities (post-site activity) proposed;
- c) approves and distributes field notes to participants; and
- d) provides a complete set to accredited representatives and stakeholder coordinators.

8.1.2.3.1.2.5 INVESTIGATION MANAGEMENT TEAM MEETINGS

8.2.1.3.1.2.5.1 These meetings guarantee the proper coordination of the investigation team and allow in particular to:

- a) discuss the organization of the survey and the factual elements collected;
- b) give directions or lines of work as the investigation progresses;
- c) define an agenda for work in progress and in particular for drafting reports (preliminary, stage, final);
- d) update and adjust terms of reference for investigative groups/sub-groups;
- e) define the structure of:
 - the various reports;
 - the analysis, conclusions and safety recommendations of the reports concerned.
- f) coordinate and distribute the tasks of the different investigative groups/sub-groups;
- g) coordinate and distribute tasks for drafting reports (preliminary, progress and final).

8.2.1.3.1.2.5.2 They are chaired by the investigator-in-charge or the deputy investigator-in-charge .

8.2.1.3.1.2.5.3 These meetings are conducted at the beginning of the day, before the survey group work, or just before the progress meeting and do not exceed [30 minutes] during the first days of the survey.

8.2.1.3.1.2.5.4 The coordination meetings of the survey management team must be maintained thereafter with a weekly frequency if possible.

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8.2.1.3.1.2.5.5 The investigator-in-charge coordinates the various actions carried out by the investigation groups and checks the progress of these actions, in particular by means of a checklist and meetings.

8.2.1.3.1.2.5.6 After the field phase, the Investigator-in-charge works diligently to maintain and manage the progress of the investigation. This post-fieldwork phase includes the following elements:

- a) continued collection and validation of evidence;
- b) review of all relevant personnel, aircraft operator, service providers, aircraft airworthiness and other records;
- c) examination of part of the wreckage in the laboratory;
- d) testing of certain components and systems;
- e) reading and analysis of recordings;
- f) conducting other interviews;
- g) determining the sequence of events;
- h) analyzing all survey information and writing technical and group/sub-group reports, as required.

8.2.1.3.1.2.5.7 The post-fieldwork phase can take several months, depending on the size and complexity of the survey. It can be difficult to ensure that the survey continues to progress after the field phase, largely because members of the investigation team are no longer in the same location and subject matter expertise is no longer readily available.

8.2.1.3.1.2.5.8 Also, the group/sub-group leaders, the assistant investigator-in-charge and the investigator-in-charge maintain communication with the members of the team and ensure that deadlines for carrying out investigative tasks are respected.

8.2.1.3.1.2.6 MEETINGS WITH ACCREDITED REPRESENTATIVES AND STAKEHOLDER COORDINATORS

8.2.1.3.1.2.6.1 The risk of conflict between parties is present in all investigations. The Investigator-in-charge must be aware of this and ready to work for their resolution.

8.2.1.3.1.2.6.2 The Investigator-in-charge meets daily with Accredited Representatives and Stakeholder Coordinators to:

- a) explain unfamiliar rules and procedures;
- b) review and discuss issues that may arise during the field phase.

8.2.1.3.1.2.6.3 These meetings should be used to determine the parties' level of satisfaction with the investigation and their ability to cooperate with each other and with the cluster/sub-cluster leaders. Advice and suggestions should be provided to them, as needed, to prevent potential problems from escalating.

8.2.1.3.1.2.6.4 This meeting is usually held at 8:30 a.m.



8.2.1.3.1.2.7 INTERNAL INVESTIGATION FOLLOW-UP MEETINGS

8.2.1.3.1.2.7.1 Internal meetings are organized at the request of the management staff of the Bureau or of the investigator-in-charge .

8.2.1.3.1.2.7.2 These meetings allow the management staff of the Bureau to:

a) know the progress of the investigation and in particular:

- the directions taken by the investigation team;
- the work in progress in the investigation groups and sub-groups;
- established facts;
- the analytical structure of the draft final report;
- any proposals for safety recommendations.

b) propose lines of inquiry if necessary;

c) validate the structure of the draft final report;

d) react to external requests;

e) avoid any miscommunication.

8.2.1.3.1.2.7.3 The frequency of meetings is determined at the end of each meeting.

(A) INVESTIGATIVE GROUP REPORTS

I) Field Notes

Each investigation group/sub-group completes “ **field notes** ” for the field survey phase and for all component reviews and tests performed.

Each member of the group/sub-group signs the finalized field notes to mark their agreement with the content. If one of the members of the group did not take part in a part of the investigation, this aspect is noted under his signature.

Similarly, the subject of a disagreement is mentioned in the field notes under the signature, when agreement on a subject could not be found between a member and the leader of the group.

The table below is an example of a field note.

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<i>Flight Operations Group Factual Report (or Field Notes) / (date)</i>	
<p>A. Accident:</p> <p>Location:</p> <p>Date/Time:</p> <p>Aircraft:</p>	<p>XXXX (identifying code number assigned by Nigerian Safety Investigation Bureau)</p> <p>XXXX [city, State, country]</p> <p>XXXX</p> <p>XXXX [make, model, registration]</p>
<p>B. Group members</p> <p>XXXX Group chairperson</p> <p>XXXX Airline specialist</p> <p>XXXX [CAA] specialist</p> <p>XXXX Manufacturer specialist</p>	
<p>C. Summary</p>	<p><i>This section should provide a synopsis of the occurrence, such as flight number, take-off time, accident time (if known), number of persons on board, injuries, etc. This section also should contain a brief synopsis of the scope of the group's work. The terms of reference for the group and subgroups and brief details of the time and location of investigation activities should also be recorded in this section. For example, "the Flight Operations Group interviewed the pilots, reviewed records, and conducted simulator work" and, "the Aircraft Systems Group documented the aircraft components on-scene, removed some parts, and conducted component examinations at the facilities of the manufacturer".</i></p>
<p>D. Details of Investigation</p>	<p><i>The facts, conditions and circumstances established by the group and investigation findings (factual) should be presented under appropriate headings describing the areas investigated. For example, in the case of the Flight Operations Group, headings would include crew histories, flight planning, dispatch and aircraft mass and balance. All the relevant facts, whether or not considered significant to the findings of the group, should be included. Relevant documentation should be attached to the group report.</i></p>

II) Investigation Group/Subgroup Report

Writing a report for each investigation group and sub-group is mandatory.

The deadlines for drafting, proofreading and validation of the "investigation group/sub-group reports" are to be set in the terms of reference of the groups/sub-groups.

The group/sub-group reports are drawn up from the field notes and enriched by the additional investigation work. The writing method is left to the initiative of the group/sub-group leader (meetings, email, group writing, compilation of individual writings etc.)

The Investigation Group/Subgroup Report may include attachments to the report (maps, charts, ...) that support the written record of the investigation.

In general, the drafting of reports is the result of collective work and must benefit from the experience of each member of the survey. Any group/subgroup report is reviewed by all members of the group/subgroup to ensure that it is accurate and complete. In principle, it is



approved by all members of the group. Any comments from members of the investigation group or sub-group are appended to the document. The final validation is carried out by the **investigator-in-charge** . The group/sub-group report specifies any disagreements.

Unless there is a justified instruction from the **investigator-in-charge** or a measure specific to an investigation, the members of an investigation group/sub-group have access to the information collected and may have a copy of the report of the investigation group/sub-group. However, its disclosure remains subject to the rules of confidentiality defined by the **investigator-in-charge** .

The principles for writing investigation group/sub-group reports are the same as for investigation reports.

8.2.1.3.2 CATEGORY 1 “MINOR” INVESTIGATION

8.2.1.3.2.1 A minor investigation may lead to the deployment of investigators in the field just as it may be conducted entirely or in large part from the office premises of the Bureau.

8.2.1.3.2.2 The Go-Team can be made up of at least two members including the investigator-in-charge , when it is an accident involving a light aircraft or an incident without serious injuries.

8.2.1.3.2.3 Depending on the circumstances of the event, other specialists (air traffic controller, aircraft performance, recorders and human factors) may be assigned to the investigation team.

8.2.1.3.2.4 In the context of a minor CAT 1 investigation, the investigator-in-charge is, on the one hand, responsible for the organization, the conduct of the investigation and the drafting of the investigation report and, on the other hand, active in the investigation work corresponding to his field of expertise and his experience. The Investigator-in-Charge Event Management Checklist (NSIB.01.07) serves as a management tool for the various stages of the investigation.

8.2.1.3.2.5 For example: In forming the investigation team, when the investigator-in-charge is a pilot, the other member of the team may have technical expertise and experience in a different area.

A runway collision would require air traffic control (ATS) and operations specialists to assist in the investigations, possibly with a human performance specialist helping to examine human performance factors.

If an accident occurs in conditions of potentially reduced visibility, icing or convective activity, the participation of a weather specialist will be required.

If evidence of an accident indicates probable aircraft failure, the involvement of specialists in structures, systems, powerplant and maintenance records will be required.

8.2.1.3.2.6 The main differences of the minor CAT 1 survey with the major CAT 1 survey are:

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- a) the size of the investigation team is smaller: a designated investigator assisted by a variable number of investigators depending on the event;
- b) the investigator-in-charge may combine the functions of deputy investigator-in-charge and head of investigation group(s) ;
- c) An investigator or may have to manage several investigation groups;

8.2.1.3.2.7 The following similarities remain:

- a) the notions of survey team and investigation management team;
- b) the notion of investigation group mandates, drawn up by the designated investigator in coordination with the heads of the investigation group and validated by the management of the investigation and analysis Department;
- c) the participation of accredited representatives, advisers or experts (internal to the Bureau, Nigerian civil aviation authorities, operators, etc.);
- d) meetings (initial, investigation management team and internal meetings) scheduled for the major CAT 1 investigation.

8.2.1.3.2.8 If the accredited representatives and their advisers are unable to attend, the investigation presentation meeting can be held by teleconference in the hours or days following the event. In all cases, an email summarizing the points of organization of the investigation allows the accredited representatives and their advisers to know the roles and functions of the Bureau’s investigators.

8.2.1.3.2.9 The drafting of a group/sub-group investigation report as for a major CAT 1 investigation is mandatory, even if certain aspects of the investigation have not been covered. The approach remains the same.

8.2.1.3.2.10 Preliminary and progress reports are possible depending on the context of the event. The final report adopts Annex 13 report template (appendix 1 to Annex 13).

8.2.1.3.2.11 Press releases and conferences are occasional for this type of event. They may be decided by the Director-General/CEO on the proposal of the designated investigator or the Head of the public relations department depending on the media context or specific external requests.

8.2.2 Responding to notifications accidents or incidents

Although immediate notification of accidents and incidents to the Bureau is essential, the uncertainty regarding the circumstances of incidents and non-major accidents, and perception that such occurrences may be low-risk events, frequently lead to delayed and incomplete notifications. Such time delays usually lead to the loss of perishable evidence. Upon receipt of notifications, the Duty Officer should immediately contact the report source to ensure that all required information has been provided, to determine who and what organizations may have been involved in the occurrence, to determine who else has been informed of the occurrence, and to determine what actions have already been taken in response to the occurrence.

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8.2.3 Securing Documentation

8.2.3.1 From the early stage in the investigation, it is important to secure the operational and maintenance documents of the occurrence aircraft, as well as all other documents relevant to the occurrence. What documents will be required for the investigation also depends on the nature of the occurrence. The IIC should decide as soon as possible, what documents need to be obtained and from which organizations (see Investigation Events Checklist - NSIB.01.07 in Appendix M). He should by telephone, email or any suitable means, contact relevant organizations (airline, maintenance facility, NAMA, NCAA, FAAN, NiMeT, etc.) to secure the documents necessary for the investigation.

8.2.3.2 Flight recorder data should be recovered as a matter of course when the decision is made to investigate. Some operators have the equipment to copy the FDR and CVR recordings without removing the unit in-situ. Consider the following before demanding a CVR or FDR be removed from an aircraft:

- a) Is the recorder data vital or useful to the investigation?
- b) Can the data be obtained from other sources?
- c) Can a suitable copy of the data be made without recording being removed from the aircraft?
- d) If a copy of the recordings cannot be made at the location of the aircraft, what is the length of time that the aircraft can operate before the desired data is overwritten?

Note.- removing CVRs for incidents: Nigeria Civil Aviation Regulations (Nig. CARs) 7.8.1.3 states that “Flight recordings shall not be switched off during flight time”. In addition, the aircraft minimum equipment list (MEL) does not allow an aircraft to be flown with a “purposely” removed or disabled flight recorder. The Bureau might be taking an unacceptable risk if the CVR is pulled and the operator continues to fly without a replacement installed since, if the aircraft subsequently sustains another occurrence, there would be no CVR recording.

8.2.5 Investigating Operational, Human Factors and Organizational Aspects

8.2.5.1 General

8.2.5.1.1 From the early 1900s until the late 1960s, aviation emerged as a form of mass transportation in which identified safety deficiencies were initially related to technical factors and technological failures. The focus of safety endeavours was therefore placed on the investigation and improvement of technical factors (the aircraft, for example). By the 1950s, technological improvements led to a gradual decline in the frequency of accidents, and safety processes were broadened to encompass regulatory compliance and oversight.

8.2.5.1.2 By the early 1970s, the frequency of aviation accidents had significantly declined due to major technological advances and enhancements to safety regulations. Aviation became a safer mode of transportation, and the focus of safety endeavours was extended to include human factors, including such things as the “man/machine interface”. Despite the investment of resources in error mitigation, human factors continue to be cited as a recurring factor in accidents. Human factors tended to focus on the individual, without fully considering the operational and organizational context. It was not until

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the early 1990s that it was acknowledged that individuals operate in a complex environment that included multiple factors which could affect behaviour.

8.2.5.1.3 During the mid-1990s, safety began to be viewed from a systemic perspective and began encompassing organizational factors as well as human and technical factors. The notion of an “organizational accident” was introduced. This perspective considered the impact of such things as organizational culture and policies on the effectiveness of safety risk controls. Additionally, routine safety data collection and analysis using reactive and proactive methodologies enabled organizations to monitor known safety risks and detect emerging safety trends. These enhancements provided the learning and foundation which lead to the current safety management approach.

8.2.5.1.4 There has long been an acknowledgement that system breakdowns or safety occurrences may reflect organizational problems. In recent years there has been a growing awareness that organizational issues such as management systems and corporate culture must be considered in an aircraft accident investigation.

8.2.5.1.5 The objective of the organizational investigation is to uncover characteristics of the organization which, although remote from the immediate circumstances of the accident, increased the probability of the accident occurring. These pre-existing, or latent, conditions, if not corrected, could become the cause of additional accidents.

8.2.5.1.6 From the beginning of the 21st century, many States and service providers had embraced the safety approaches of the past and evolved to a higher level of safety maturity. They have begun implementing SSP or SMSs and are reaping the safety benefits. However, safety systems to date have focused largely on individual safety performance and local control, with minimal regard for the wider context of the total aviation system. This has led to growing recognition of the complexity of the aviation system and the different organizations that all play a part in aviation safety. There are many examples of accidents and incidents showing that the interfaces between organizations have contributed to negative outcomes.

8.2.5.1.7 The steady, compounding evolution of safety has led States and service providers to a point where they are giving serious consideration to the interactions and interfaces between the components of the system: people, processes, and technologies. This has led to a greater appreciation for the positive role people play in the system.

Safety benefits from collaboration between service providers, and between service providers and States. This perspective has nurtured multiple collaborative initiatives between service providers and an appreciation of the benefits of collaboration when addressing safety issues. The ICAO Runway Safety Programme is a good example.

8.2.5.1.8 For the collaborative total system approach to flourish, the interfaces and interactions between the organizations (including States) need to be well understood and managed. States are also beginning to recognize the role the total aviation system approach can play in their SSP development. For example, it helps to manage safety risks which cut across multiple aviation activities.

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8.2.5.2 Organizational Investigation

8.2.5.2.1 The Reason Model and the Organizational Investigation

8.2.5.2.1.1 Accidents require the coming together of a number of enabling factors, each one significant but in itself not sufficient to breach system defences. Major equipment failures, or operational personnel errors, are seldom the sole cause of breaches in safety defences. Often these breakdowns are the consequence of human failures in decision-making. The breakdowns may involve active failures at the operational level or they may involve latent conditions conducive to facilitating a breach of the system’s inherent safety defences. Most accidents include both active and latent failures.

8.2.5.2.1.2 Figure 8-11 portrays an accident causation model that assists in understanding the interplay of organizational and management factors (i.e. system factors) in accident causation. Various “defences” are built into the aviation system to protect against inappropriate performance or poor decisions at all levels of the system: the front-line workplace, the supervisory levels and senior management. This model shows that while organizational factors, including management decisions, can create latent failure conditions that could lead to an accident, they also contribute to the system defences.

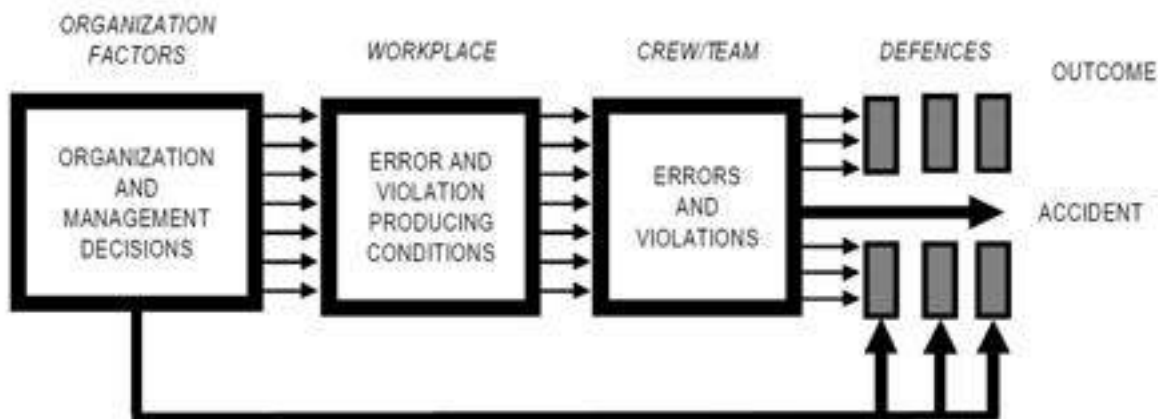


Figure: 8-0- 11: Accident Causation Model (Professor James Reason Model)

8.2.5.2.1.3 Errors and violations having an immediate adverse effect can be viewed as unsafe acts; these are generally associated with front-line personnel (pilots, controllers, mechanics, etc.). These unsafe acts may penetrate the various defences put in place to protect the aviation system by company management, the regulatory authorities, etc. resulting in an accident. These unsafe acts may be the result of normal errors, or they may result from deliberate violations of prescribed procedures and practices. The model recognizes that there are many error-producing or violation-producing conditions in the work environment that may affect individual or team behaviour.

8.2.5.2.1.4 These unsafe acts are committed in an operational context which includes latent unsafe conditions. A latent condition is the result of an action or decision made well before an accident. Its consequences may remain dormant for a long time. Individually, these latent conditions may appear harmless since they are not perceived as being system deficiencies.



8.2.5.2.1.5 Latent unsafe conditions may only become evident once the system’s defences have been breached. They may have been present in the system well before an accident and are generally created by decision-makers, regulators and other people far removed in time and space from the accident. Front-line operational personnel can inherit defects in the system, such as those created by poor equipment or task design; conflicting goals (e.g. on-time service vs safety); defective organizations (e.g. poor internal communications); or bad management decisions (e.g. deferral of a maintenance item). Effective safety management efforts aim to identify and mitigate these latent unsafe conditions on a system-wide basis, rather than by localized efforts to minimize unsafe acts by individuals. Such unsafe acts may only be symptoms of safety problems, not causes.

8.2.5.2.1.6 Most latent unsafe conditions start with the decision-makers, even in the best-run organizations. These decision-makers are also subject to normal human biases and limitations, as well as to very real constraints of time, budget, politics, etc. Since some of these unsafe decisions cannot be prevented, steps must be taken to detect them and to reduce their adverse consequences.

8.2.5.2.1.7 Fallible decisions by line management may take the form of inadequate procedures, poor scheduling or neglect of recognizable hazards. They may lead to inadequate knowledge and skills or inappropriate operating procedures. How well line management and the organization as a whole perform their functions sets the scene for error, or violation-producing conditions. For example, how effective is management with respect to setting attainable work goals, organizing tasks and resources, managing day-to-day affairs, communicating internally and externally, etc.? The fallible decisions made by company management and regulatory authorities are too often the consequence of inadequate resources. However, avoiding the costs of strengthening the safety of the system can facilitate accidents that are so expensive as to bankrupt the operator.

8.2.5.2.1.8 For a comprehensive review of the Reason model, refer to Circular 247, *Human Factors, Management and Organization*.

8.2.5.2.2 The Six “M” Model for Organizational Investigation

8.2.5.2.2.1 Organizational investigation is to discover the effect of management actions and decisions on operations, maintenance and support activities. Therein, we find the influences present before an accident. The factors directly affected by management decisions and the interrelationship between them is critical to discovering the systemic factors that either led to the accident sequence of events or, at least, failed to intervene with adequate defenses. Figure 8-12 illustrates these factors.

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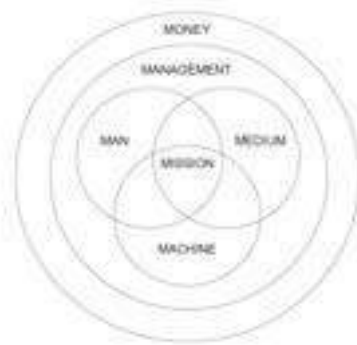


Figure: 8-0-12: The Six “M” Model for Organizational Investigation

A. Formulation of the Mission

8.2.5.2.2.2 At the heart of the interrelationships are three factors which, together, provide the basis for the aircraft operation (the Mission) directly, the Man, the Machine and the Medium. Investigation into each of these individual factors is straight-forward and addressed in other sections of this manual. However, how the organization influences these factors should be investigated separately.

a) *The Man*. Ultimately, if the accident flight was not conducted by the owner and operator directly, some organizational process was involved in selecting and designing the methodology used by this particular individual for the actions involved. It should be understood here that any discussion of “the Man” is not limited to the pilot or crew members. It may well apply to maintenance, dispatch, air traffic, designer personnel or any other personnel involved with the operation of aircraft, including government oversight.

Under this concept, the organizational policies on employment, scheduling, preparation for the individual’s activities, supervision of these activities and procedures for discipline should be scrutinized. For example, while a crew member may be directly responsible for obtaining sufficient rest prior to flight, the management organization may not have effective policy to protect that period and, in fact, may interrupt the rest period without consideration for the fatigue that may result. In this case, the organizational influence may well be identified as contributing to the overall effect.

b) *The Machine*. While this normally refers to the aircraft, this area includes any equipment used to support the aircraft during maintenance or pre-flight preparation. Additionally, the equipment used to respond to the post-accident environment may also be considered. Again, direct investigation as to adequacy of the equipment is straightforward. However, how the organization involved procured the equipment, how the equipment is maintained and how individuals are trained in its use should be the focus of the organizational investigation. Selection of the particular equipment is an organizational decision. For example, if the equipment was a work-around because the organization had not procured the correct support equipment, then the organizational influence was directly involved.

c) *The Medium*. This area includes the conditions under which the other actions take place. This area may include the weather at the time the actions were taken and whether the actions took place during daylight or during periods of darkness. If in-flight, these may include whether the flight was in visual meteorological conditions or operating under instrument conditions.

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8.2.5.2.2.3 The interrelationship of the above factors is just as critical as the components themselves. These interfaces often become barriers to information exchange or coordinated management oversight.

a) *The Man-Machine interface.* This area takes into that account any organizational actions which combine a piece of equipment with an individual who is in some way incompatible with that equipment. In aircraft, the design of the cockpit cannot accommodate all sizes of human beings. Designers use certain standards to allow the majority of individuals to have access to all controls or the ability to fully use the equipment. If an individual is too large, too small, has insufficient strength or another limiting factor, the organization should consider these limitations when selecting the individual or the equipment.

b) *The Man-Medium interface.* The activity that surrounds the accident sequence should be considered in light of how the individual had to cope with the environment. For example, if the particular maintenance activity being investigated took place during the day, it may have involved activity under intense sun, involving blowing dust or precipitation and if the organization took no action to reduce the risk of error under these conditions, then the organization would be found contributing.

c) *The Machine-Medium interface.* Compatibility of the equipment to effectively operate within the medium is central to an organization’s decision to use the equipment. For example, it would not be prudent to operate an aircraft into an airfield when the only available runway was less than the certificated minimum field length. If the organization failed to consider the limitations under the environmental conditions anticipated, then its contribution is significant.

8.2.5.2.2.4 Together, these factors form the Mission: the activity the aircraft was engaged in at the time of the accident. The organization is responsible for assigning men, machines and conducting the anticipated activities in the existing medium. Acceptance of the risks involved make the organizational influences contribute to the accident analysis. The Mission may be simply to fly from point A to point B, but the choice of time, route and conditions to alleviate any anticipated risks set the stage for the events which ultimately led to the accident. If the task assigned to the aircraft and its crew is beyond the experience of the individuals involved, it is up to the organizational structure to provide adequate defenses to preclude undue risks.

B. Management

8.2.5.2.2.5 Organization’s management administers the elements that make up the basic factors. This should include all levels of supervision from the most senior management officials to the supervisors of individuals directly involved. It encompasses all the factors discussed above because management at all levels promulgates the policy and standards of behaviour that create the corporate culture. This culture may be tolerant of deviations to existing rules when faced with an adverse or risk-increasing situation. Alternatively, the culture may be open to communication of these factors only to be thwarted by middle management indecision or interference. When encountered by the investigator, it must be determined whether the risk associated with the culture issue is directly or indirectly involved in the sequence of events leading to the accident. If so, it must be examined for causality. If not, then procedures reporting discovered deficiencies which have accident potential should be considered for the report.

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8.2.5.2.2.6 Management issues should also be considered externally to the principle organization as well. In many cases, industry or government oversight organizations which issue, control and/or monitor operating certificates have their own influence on the way a latent condition or accident may occur. Just as it may be understandable when an individual faces a dilemma created by management’s insistence on riskier actions, the entire organization’s management may be influenced by an enthusiastic or an uninvolved oversight organization to the detriment of normal cautions afforded in the rules.

8.2.5.2.2.7 *Procedures.* Some areas governed by management or the oversight of the employees’ actions might include procedures, as most organizations involved in aviation activities are required to establish procedures to assure regulators that operations and maintenance actions will be handled in an efficient and safe manner. Investigations into operations and maintenance should take these procedures into account. The organizational investigator must look for systemic issues that might lead procedures to create a safety problem - one that may not have been overcome by the individual’s actions.

a) These may include changes in flight operations requirements by operations between individual States.

While ICAO procedures are designed to simplify these transitions, it is left to the individual States to create their own operational regulations. Aircraft transitioning between States may find conflicting procedures which must be complied with in addition to operating within their own State’s guidelines.

b) An organization may further restrict their operations by having procedures that “ensure” compliance with regulations and make management of personnel easier, for example, how an organization handles the crew’s rest periods.

c) Additionally, because many regulators require that operating procedures are in an operator’s own format, the longer an organization operates a particular piece of equipment, the longer the organization has published their own procedures and has added steps that make their unique operating environment easier to handle. Additional procedures to combat corrosion may be implemented if the aircraft is continuously operated in a high moisture environment. Conversely, the anti corrosion procedures may be minimal when the aircraft is operated in a very low humidity environment. Over time, procedures originally issued by the manufacturer may become significantly amended by individual organization manuals and procedures. The organizational investigator must look for this gradual shift in procedures and the application of changing procedures from the origin (the manufacturer) to the implementation (the operator). Standardization and harmonization of these documents across a larger organization is a significant administrative burden that needs to be rigidly enforced, especially if there is not a central reference library. Otherwise, the various parts of the organization are acting under different versions and revisions of operative procedures.

d) The transfer of information from detailed guidance contained in manuals and handbooks into operator’s flight checklists or maintenance work cards should be examined with great care. An organization transferring critical data may inadvertently delete or re-arrange an action in a checklist or Workcard. This action may leave the individual without adequate reference to apply the procedure correctly, especially when activity has increased in tempo such as during an in-flight emergency.

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C. Funding

8.2.5.2.2.8 The term “funding” refers to the adequacy of resources. Given sufficient resources, organizations rarely expose their aircraft, personnel or the public to unnecessary risks. As resources become scarce, methods to stretch the remaining resources to keep the organization operating are employed. While these methods may not present an obvious risk increase, over extended periods the application of resource-saving techniques may create a management culture that allows an unacceptable risk to enter the picture with a disregard for its impact or with an acceptance of that risk as “normal operating procedures.”

8.2.5.2.2.9 Issues (beyond the obvious of financial resources) should be examined in this context.

a) *Availability of human resources.* The availability of sufficient personnel to perform required functions is one area that should be investigated when a deviation from accepted practice occurs. In some cases it has been discovered that while crew members or mechanics were well qualified, there were insufficient numbers of them to keep the existing regulations in perspective. When human resources were limited, compromises in qualifications, crew rest or other scheduling was the common result.

b) *Quality of human resources.* Similar to the discussion above, at times the experience level of the various personnel should be evaluated in light of the accident sequence. While the worker and the supervisors may be individually qualified, their ability to continue quality work depends on the appropriate ratio of workers to supervisors and the experience levels of each. For example, one organization demonstrated that a specified number of maintenance personnel were employed. However, the organizational investigator found that among these employees, the number of supervisors was extremely short, while the number of trainees was higher than ideal. Another condition might exist where there are sufficient supervisors, but they are mostly assigned to daytime duties, when the majority of maintenance activities are conducted at nighttime with minimum supervision. Numbers of employees do not necessarily equate to the quality of work performed.

c) *Acquisition of parts and other commodities.* In organizations under the pressure of inadequate resources, alternative methods of obtaining needed parts may be used. While the quality of parts may present the investigator with another problem completely, the organizational investigator is looking for the mind-set that puts safety at risk by using alternative methods. For example, an organization requiring parts to put the aircraft back into service was found to have taken the parts from another aircraft. While the practice alone does not increase risk, the fact remained that the aircraft from which the parts had been taken was becoming a “parts store” in order to delay the purchase of the needed parts. Eventually the paper trail of parts removed and re-installed became unwieldy and a breakdown in documentation occurred. This led to the accident aircraft having parts that were not documented in the maintenance logs and which led to installation errors.

8.2.5.2.3 Potential Problems in an Organizational Investigation

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8.2.5.2.3.1 As occurrence factors become increasingly remote from the immediate time and place of the accident, the potential subjectivity of the investigation increases, as do the opportunities for disagreement amongst those with a stake in the investigation. This is not, however, justification for avoiding controversial organizational and systemic issues.

8.2.5.2.3.2 It should also be borne in mind that several organizations may be implicated in an accident, each with its own level of involvement. The organizational factors relating to each of these organizations should be considered separately.

8.2.5.2.3.3 In most cultures, there is a strong tendency to search for culpable individuals after an accident and a corresponding reluctance to consider the role institutions such as companies or government organizations may play. The organizational investigator must resist such pressures, yet still consider how an effective organizational investigation can be conducted consistent with the national culture.

8.2.5.2.4 Methodology

8.2.5.2.4.1 Since each organizational investigation is unique, it is not desirable to prescribe in detail how each investigation should be conducted. The method section below describes how the Reason model can be applied to an accident investigation. This model provides a useful checklist to ensure that issues are explored and can assist in writing up findings in a form that is consistent with publications such as Circular 247, *Human Factors, Management and Organization* and Circular 240, *Investigation of Human Factors in Accidents and Incidents*.

8.2.5.2.4.2 The Reason model is not the only possible method or framework that can be used in a systemic investigation. Other methods such as Management Oversight and Risk Tree (MORT), Human Factors Analysis and Classification System (HFACS) and Threat and Error Management framework (TEM) may be useful and the organizational investigator should not feel compelled to limit the investigation to one particular model. The importance of using a systematic model or process is to ensure a thorough consideration of ALL aspects of the investigation, without pre-judging the causes or responsibilities for the deficiencies leading to the event.

A. The application of the Reason model to accident and incident investigation

8.2.5.2.4.3 The organizational investigator will often rely on other groups to identify active failures, local factors and failed or absent defenses. As this information becomes available, the organizational investigator will be in a position to consider the underlying organizational and systemic factors which enabled the situation to develop.

8.2.5.2.4.4 In the event of a major investigation, there may be daily briefings which will enable the organizational investigator to become aware of the progress of other groups. It may be appropriate, however, for the organizational investigator to arrange for a member of each group to act as a contact and report information which may have a bearing on organizational issues.

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8.2.5.2.4.5 In the early stages of the investigation, the organizational investigator may need to attend or review key interviews conducted by other groups such as ATC or Operations. This will ensure that potential organizational issues are not being neglected during the interview. As the investigation progresses there may be a need to conduct interviews specifically directed at organizational issues.

8.2.5.2.4.6 In addition to relying on information from sources such as interviews and documents, the organizational investigator may choose to collect information via additional means such as structured investigation interviews or questionnaires.

8.2.5.2.4.7 The organizational investigator should develop a listing of the organizations that played a role in creating potential local or systemic factors. For example, if the accident is remote from the organization headquarters, there may be an intermediate level of supervision involved. Similarly, when outsourcing is used, for example, for aircraft maintenance, there may be several contractual relationships established involving multiple organizations. In this case, the relationship between each organization should be well understood to identify breakdowns in the management oversight and communications. Finally, as the investigator comes to understand the organization's structure, there must be consideration of the government relationship with the organizations related to the issuing and continued oversight of the operations and/or maintenance certificates.

8.2.5.2.4.8 Potential organizational weaknesses may become apparent during the investigation. Yet these organizational weaknesses may have had no role in the development of the accident. If no evidence subsequently emerges to link these weaknesses with the active failures, local factors and defenses of the accident scenario, the organizational investigator should not list these weaknesses among the accident factors. Such findings should, however, be included in the accident report and, if applicable, they should be the subject of a safety recommendation. It might be appropriate to place such findings under the category of "additional information" in the accident report.

B. Potential local and systemic issues

8.2.5.2.4.9 In the following section, potential areas of concern are linked with possible questions which could guide an organizational investigator. These are by no means the only potential topics to be considered as part of an organizational investigation.

C. Corporate goals

8.2.5.2.4.10 Most organizations operate with goals which conflict from time to time, such as on-time performance and fuel saving. The manner in which the organization recognizes the conflict and balances goals with one another may be significant to the occurrence.

Does the organization have a formal statement of goals?

What are the performance expectations of owners, shareholders or government?

Does the organization have a quality policy?

Does the organization have a safety policy?

Organizational structure

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8.2.5.2.4.11 This area includes factors relating to the structure and systems of the organization.

- Do problems stem from the structure of the organization?
- Are management responsibilities clearly defined?
- What actions by managers and other staff are rewarded?
- What actions by managers and other staff are punished?

D. Communications

8.2.5.2.4.12 Would the accident have been less likely if internal communications were better?

- Do field stations communicate with headquarters?
- Is upper management aware of operational realities?

E. Planning

8.2.5.2.4.13 Does the organization operate in a short term environment?

- Does the organization have difficulty in anticipating events?

F. Control and monitoring

8.2.5.2.4.14 Are there adequate systems in place to inform management of key performance indicators?

- Does the organization have a hazard identification and risk management policy/programme?

Design of systems and components

8.2.5.2.4.15 Design factors are included as systemic factors because the design of systems and components is normally an activity remote from day to day systems operation. Some systems may not have been “designed” at all, but may have developed over time. Systems which are complex to the extent that their workings are not understood by operators (opaque systems) can be particularly problematic.

- Did the designers receive feedback on the adequacy of the design?
- Were there opportunities to modify the design?
- Do operators understand the systems they use?
- If complex technical systems are involved, is there a single person who has a general understanding of system operation?

G. Corporate memory

8.2.5.2.4.16 Have there been recent mergers or takeovers?

- Does the organization have a well maintained corporate memory?

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Are there events remembered in the “folklore” of the organization which still influence the functioning of the organization?

H. Procedures

8.2.5.2.4.17 Is there a conflict between informal norms and formal procedures?

Would the organization fail to function if procedures were strictly adhered to?
Are there local orders/instructions that may conflict with organizational orders/instructions?

I. Resources

8.2.5.2.4.18 Does the organization have the resources to recruit and train staff, maintain equipment and operate responsibly?

Has the organization undergone a significant reorganization, or has it recently undertaken a significant reorganization that has resulted in the re-distribution of resources to different parts of the organization?

J. Regulation

8.2.5.2.4.19 How frequently do regulators visit the organization?

Are the regulators capable of administering the regulations?
Do the regulators have an available range of measures (such as sanctions) to encourage compliance?
Does the regulator require and oversee the organization’s Safety Management System?

K. Adaptation to new technology

8.2.5.2.4.20 Has the organization reacted appropriately to new technologies?

L. Corporate culture

8.2.5.2.4.21 Does the organization condone risk taking?

Is safety an important goal of the organization?
Does the organization have a history of correcting problems?
Does the organization have a history of ignoring or covering up problems?



M. Safety management

8.2.5.2.4.22 Does the organization have a safety management programme?

Does the organization have a quality assurance programme?
 Is there a safety department? If so, to whom does it report?
 Has the organization recently been subject to an outside audit?
 Has there been a formal hazard analysis of the operation?

8.2.5.2.5 Final Considerations

8.2.5.2.5.1 To be effective, investigations must consider the role of organizational factors, yet the investigation of such factors is likely to be heavily reliant on subjective judgment.

8.2.5.2.5.2 One of the most important subjective considerations in an investigation is knowing when to stop. Accident factors may be found far removed in time and distance from the accident itself and it may be difficult to know how widely the organizational investigation should extend. Such a decision will be influenced by the legal framework within which the investigating authority operates. A useful rule is that when the organizational investigator begins to arrive at circumstances which are beyond the control of managers, the investigation has exceeded reasonable bounds.

8.2.5.3 Investigating Human Factors

8.2.5.3.1 General

8.2.5.3.1.1 This portion of the manual is intended as a general guide to the investigation of the human contribution to aviation occurrences, which advocates a systems approach to the investigation. Whether the investigation is conducted by a single investigator or a team of investigators, the use of a systematic approach will ensure that the investigation of human factors is integrated within the investigation proper and not relegated to the rank of a residual capacity activity, something that happens only if one is allotted enough time and sufficient resources. For both the single investigator and the investigation team, the use of such an approach will make the occurrence investigation more efficient and more complete.

At the moment the Bureau does not have specialist to conduct investigation of human contribution to aviation occurrences. Although, Director-General/CEO had provided to Air Safety Investigators (ASIs) training on investigation of human factors in aircraft accidents/ incident, however, the ASIs are yet to develop full capacity to independently conduct such investigations. Therefore, the Director-General/CEO will seek assistance from other accident investigation authorities for assistance (refer to 8.7 of this manual). The ASIs will use the opportunity of foreign technical expertise as on-the-job-training.

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Objective

8.2.5.3.1.2 The objective of the investigation of human factors in occurrences is to advance aviation safety by:

- a) determining how breakdowns in human performance may have caused or contributed to the occurrence;
- b) identifying safety hazards as they relate to limitations in human performance; and
- c) making recommendations designed to eliminate or reduce the consequences of faulty actions or decisions made by any individual or groups involved in the occurrence.

Scope

8.2.5.3.1.3 To achieve such an objective, the collection and analysis of human factors information should be as methodical and complete as any other traditional area of the investigation, a requirement that forces the investigation beyond the examination of the actions of the aircrew to include an analysis of any individual or group involved in the occurrence, be it management, the regulator, or the manufacturer.

8.2.5.3.1.4 In a complex, interactive and well-guarded transportation system such as the aviation industry, accidents rarely originate from actions or non-actions of the front-line operators alone; accidents result from the interaction of a series of latent factors already in the system. In almost every facet of an investigation, from management and supervisory decisions to maintenance activities and pilot performance, one can identify human performance factors that may help to explain the causal event sequence. An investigation that focuses on only the front line operators acts as a barrier to the identification of systemic safety hazards and the opportunity to eliminate or reduce the consequence of safety hazards through the making of recommendations.

Overview

It provides guidelines on the integration of the human factors investigation with the overall investigation. The guidelines are equally applicable to the investigation by a single investigator responsible for all aspects of the investigation, as they are to the investigation where one or more investigators are dedicated solely to the human factors aspects of the investigation.

8.2.5.3.2 A Systems Approach to the Investigation of Human Factors

Human factors frameworks

8.2.5.3.2.1 In general, the human factors data that must be collected fall into two broad areas: information which will enable investigators to construct a detailed chronology of each significant event

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known to have occurred prior to and, if appropriate, following the occurrence (this chronology must place particular emphasis on the behavioral events, and what effect they may have had on the accident events sequence); and contextual information which will permit investigators to explain why the behaviour actually happened.

8.2.5.3.2.2 The human element can become involved in occurrences in three ways. The first way is as a direct contributor through an unsafe act. Generally, this tends to be an active failure by an operator at the scene of the occurrence and is often referred to as “operator, user or pilot error”. The second way, which also results in direct involvement, is as a receiver/user of unsafe conditions. The third way is an indirect contributor to either unsafe acts or conditions through an antecedent unsafe act or latent failure. This final manner of involvement emphasizes the interrelationships or linkages between unsafe acts and conditions and, therefore, underscores the need to consider various layers of underlying causes and contributing factors.

8.2.5.3.2.3 Following is a description of four frameworks - the SHEL model, Reason’s Model of Accident Causation, a Latent Unsafe Conditions Framework (LUC), and a Behaviour and Error Framework that will aid the investigator in gathering and analyzing relevant occurrence information to determine the various layers of underlying causes and contributing factors. Subsequent to the description of the four frameworks is a description of an investigative tool, the Integrated Process for Investigating Human Factors, which integrates the four frameworks into an investigative step-by-step process.

SHEL

8.2.5.3.2.4 The SHEL model (Figure 8-13), originally developed by Edwards (1972) and modified by Hawkins (1987), facilitates a systematic approach to data collection. Each component of the SHEL model (software, hardware, environment, and liveware) represents one of the building blocks of human factors studies.

8.2.5.3.2.5 The liveware, or the human element, is the centerpiece of the model, representing the most critical and flexible component. The person represented by this component could be any person involved with the operation of a flight, and thus the component should not be considered restricted to aircrew. Each person within this central component brings his or her own limitations and strengths, be they physical, physiological, psychological, or psychosocial.

8.2.5.3.2.6 The central human component does not act on its own; it interacts directly with each of the others. The edges of this human block are not simple and straight, so other blocks must be carefully matched to them if stress and eventual breakdown (an accident) are to be avoided. The investigation of human factors must identify where mismatches between components existed and contributed to the occurrence, and so the data collected during the investigation should permit a thorough examination and analysis of each of the SHEL components and its interactions with the central component.

- a) *Liveware - Hardware (Human-Machine)*. This interaction includes any physical or mental interactions between the human and the machine, design limitations and peculiarities in workstation configuration.

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- b) *Liveware - Software (Human-System)*. This interaction concerns the nature of the information transfer between the human and supporting systems such as checklists, manuals, training, procedures, and regulations.
- c) *Liveware - Environment (Human-Environment)*. This interaction subdivides into two areas:
 - i) Internal: personal comfort and physical working conditions.
 - ii) External: weather, aerodrome surroundings and infrastructure.
- d) *Liveware - Liveware (Between People)*. This interaction explores the nature of human interactions and communication breakdowns between individuals.



Figure: 8-0- 13: SHEL Model (Adapted from Hawkins, 1975)

Reason's model of accident causation

8.2.5.3.2.7 A framework proposed by James Reason (1990) explains how humans contribute to the breakdown of complex, interactive, and well-guarded systems such as the aviation industry. In such a system, accidents rarely originate from active failures or unsafe acts of front-line operators alone. According to Reason, accidents result from the interaction of a series of flaws, or latent failures, already present in the system (Figure 8-14).

8.2.5.3.2.8 The two types of failures, active and latent depend upon the immediacy of their consequences. An active failure is an error or violation which has an immediate adverse effect. Active errors are usually made by the front-line operator. A pilot raising the landing gear lever instead of the flap lever exemplifies this failure type. A latent failure is a result of a decision or an action made well before an accident, the negative consequences of which may lie dormant for a long time. These failures usually originate at the decision-maker, regulator, or line management level, that is, people far removed in time and space from the event. A decision to merge two companies without providing training to standardize operating procedures illustrates the latent failure. These failures can also be introduced at any level of the system by the human condition – such as policies that lead to poor motivation or fatigue.



8.2.5.3.2.9 Latent failures, which originate from questionable decisions or incorrect actions, although not harmful if they occur in isolation, can interact to create a “window of opportunity” for a pilot, an air traffic controller, or mechanic to commit an active failure which breaches all the defenses of the system and results in an accident. The front-line operators are the inheritors of a system’s defects. They are the ones dealing with a situation in which technical problems, adverse conditions, or their own actions will reveal the latent failures present in a system. In a well-guarded system, latent and active failures will interact, but they will not often breach the defenses. When the defenses work, the result is a minor event or at most an incident; when they do not, it is an accident.

- a) *Upper management decisions.* Among these latent failures are decisions made by upper management, an aviation company’s corporate managers or regulatory officials. When allocating resources, management has to balance, among other things, safety against cost. These objectives can conflict and may result in flawed decisions which will be reflected throughout the system.
- b) *Line management deficiencies.* Managerial decisions, including those that are flawed, have to be implemented by line management through their standard operating procedures, training programme, flight and crew scheduling, etc. If deficiencies also exist at this level, they will increase the accident potential of those managerial decisions; for example, dispatch who has inadequate appreciation for operational conditions may jeopardize safety by trying to follow a policy which is not appropriate for the situation.
- c) *Existing preconditions.* If certain characteristics or preconditions, such as an unproductive environment, poorly motivated or unhealthy workforce, machines in a poor working state, and poorly established procedures are present in the system, they will influence the front line operation’s actions and become a source of unsafe acts.
- d) *Latent failures.* Flawed decisions at the managerial levels, line management deficiencies, and existing preconditions at the worker level represent the system’s latent failures.
- e) *Unsafe acts.* Unsafe acts take many forms and, because of error, can never be totally eliminated.
- f) *Defenses.* In a complex and well-guarded system, these latent failures may lie dormant for a long time without having significant impact on safety because very effective defenses, such as checks, procedures or GPWS, allow for a great number of these flaws to be simultaneously present in the system without serious consequences.
- g) *Window of opportunity.* An accident trajectory occurs when unsafe acts interact with latent failures present in the system and breach all the system defenses, thus creating a “Window of opportunity” for an accident to occur.
- h) *Summary.* Many unsafe acts are committed without consequence because existing conditions did not favour an interaction of all the deficiencies present in the system. Investigators, therefore, should not only examine unsafe acts made by front-line operators, but should work their way from unsafe acts and inadequate or removed defenses, through the accident trajectory, all the way back to upper management levels. Addressing the higher levels’ deficiencies, in addition to the ones closely related to the unsafe acts, allows the investigator to formulate preventive measures which will affect a larger set of occurrences.

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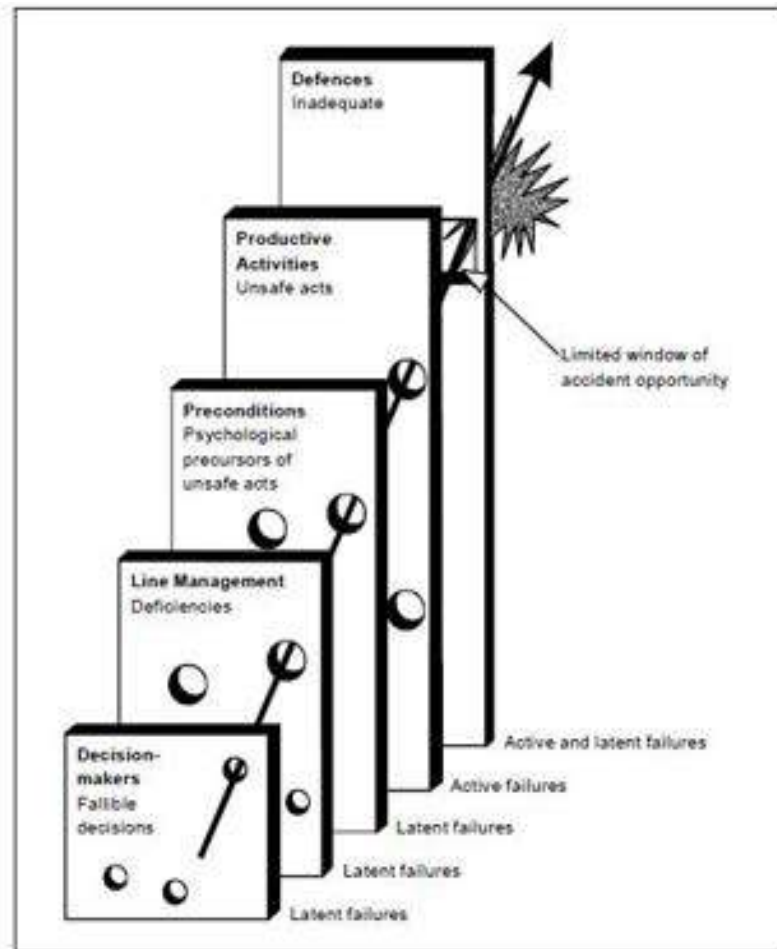


Figure: 8-0-14: Reason’s Model

Latent Unsafe Conditions (LUC) framework

8.2.5.3.2.10 The LUC framework is an extension of the Reason model, with an emphasis on a systematic means for examining personal and organizational factors. This framework comprises the elements of the SHELL model within the Reason concept of latency. Latent unsafe conditions include all those latent factors in the transportation system which can adversely affect safe operations or maintenance. They include latent factors at both the personal and the organizational level and may be referred to as LUC factors. It should be noted that an element of chance is involved in occurrences in the sense that operations may be conducted year after year under the same unsafe conditions without consequence; however, on any given day, an additional element of “bad luck” is added to the equation and tragedy results. Hence, the abbreviation LUC is a reminder of this element of chance.

8.2.5.3.2.11 Personal latent unsafe conditions (P-LUC factors) include those factors such as the state of mind of the individual, physical well-being, etc.; such factors can adversely affect the safety of operations or maintenance activities. Similarly there are organizational latent unsafe conditions (O-LUC



factors); i.e. those factors beyond the purview of the individual which have the potential for adversely affecting personal or team performance in operations or maintenance.

Personal LUC factors

8.2.5.3.2.12 Latent unsafe conditions at the personal level are known as P-LUC factors. These factors may limit or degrade an individual’s expected performance, resulting in an error of some type. The potentially adverse effects of P-LUC factors may be amenable to mitigation by the individual or by the organization, if they are identified in time. Aside from collecting the facts at the individual level, it may be difficult for the transportation system to address “personal” problems. However, sometimes a P-LUC factor will be indicative of a more systemic Organizational LUC factor, which is conducive to broad remediation. P-LUC and O-LUC factors are illustrated within the Reason framework in Figure 8-15 below.

8.2.5.3.2.13 The P-LUC factors are sometimes referred to as the physical, physiological, psychological, and psycho-social factors.

Organizational LUC factors

8.2.5.3.2.14 Latent unsafe conditions at the organizational and management level are known as O-LUC factors. Company management practices, the regulatory climate, and even the attitudes of workers fostered by professional associations can adversely affect human performance in both operations and maintenance. Following are some of the principal O-LUC factors:

a) Design:

- 1) Poor technical design of equipment, including inadequate consideration of the human/machine interface requirements for avoiding human error.
- 2) Poor task design, failing to take into account all the SHELL model interfaces.

b) Personnel:

- 1) Inadequacies in the initial (and ongoing) selection of personnel with the requisite knowledge, skills and attitudes for safe and efficient job performance.
- 2) Deficiencies in the knowledge and skills of employees which are necessary for them to do their jobs safely, resulting from training inadequacies.

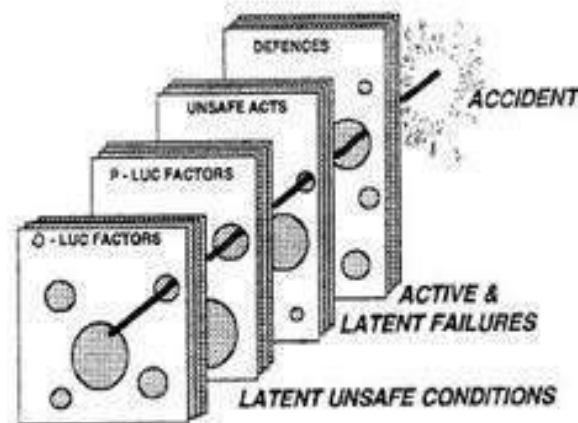


Figure: 8-0- 15: Latent Unsafe conditions within the Reason framework

- 3) Scheduling practices for operating or maintenance personnel which may compromise individual or team performance.
 - 4) Inadequacies in personnel monitoring and support programme to ensure the continuing fitness of employees for their specified duties.
 - 5) Remuneration practices which provide employees with incentives to cut corners.
- c) Procedures and accepted operating practices:
- 1) Company-prescribed procedures which are difficult to follow, ambiguous, incomplete, incorrect, inaccessible or absent.
 - 2) Accepted operating or maintenance practices which differ from prescribed procedures and create conditions that might lead to errors.
- d) Communications:
- 1) Information necessary for safe and effective operations and maintenance is not sent, received or understood by the intended recipients in a clear, unambiguous and intelligible form.
- e) Organization:
- 1) Deficiencies in the operating philosophy and policies of the organization which create error conducive conditions.
 - 2) Incompatible organizational goals in that production goals are in conflict with the maintenance of a safe operating environment.
 - 3) Deficiencies in either the structure of the organization or its way of conducting business which inhibit effective internal communications between management and operations or maintenance.
 - 4) Deficiencies in the organization's safety climate which allow safety responsibilities to be ill-defined and warning signs to be overlooked.
- f) Work environment:
- 1) Conditions conducive to committing unsafe acts or making safety related errors due to physical conditions in the workplace which influence individual or team performance.
- g) Regulatory overview:
- 1) Deficiencies in the rules and regulations governing transportation operations and maintenance.



- 2) Deficiencies in the certification of equipment, personnel and/or procedures.
- 3) Deficiencies in the surveillance, audit and inspection of transportation operations and maintenance.
- h) Associations and unions:
 - 1) Philosophies, policies, or practices which create conditions conducive to human error and unsafe acts.
- i) Defenses:
 - 1) Deficiencies in the identification and dissemination of known risks and how to manage them; i.e. safety awareness.
 - 2) Deficiencies in providing personnel with adequate detection and warning systems to see an unsafe event unfolding in time to prevent it.
 - 3) Deficiencies in the system's 'error tolerance' such that recovery from an unsafe condition is difficult without sustaining injury or damage.
 - 4) Deficiencies in the emergency response capabilities of the system which aggravate the consequences of an accident.

8.2.5.3.2.15 These Latent Unsafe Conditions in organization and management provide the operational context for human errors by operators and maintainers. Each LUC factor represents a potential hazard which can be systematically identified, validated, and corrected.

Behaviour and error framework

8.2.5.3.2.16 The following is a description of modes of behaviour, human error, and the interaction between behaviour and error. The behaviour/error framework has been adapted primarily from Rasmussen's (1987) taxonomy of behaviours and Reason's (1990) generic error-modeling system (GEMS) framework which facilitates the linkage of an error to an individual's level of performance (i.e. behaviour) at the time the failure occurred.

Modes of behaviour

8.2.5.3.2.17 To understand the ways in which people err, it is necessary to first look at the ways in which they behave. Rasmussen (1987) has identified a taxonomy of behaviours which provides a description of performance based on three different levels of decision-making. The following are descriptions of these three performance levels.

- a) *Skill-based performance* describes behaviour for a person engaged in a well-learned activity. Actions tend to be based on stored routines; skill-based performance is largely an automatic response where there is little, if any, conscious decision-making;
- b) *Rule-based performance* is less automatic. Decisions are based on learned procedures; these procedures are stored in long-term memory and require the involvement of the central decision maker and working memory because rule-based behaviour are actioned at the conscious level. Response is governed by an "if-then" algorithm, such as "if' this is the situation, then this is the diagnosis; if this is the diagnosis, then this is the remedial action"; and,
- c) *Knowledge-based performance* is behaviour that arises when an operator is faced with novel situations for which there are few pre-established rules, but which require that appropriate action be taken. Without rules to guide, decisions are based on the operator's knowledge and experience. Having categorized behaviour using the skill-rule-knowledge-based taxonomy, one can examine how people fail while operating within the behavioral modes.

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Human error

8.2.5.3.2.18 There are two distinct categories of error, those actions that deviate from intention or are unintended (i.e. actions that do not proceed as planned) and those that are intended (i.e. actions that proceed as planned, but they fail to achieve the desired consequences). Errors can be further broken down into types, and the type depends largely on examining the concept of intended action. It is important to note that the criteria of “intentionality” refers to the action itself and not the intention to err.

a) *Unintended actions*. “Was the action that was carried out, the action that was planned?” If the answer to that question is no, then an unintentional action occurred. An unintentional action resulting in an error arises from a failure in the execution of the action in that there was a difference between what action was supposed to have occurred and what action actually did. An error in execution is either a slip or a lapse.

Slips usually arise as the result of not paying sufficient attention to the execution of the action. For example, an operator reaches for a switch, without looking, and places the control in the “OFF” position from the “STANDBY” position, when the intent was to place the switch control in the “ON” position.

A lapse is an unintentional action where there is a memory failure. For example, a person following a series of instructions may forget one of the steps involved in a task.

Whether the error is a slip or a lapse, the planned action is the correct action for the situation; however, the operator fails to execute the action properly.

b) *Intended actions*. “Was the action that was carried out, the action that was planned?” If the answer to that question is yes, then it is an intended action. An intentional action resulting in an error or violation involves a failure in planning in that the intended action was inappropriate. An error in planning is either a mistake or a violation. With this error type, the action proceeds exactly as planned but fails to achieve the desired consequences; in other words, the error is in the planning – it is the incorrect action for the situation. Mistakes are often failures of thought and of the decision-making process.

They are usually more subtle than slips and lapses and considerable time can pass between the execution of the erroneous action and its detection.

Mistakes, where there is no desire to do the wrong thing, can be distinguished from a violation where a deliberate decision to act against a rule or plan has been made. The term violation denotes a calculated adjustment or modification of a rule or plan which differentiates it from the basic error types as defined by the slip, lapse and mistake.

8.2.5.3.2.19 Despite the deliberate actions, some violations (i.e. routine and exceptional violations) involve people trying to “do the right thing” and differ from sabotage where there is malicious purpose. Routine violations occur every day as people regularly modify or do not strictly comply with work procedures, often because of poorly designed or defined work practices. In contrast, an exceptional violation tends to be a one-time breach of a work practice, such as at Chernobyl where safety regulations were deliberately ignored in order to carry out a safety test. However, the goal was not to commit a malicious act, but actually to improve system safety.

Behaviour/error framework

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8.2.5.3.2.20 Reason's GEMS (1990) provides a framework that combines Rasmussen's skill-rule-knowledge-based behaviour taxonomy with the basic human error types, the result of which yields the following:

- 1) skill-based slips and lapses;
- 2) rule-based mistakes; and
- 3) knowledge-based mistakes.

An argument has been forwarded that violations are typically rule-based and only sometimes knowledge-based (Glendon and McKenna, 1995). However since an assessment or evaluation of information (e.g. a rule or plan) is associated with a violation, this type of failure would appear to occur most often at the knowledge-based level of performance (Hudson, 1991).

a) *Skill-based slips and lapses.* If the error involves skill-based performance, then a slip or a lapse would have occurred due to either inattention or over attention. Inattention is the failure to make a necessary attentional check on progress; over attention involves making the attentional check, but at an inappropriate time in the action sequence. Inattention may result from something as simple as an interruption; in that case, the operator omits the required check because he or she is interrupted or distracted by some external event, such as a radio call interrupting a checklist procedure, resulting in the operator's missing one of the checks. Over attention may also result in an omission. Should the operator believe that the action sequence is further along than it actually is, a necessary step in the sequence can be omitted.

b) *Rule-based mistakes.* If the error involves rule-based performance, then a mistake occurred because either a bad rule was applied or a good rule was misapplied. A bad rule is one that is either incorrect, ineffective or inadvisable (refer to Appendix 1 to Chapter 16 for further discussion of failure modes at the rule-based level). A good rule is one that has proven to be useful under given circumstances. An error involving a misapplication of a good rule is one where the applied rule is no longer appropriate for the particular circumstances. (See ICAO Doc 9756 Part III Appendix 1 to Chapter 16 for examples of failure modes at the rule-based level.)

c) *Knowledge-based mistakes.* When no rules apply to a given situation, new solutions or plans must be formulated (Hudson, 1991). An error that is a mistake, that occurs during the formulation of the solutions or plans falls within knowledge-based performance. These errors occur because the operator is without all the information required to form an accurate mental model of the problem space. Failure modes at this level can arise from biases such as confirmation bias where the operator seeks information that will confirm what he or she already believes to be true and discounts information that is inconsistent with the chosen hypothesis. (See ICAO Doc 9756 Part III Appendix 1 to Chapter 16 for examples of failure modes at the knowledge-based level.)

An Integrated Process for Investigating Human Factors

8.2.5.3.2.21 The work systems/organization and human error/behaviour frameworks, described in 8.2.5.3.2.1 to 8.2.5.3.2.20 provide investigators with a focus on the potential unsafe conditions that an investigation of human factors strives to uncover. The following is a process that integrates those frameworks into a step-by-step systematic approach for use in the investigation of human factors. Refer to Appendix 2 to Chapter 16 for greater detail of each step in the process.

8.2.5.3.2.22 The process can be applied to both types of occurrences, i.e. accidents and incidents. Illustrated in Figure 8-16, the process consists of seven steps:

- 1) collect occurrence data;

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- 2) determine occurrence sequence; and
- 3) identify unsafe acts (decisions) and unsafe conditions;
and then for each unsafe act (decision),
- 4) identify the error type or adaptation;
- 5) identify the failure mode;
- 6) identify behavioral antecedents; and,
- 7) identify potential safety problems.

8.2.5.3.2.23 Steps 3 to 6 are useful to the investigation because they facilitate the identification of latent unsafe conditions. Step 7, the identification of potential safety problems is based extensively on what factors were identified as behavioral antecedents.

Note.- At times, an unsafe condition may be a result of a natural occurrence. At other times, an unsafe act or decision may result from an unsafe condition which itself was established by a fallible decision. In the former case, the investigator may jump from Step 3 to Step 7; in the latter case, the investigator should proceed through Steps 3 to 7.

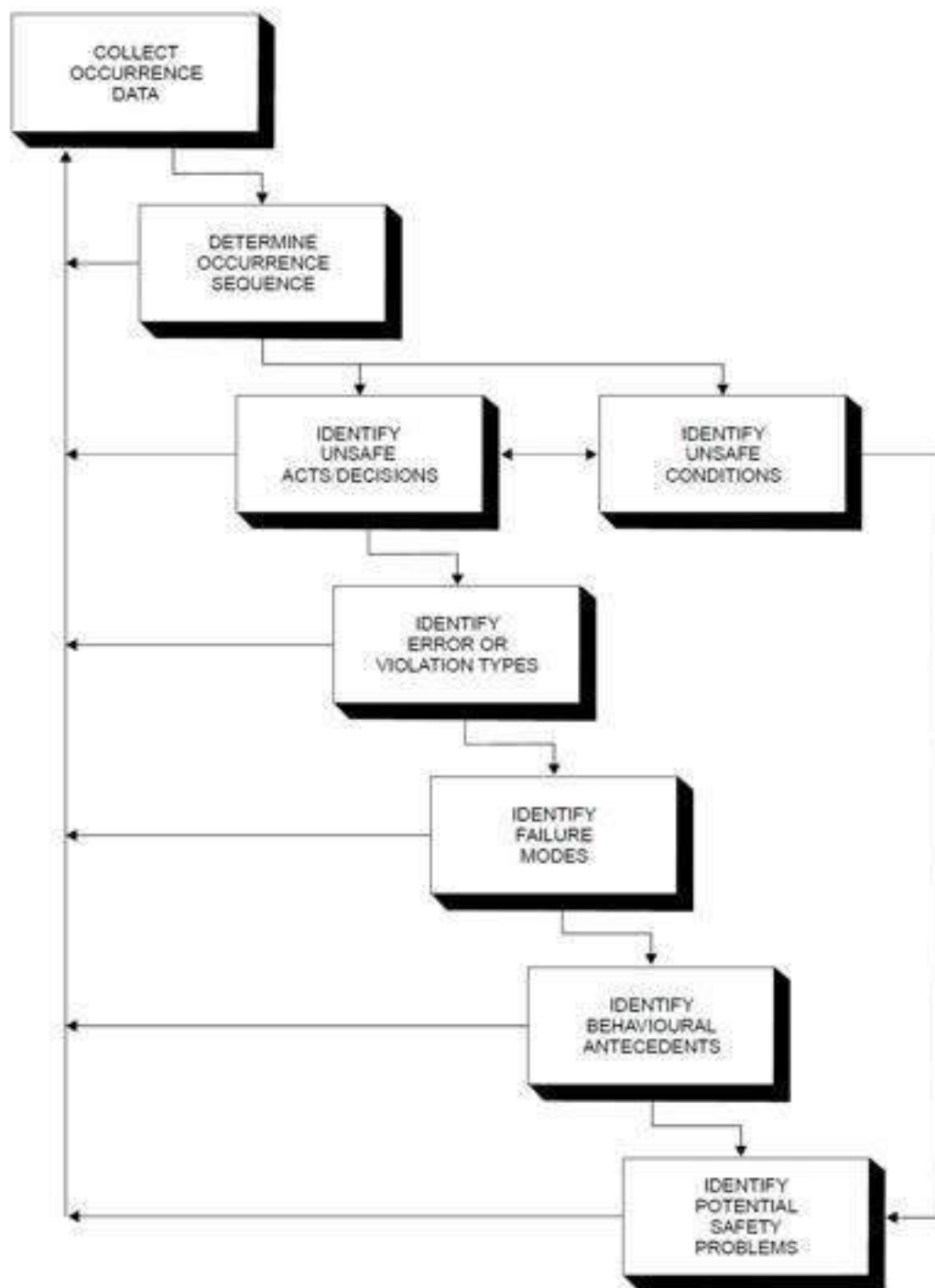


Figure 8-0- 16: Integrated process for occurrence investigation



Step 1 - Collect occurrence data

8.2.5.3.2.24 The first step in the human factors investigation process is the collection of work-related information regarding the personnel, tasks, equipment, and environmental conditions involved in the occurrence.

8.2.5.3.2.25 For complex systems, where there are numerous interactions between the component elements, there is constant danger that critical information will be overlooked or lost during an investigation. Use of the SHEL model as an organizational tool for the investigator’s workplace data collections helps avoid problems downstream because:

- a) it takes into consideration all the important work system elements;
- b) it promotes the consideration of the interrelationships between the work system elements; and
- c) it focuses on the factors that influence human performance by relating all peripheral elements to the central liveware element.

8.2.5.3.2.26 Figure 8-17 below is an adapted illustration of how this model can be applied to a complex system where multiple liveware, hardware, software and environmental elements exist.

Step 2 - Determine occurrence sequence

8.2.5.3.2.27 As the investigator moves to addressing questions of “how and why”, there is a need to link the events and circumstances identified in the first step of the process. Reason’s (1990) model of accident causation, utilizing a production framework, can be used by an investigator as a guide to developing an occurrence sequence. As well, Reason’s model facilitates further organization of the work system data collected using the SHEL model, and an improved understanding of their influence on human performance. The occurrence sequence is developed by arranging the information regarding occurrence events and circumstances around one of five production elements, i.e. decision makers, line management, preconditions, productive activities, and defenses.

8.2.5.3.2.28 These production elements themselves are basically aligned in a temporal context. This temporal aspect is an important organizing factor since the events and circumstances that can lead to an accident or incident (and would therefore be causal factors) are not necessarily proximate in time, nor in location, to the site of the occurrence. By establishing a sequential ordering of the causal data, Reason’s (1990) concept of active versus latent factors is introduced (refer to 8.2.5.2. 7 to 8.2.5.2.9).

8.2.5.3.2.29 In practice, Steps 1 and 2 may not be mutually exclusive. To facilitate this concurrent activity, the SHEL and Reason models can be combined as illustrated in Figure 8-18.

Steps 3-5 – An overview

8.2.5.3.2.30 Steps 3 to 5 are based upon the behaviour and error framework discussed above. The framework provides “pathways” that lead from the identification of the unsafe act/decision (Step 3) to the identification of what was erroneous about the action or decision (Step 4) and finally to its placement within a behavioural context (i.e. a failure mode within a given level of performance in

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Step 5. The behaviour and error framework as illustrated in Figure 8-19 is particularly useful in exploring hypothetical reconstructions of the occurrence facts.

Step 3 - Unsafe acts/decisions and conditions

8.2.5.3.2.31 In Step 3 of the process, the investigation and/or analysis is simplified where the information gathered and organized using the SHEL, Reason, and LUC frameworks is used to initiate identification of unsafe acts/decisions and conditions. There may be several acts, decisions and/or conditions which are potential unsafe candidates, thus necessitating iterative assessments of the occurrence facts. The SHEL and Reason hybrid model (refer to Figure 8-18) can provide a useful base for conducting such iterative assessments.

8.2.5.3.2.32 The data collected during an investigation (i.e. events and circumstances) can be organized, using multiple components of the modified SHEL model, into a framework surrounding an occurrence template (in this case the accident scenario), based upon the Reason model. In this way, each occurrence can be described by a unique framework of events and circumstances, the investigator being interested in identifying those which constitute the occurrence's unsafe acts/decisions and conditions.

8.2.5.3.2.33 When an unsafe act, decision or condition is identified, the focus shifts to determining the genesis of that particular act. Further investigation and/or analysis may reveal other unsafe acts/decisions or conditions antecedent to the causal factor that was initially identified.

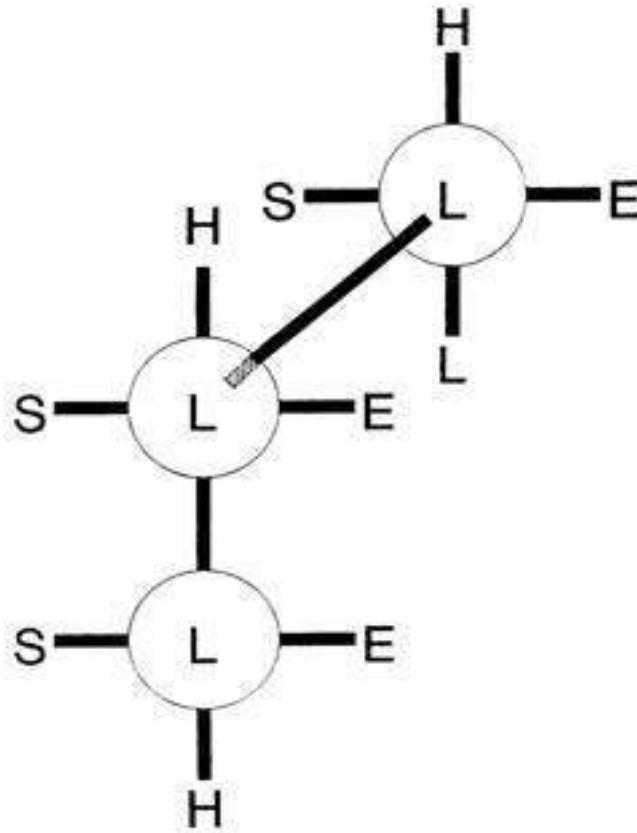


Figure: 8-0- 17: Modified SHEL Model

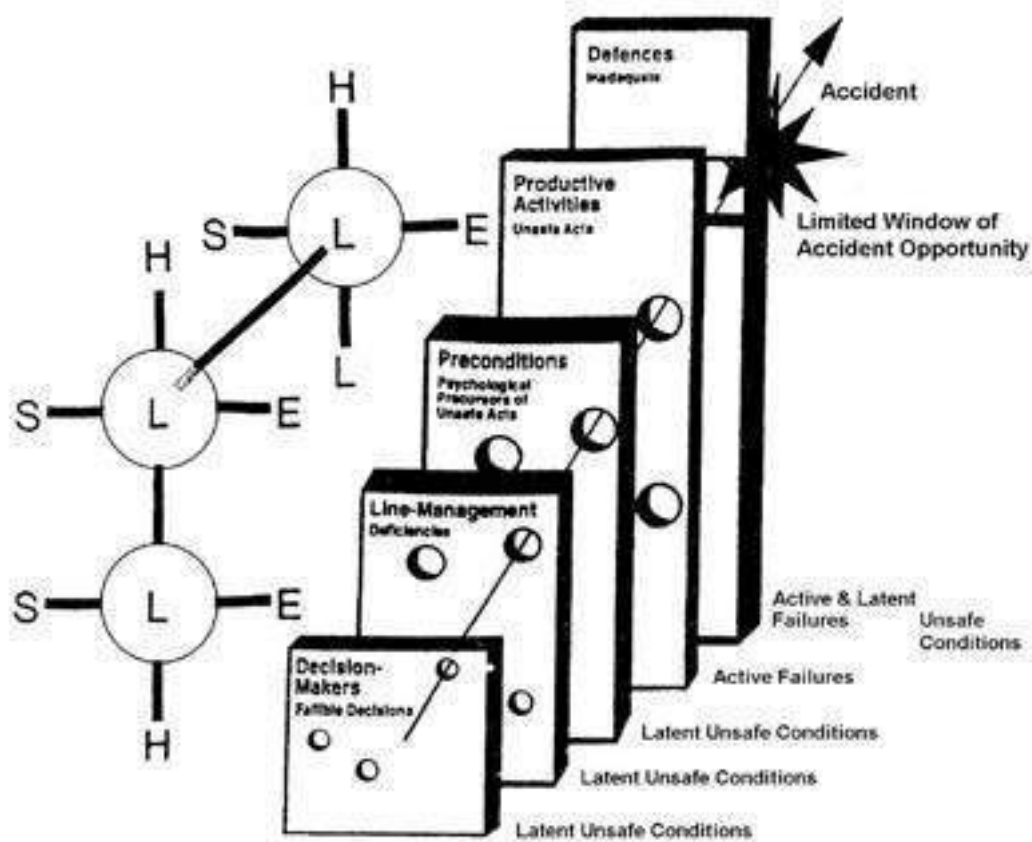


Figure: 8-0- 18: SHEL and Reason Hybrid Model

8.2.5.3.2.34 The last unsafe act precipitating the occurrence often provides a convenient starting point for reconstruction of the occurrence.

8.2.5.3.2.35 For example: Following Steps 1 and 2, an investigator determines that one of the unsafe acts was the failure to complete a checklist item.

Note.— This example will be used and built upon throughout this section to illustrate the process.

Step 4 - Identify error or violation type

8.2.5.3.2.36 Step 4 is initiated for each unsafe act/decision by posing the simple question, “What is erroneous or wrong about the action or decision that eventually made it unsafe?” (Refer to 8.2.5.2.8 for elaboration of the terms used throughout this step.).



8.2.5.3.2.37 The identification of the type of error or violation involves two sub-steps. (See Figure 8-19.)

1) *Unintended or intended action.* First, determine whether the error or violation was an unintended or intended action.

2) *Error type or violation.* The second sub-step is the selection of error type or violation that best describes the failure, keeping in mind the decision regarding intentionality. There are four potential error/adaptation categories, i.e. slip, lapse, mistake and violation.

- A slip is an unintentional action where the execution failure involves attention.
- A lapse is an unintentional action where there is a memory failure.
- A mistake is an intentional action, but there is no deliberate decision to act against a rule or plan.
- A violation is a planning failure where a deliberate decision to act against a rule or plan has been made.

8.2.5.3.2.38 For example: Continuing with the unsafe act described above, the investigator determines that the unsafe act of not completing a checklist item was unintentional and that it was due to a slip because the operator did not attend to a step in the sequence.

Step 5 - Identify failure modes

8.2.5.3.2.39 In Step 5, the focus is now placed on the decision that eventually led to the erroneous action or decision identified in Step 3. This is accomplished by placing the errors (slips, lapses and mistakes) and violations into the context of performance (behaviour), i.e. how was one performing at the time of the failure?

8.2.5.3.2.40 The GEMS (Generic Error Modeling System) framework facilitates the linkage of an error/violation to an individual’s level of performance at the time the failure occurred. By following through to the next step (refer to Figure 8-20), one can begin to understand how errors and violations can have their roots in common behavioural failure patterns (i.e. failure modes) and are not necessarily the result of irrational behaviour.

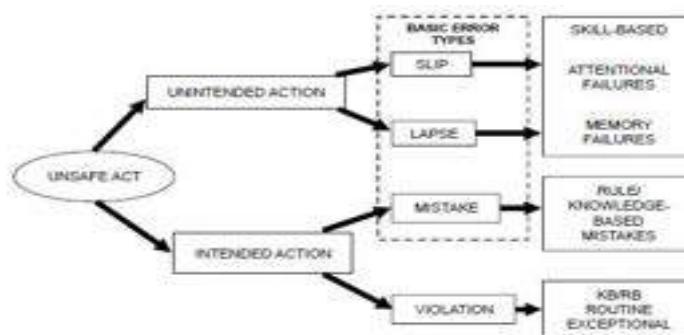


Figure: 8-0- 19: The GEMS Framework (adapted from Reason, 1990)

8.2.5.3.2.41 Recalling from 8.2.4.3.16 to 8.2.4.3.20, the error types and violations are matched against three categories of behaviour, resulting in the following:



- 1) skill-based - slips and lapses during skilled-based performance where actions tend to be based on stored routines and there is little, if any, conscious decision-making;
- 2) rule-based - mistakes are involved in rule-based performance where decisions are based on learned procedures; and
- 3) knowledge-based - mistakes and violations occur during knowledge-based performance where decisions are based on knowledge and experience (no set procedures) which necessitates evaluations.

8.2.5.3.2.42 Within each level of performance (i.e. behavioural category), there are different ways or modes a failure can occur (refer to Figure 8-20 for general descriptions of these failure modes). The errors and violations identified in Step 4 can be related to the failure modes as demonstrated by following a given pathway from Figure 8-19 to Figure 8-20.

8.2.5.3.2.43 For example: Having determined that the unsafe act of not completing a checklist item was unintentional and the error type was a slip, the investigator matches the error type to the performance level and determines that the operator was in skill-based behaviour. The failure modes that occur in skill-based behaviour are listed in ICAO Doc 9756 Part III Appendix 1 to Chapter 16. In the example, the investigator, having pieced together the accident scenario, knows that, while carrying out the checklist procedure, the pilot was contacted by ATC and given a departure clearance. The investigator then identifies that one of the failure modes at the skill-based level is omission following interruption which is characterized by a required check being interrupted by some external event. In this failure mode, the original action sequence, i.e. carrying out the checklist procedure, continues, but with one or more of the items omitted. In the case of the example, the two tasks, monitoring the checklist and copying out the departure clearance, competed for the same attentional resources and checklist monitoring suffered.



Figure: 8-0-20: Breakdown of behaviour into failure modes



Step 6 - Identify behavioural antecedents

8.2.5.3.2.44 In Step 5, the focus was placed on the identification of failure modes which described erroneous decision-making or unsafe acts. To uncover the underlying causes and contributing factors behind the decision of an individual or group, it is important to determine if there were any factors in the work system that may have facilitated the expression of the given failure mode (and hence the error/violation and the unsafe act). These factors have been termed behavioural antecedents. The behavioural antecedents can be found by examining the work system information collected and organized using the SHELL, Reason, or LUC frameworks in Steps 1 and 2. The re-examination of these data again emphasizes the iterative nature of this investigative process where it may even be deemed necessary to conduct further investigations into the occurrence.

8.2.5.3.2.45 The three performance or behaviour levels can be broken down into common behavioural failure patterns or modes of failure. Descriptions of these failure modes are provided in ICAO Doc 9756 Part III Appendix 1 to Chapter 16.

8.2.5.3.2.46 For example: In re-examining the data gathered, the investigator discovers one of the behavioural antecedents is the design of the checklist itself. The checklist is paper; there are no aids incorporated into the checklist that will enable the pilot to keep track of the checklist sequence. In the absence of such aids, the onus is on the pilot to ensure that an item is not missed. By identifying the design of the checklist as problematic, the investigator has uncovered a latent unsafe condition in the system. Such latent unsafe conditions in organization and management are the behavioural antecedents to unsafe acts and decisions by operators and maintainers. They represent potential hazards which can be systematically identified, validated and corrected.

Step 7 - Identify potential safety problems

8.2.5.3.2.47 At Step 7, the investigator flags those unsafe latent conditions that occurred naturally or those that occurred as a result of a fallible decision as potential safety problems. For the most part, the identification of potential safety problems is based extensively on what factors were identified as behavioural antecedents. Once again this underscores the importance of the application of a systematic approach to Steps 1 and 2 of the process which sets the foundation for the subsequent analysis steps.

8.2.5.3.2.48 Where appropriate, the potential safety problems can be further analyzed to identify safety deficiencies and recommendations for safety actions.

Summary

8.2.5.3.2.49 The Integrated Process for Investigating Human Factors was developed as a tool to be used by investigators and analysts to facilitate the identification of direct and underlying unsafe conditions in transportation occurrences. The frameworks, which provide the foundation for the process, were drawn from the human factors literature since the human element has been identified as a significant contributor to occurrences. The final step of the process is the identification of potential safety problems which, in turn, may be used to identify systemic safety deficiencies.

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8.2.5.3.3 Investigative Activities

Gathering information

8.2.5.3.3.1 The success of the human factors investigation depends largely on the quantity and quality of the information collected. As each occurrence is different from the other, the investigator will need to determine the type and quality of data to be collected and reviewed. As a rule, the investigator should be over-inclusive in gathering information initially and eliminate superfluous data as the investigation unfolds.

8.2.5.3.3.2 Use the SHEL conceptual model previously described as a tool to orient the data collection phase. In general, collect facts that will allow you to:

- a) construct a history of all significant behavioural events known to have occurred;
- b) thoroughly examine and analyse the SHEL interfaces to determine if and where breakdowns existed;
- c) determine what might have influenced or motivated a particular action, of all persons involved in the occurrence; and
- d) fully support the existence of an identified safety deficiency.

Sources of information

8.2.5.3.3.3 Information relevant to an aviation occurrence can be acquired from a variety of sources. Primary sources relating specifically to human factors include hardware evidence, paper documentation, audio and flight recorder tapes, interviews, direct observation of aviation personnel activities and simulations. Secondary sources include aviation occurrence data bases, reference literature and human factors professionals and specialists.

a) Primary sources

1) Hardware evidence is most often associated with the aircraft but may also involve other work stations and equipment used by aviation personnel (e.g. air traffic controllers, flight attendants, aircraft maintenance and servicing personnel). Specific sources include aircraft wreckage, similarly configured aircraft, manufacturer's data, company records and logs, maintenance and servicing equipment, air traffic control facilities and equipment, etc.

2) Paper documentation spans the complete spectrum of SHEL interfaces. Consider the following list of documents:

- Personal records and logbooks;
- Certificates and licences;
- Company personnel and training records;
- Aircraft flight manuals;
- Company manuals and standard operating procedures;
- Training manuals and syllabi;
- Company training and operational schedules;
- Regulatory authority records;

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Weather forecasts, records, and briefing material;
 Flight planning documents;
 Medical records; and
 Medical and post-mortem examinations.

3) Flight data recordings and ATC radar tapes are valuable sources of information for determining the sequence of events and examining the liveware - liveware interfaces. Within airlines using flight recorder monitoring programs, there can be a wealth of information about crew's normal operating procedures. In addition to traditional flight data recordings, new generation aircraft have maintenance recorders and some electronic components with non-volatile memories that are also potential sources of information. Audio (ATC and CVR) recordings are invaluable sources of information about the liveware - liveware and liveware - hardware interfaces. In addition to preserving personnel communications, audio recordings can also provide evidence on the state of mind of individuals, and possible stress or fatigue. It is essential, therefore, that persons familiar with the crew listen to the recordings to confirm the identity of the speaker and to indicate any anomalies in speech pattern or style. It is also essential that individuals knowledgeable about the specific crew operating procedures listen to the recordings to provide a more complete picture of crew activities that are non-verbal.

4) Interviews conducted with individuals both directly and indirectly involved in the occurrence are also important.

Consider the following persons to interview:

Flight crew	Flight attendants
Other crew members	Passengers
Air traffic controllers	Eyewitnesses
Ground handlers	Dispatchers
Weather briefers	Baggage handlers
De-icing personnel	Aircraft maintenance engineers
Company owner	V.P. flight operations
Chief pilot	Chief instructor
Instructors	Check pilot
Other company pilots	Former employers
Supervisors	
Chief of maintenance	Maintenance engineers
Technical specialists	
Flight test examiners	Airworthiness inspectors
Auditors	Other regulatory authorities
Physician	Psychologist
Aeromedical examiner	Co-workers
Friends	Family members

Knowledge gleaned from such interviews can be used to confirm, clarify, or supplement data from other sources. In the absence of measurable data, interviews become the single source of information,



and investigators therefore need to be skilled on interview techniques. Guidelines on interview techniques are contained in Appendix 2 of ICAO Human Factors Digest No. 7 (Cir 240), *Investigation of Human Factors in Accidents and Incidents*.

b) Secondary sources

1) Not all human factors factual information is gathered in the field. After the field phase of the investigation, additional information about human factors may be collected, facilitating analysis of the factual information collected in the field. These secondary data come from several sources.

2) Direct observations of actions performed in the real environment can reveal important information about human factors. Observations can be made of the following:

Flight operations activities

Flight training activities

Maintenance activities

Air Traffic Control activities

3) Simulations permit reconstruction of the occurrence and can facilitate a better understanding of the sequence of events which led up to it, and of the context within which involved personnel perceived the events.

4) Computer simulation can be used to reconstruct events by using data from the flight recorders, air traffic control tapes, and other physical evidence.

5) Often a session in an aircraft flight simulator or reconstruction of a flight in a similar aircraft can offer valuable insights into the circumstances that led to an occurrence. Participation in simulations by personnel involved in the occurrence events can trigger recollection of important information which would otherwise not come to light.

6) Aviation safety databases containing accident/incident data or confidential reporting systems and databases maintained by some aircraft manufacturers are useful sources of information directly related to the aviation operational environment. Examples are ADREP (ICAO), STEADS (IATA), CASRP (Canada), ASRS, and ASIS (United States), CAIRS (Australia), CHIRP (United Kingdom).

7) Investigators should use databases with caution, however, being sure to know its source and target populations as well as its limitations. They should be familiar with the vocabulary used in a specific database, as no single set of key words is common to all databases. Coding and data entry criteria differ between various databases, which may affect the meaning of retrieved data. Appendix 4 of ICAO Human Factors Digest No. 7 (Cir 240), *Investigation of Human Factors in Accidents and Incidents* provides a more detailed discussion of databases and their application to the investigation of human factors.

8) Literature reviews can be an important source of information. Consulting reference material can help to do the following:

i) Identify how a given human factor may affect performance;

ii) Relate the information found in the field to what is known of human behaviour in similar circumstances; and

iii) Organize the information gathered in the field in a logical way.

9) It should be noted that basic psychological and sociological references can be good sources of information about general human performance, but they seldom address human behaviour in conditions comparable to the aviation operational environment. In recent years, professionals

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in the human factors field have provided some valuable material addressing aviation operational issues. Some aviation research agencies will, on request, provide literature review services on selected topics. Additional references can be found in ICAO Human Factors Digest No. 7 (Circular 240).

10) At any time during an investigation, investigators must be willing to consult professionals outside their area of expertise. These professionals include, but are not restricted to, the following:

- i) Medical officers – to analyze the impact of any medical condition found in the flight crew or other relevant personnel;
- ii) Psychologists – to analyze the impact of environmental, operational, and situational factors on motivation and behaviour;
- iii) Sociologists – to evaluate the factors that affect interactions and performance;
- iv) Sleep researchers and professionals – to evaluate the quality of rest available to the individual, and the impact on performance of a particular work-rest duty cycle or of circadian factors; and
- v) Ergonomics – to assess the effect of design and layout on the user.

Data gathering guidelines

8.2.5.3.3.4 The following data gathering guidelines on the gathering of Human Performance information are based on the SHELL and LUC frameworks. These guidelines were designed to offer:

- a) some suggestions on how performance can be altered by these factors; and
- b) some guidance on areas to examine for sources of evidence.

8.2.5.3.3.5 In addition to the guide above, refer to the Bureau’s Human Factor Investigation Checklist (NSIB.01.12) for the SHELL Model components and interfaces to help investigators collect data to achieve a thorough human factors investigation.



8.3 ACTIVITIES AT THE SCENE OF AN ACCIDENT

8.3.1 Initial Measures at the Scene of the Accident/Incident

8.3.1.1 The Nigeria Police, Nigeria Civil Defense Corps, Federal Road Safety, fire service, or search and rescue services are likely to be the first to arrive at the scene of an aircraft accident/incident.

8.3.1.2 The Director-General/CEO has put measures in place to ensure cooperation with the above first responder organizations in the form of MoU/training to ensure the safety and control of accident/incident sites before and throughout the investigation. It is essential that important clues (evidences) are not lost through interference with aircraft wreckage in the initial stages of an investigation.

8.3.1.3 Local authority personnel are briefed on their responsibilities in aviation accidents/incidents by the Investigator-in-Charge or Bureau's investigators .

8.3.1.4 The Director-General/CEO should ensure the coordination of the needs of the Bureau in advance with the search and rescue center, the fire services. The investigator-in-charge is responsible for this.

8.3.1.5 Plans and arrangements are in place for the following essential tasks:

- a) notification to the rescue coordination centre;
- b) notification to the Bureau and other departments as required;
- c) protection of aircraft wreckage from fire and other damage;
- d) verification of the presence of dangerous goods (radioactive packages or poisons transported as freight, etc.) and appropriate protection measures;
- e) assigning guards to protect aircraft wreckage and evidence;
- f) the measures to preserve (photographs or other appropriate means) all evidence of a transitory nature of the wreckage and ephemeral evidence such as ice, snow or soot;
- g) obtaining contact information (names, telephone numbers and addresses) of all witnesses whose testimony could assist the investigation.

8.3.1.6 As far as possible, the wreckage should not be disturbed, moved before the arrival of the survey team.

8.3.1.7 The staff has the equipment (camera, video camera, GPS, drones, etc.) to photograph and map accident/incident sites.

8.3.2 Handling of Presumption of Unlawful Interference

8.3.2.1 Situation of unlawful interference with aircraft involves several areas; namely use of explosive devices (bomb), hijack, sabotage (installation of suspected unapproved parts on aircraft), suicide, etc. The following could be evidences to guide the investigator-in-charge to suspect that unlawful interference played a role in the aircraft accident:

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- a) Nature of damage of aircraft fuselage or structure suggestive of explosive activity;
- b) Nature of damage at the point of breakup of a fuselage or structure;
- c) Pieces of bomb / explosive materials on the wreckage;
- d) Maintenance records of the indicate use of suspected unapproved (counterfeit/bogus) part/component;
- e) Testing facility discovers the component/ part undergoing test/examination is a suspected unapproved part;
- f) Analysis of Flight Data Recorder recordings indicates flight maneuvers that are suggestive of deliberate accident (suicide), etc.

8.3.2.2 If, during the Bureau’s investigation, it appears or if it is suspected that an act of unlawful interference played a role in the accident or incident, the investigator-in-charge immediately informs the accredited representatives, Director of Engineering/ Director of Operations, Legal Adviser and the Director-General/CEO. The investigator-in-charge should provide as much information as is available relevant to unlawful interference such as the location of explosive device on board the aircraft, flight data analysis report, including pictures or video.

8.3.2.3 In the event of explosive devices, the Director-General/CEO in coordination with the Legal Adviser and the Head of Safety and Security Unit of the Bureau shall immediately notify the following entities using mobile calls:

- a) The judicial authorities (Nigeria Police and/or Corona); and
- b) The Nigeria Civil Aviation Authority, being the aviation security authority for Nigeria.

8.3.2.4 In the event of suicide, the Director-General/CEO in coordination with the Legal Adviser of the Bureau shall immediately notify the following entities using mobile calls:

- a) The judicial authorities (Nigeria Police and/or Corona); and
- b) The Nigeria Civil Aviation Authority, being the aviation security authority for Nigeria.

8.3.2.5 When during the investigation, factual elements emerge concerning the use of counterfeit or suspect aircraft parts (counterfeit or bogus parts/unapproved parts), the Director-General/CEO in coordination with the Director of Engineering shall immediately notify the Nigeria Civil Aviation Authority, providing as much information as available.

8.3.2.6 The procedures in this section is followed for any case when it appears to or is suspected that an unlawful interference has played role in the aircraft accident/incident.

8.3.2.7 The Director-General/CEO in coordination with the Director of Engineering and Director of Operations should discuss and decide on Bureau’s further actions, including the continuation of technical investigation to the extent necessary, cooperation and coordination with the judicial authorities in the event of a parallel investigation. The decision to should be communicated to the investigator-in-charge and the accredited representatives.

8.3.2.8 The investigator-in-charge should cooperate and coordinate with, and provide requested assistance to, the investigators of judicial authorities and will complete a Final Report of the

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occurrence, in accordance with Annex 13, keeping in mind continued cooperation with the judicial authorities. The investigator-in-charge should explain the Bureau's procedures and the criticality of preserving and documenting certain forms of evidence and timely readout and analysis of flight recorders. If any problems are encountered in this type of accident investigation, the Bureau's Director-General/CEO should be consulted.

8.3.3 Rescue Operations

8.3.3.1 The first thing that people who arrive at the scene of an aviation accident/incident must take care of is the rescue and assistance to survivors as well as the protection of property with the means available.

8.3.3.2 The location of survivors found in the aircraft and wreckage moved during the rescue is noted/recorded by the rescuers. When circumstances allow, the bodies of people who died in an accident are left in place until:

- a) their location and condition are noted;
- b) photos are taken; And
- c) a diagram indicating their location in the wreckage has been drawn up.

8.3.3.3 When the bodies are outside the wreckage, their location must be marked with stakes bearing an identification number. A corresponding tag should be affixed to each body, indicating where it was found. Proper recording of this data is essential to identify bodies and gather information that may assist investigators during the investigation.

8.3.3.4 When the bodies are removed from the wreckage before the arrival of the investigators, the investigators verify the application of the indications referred to in the previous paragraph. If this is not the case, investigators should interview personnel from the rescue services or other entities present at the site in order to gather the necessary information.

8.3.3.5 Investigators determine whether the wreckage was moved during salvage operations and note their findings in this regard.

8.3.3.6 Following the initial rescue operation, rescue personnel should take all necessary precautions to ensure that their movement does not destroy evidence necessary for the investigation.

8.3.3.7 Once the survivors have been rescued and the risk of fire eliminated, the movements of ambulances and fire engines along the tracks left by the wreckage are prohibited.



8.3.4 Safety at the Scene of the Accident / Incident

8.3.4.1 When informed of an accident, the investigator-in-charge immediately verifies that measures have been taken to protect the wreckage. These measures can be taken with the assistance of the police, military personnel or specially recruited civilians.

8.3.4.2 Before the start of the investigation at the site of the accident/incident, the investigator-in-charge consults the manifest (NOTOC which contains the information relating to the dangerous goods on board the aircraft) of the operator of the aircraft and verifies the presence of the dangerous goods on board the aircraft.

8.3.4.3 When it is suspected that the aircraft was carrying dangerous goods (radioactive materials, explosives, ammunition, corrosive liquids, toxic products, bacterial cultures, etc.) special precautions are taken to ensure that wreckage keepers are posted at an appropriate distance.

8.3.4.4 The risk analysis carried out by the investigation team in coordination with the experts and representatives of the services present on the site makes it possible to identify the measures to protect the health and safety of the workers, in particular the safety distance to be observed. Refer to Form NSIB.01.06- hazard and risk assessment of accident site.

8.3.4.5 This point is particularly important when there has been a fire, because contaminants tend to disperse in these circumstances. Signs indicating a potentially dangerous area shall be erected until experts, in consultation with the Investigator-in -Charge or the Bureau's Site Safety and Security Coordinator, have assessed the danger.

8.3.4.6 When arriving at the scene of an accident, one of the first tasks of investigators is to review safety measures. Guards must be fully aware of their duties, namely:

- a) protect the public from the hazards of the wreckage;
- b) prevent removal of wreckage (including aircraft bodies and contents);
- c) protect property;
- d) admit to the scene of the accident/incident only persons authorized by the Director-General/CEO or any other competent local authority;
- e) protect and preserve as far as possible the marks left on the ground by the aircraft and its components.

8.3.4.7 The designated investigator gives clear and precise directions to the people responsible for guarding the scene of the accident/incident (police force, NCSCDC, military, etc.) so that only people with appropriate identification are authorized to approach the site.

8.3.4.8 In the case of a large-scale investigation (major CAT 1), credentials with photo identification, pass/authorizations or armband are issued to authorized persons.

8.3.4.9 When the wreckage has not completely disintegrated, the site can be secured by cordoning with ropes/ tapes.

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8.3.4.10 However, when the wreckage has left long traces on the ground, protecting the site can pose enormous difficulties and require a large number of guards to cover the entire perimeter.

8.3.4.11 The police can provide valuable assistance by liaising with the surrounding communities, particularly with regard to the location of wreckage lying outside the perimeter. People living near the accident site are encouraged to report/notify if they discover items of wreckage, but they should also be aware that these items should be left in place.

8.3.4.12 The Investigator-in-charge ensures that isolated pieces of wreckage are not clumped together alongside the main wreckage when traces of where these items were discovered are not recorded. He ensures that arrangements are made to protect the elements of the wreck against souvenir hunters.

8.3.4.13 The wreckage is held until the Investigator-in-charge believes that all necessary evidence has been collected from the scene.

8.3.4.14 The investigator-in-charge reviews the situation periodically and organizes the gradual withdrawal of the guards, as required.

8.3.5 Keeping Records, Samples and Records

8.3.5.0.1 The investigator-in-charge shall ensure that the following records are secured and placed under protection:

- a) Flight recorders (FDR/CVR), if installed;
- b) All types of recording devices found on board belonging to the crew or passengers;
- c) All recordings and communication documents, including air traffic services (ATS) data considered to be associated with the flight; and
- d) Aeronautical meteorological data,.

8.3.5.0.2 The aircraft operator's documentation relating to the aircraft, the flight crew and the execution of the flight is kept in safe custody.

8.3.5.1 Securing Documentation

8.3.5.1.1 The documents required for the investigation also depend on the nature of the event.

8.3.5.1.2 After his/her appointment, the investigator-in-charge identifies, as soon as possible, the type of documents to be collected necessary for the investigation and the organizations to contact to obtain them.

8.3.5.1.3 He/she contacts, by telephone, e-mail or any other appropriate means available, the competent organizations (airline company, ATS, aerodrome operator, maintenance organization,

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foreign accident investigation authorities, NCAA, etc.) to obtain the documents necessary for the investigation.

8.3.5.1.4 Flight recorder data is systematically retrieved when the decision to open an investigation is taken. The Bureau has mobile download equipment to copy data from FDR and CVR without removing them from the aircraft, if there is no need to remove the flight recorders from the aircraft.

8.3.5.1.5 Air Traffic Services (ATS) communications recordings and flight documentation are secured and placed in a secure location as soon as possible.

8.3.5.1.6 The Bureau also oversees the examination of electronic equipment equipped with memory devices other than flight recorders, which may contain valuable information related to the accident/incident. Such as :

- a) the Quick Access Recorder (QAR);
- b) Full Authority Digital Engine Control (FADEC);
- c) the Equipment Condition and Usage Monitoring System (HUMS);
- d) satellite navigation units (e.g. Global Positioning System (GPS));
- e) the Global Navigation Satellite System (GNSS);
- f) ground proximity warning system (GPWS);
- g) Terrain Awareness Warning System (TAWS);
- h) flight management system (FMS), ATS radar;
- i) etc

8.3.5.1.7 Early identification of problem areas can allow the Director-General/CEO in coordination with the investigator-in-charge to make urgent safety recommendations needed to prevent recurrence of the occurrence.

8.3.6 Flight Recorder Processing

8.3.6.1 Decision to Remove a Flight Recorder

8.3.6.1.1 Investigators consider the following before requiring the removal of the CVR or FDR from an aircraft :

- a) Is the data from the recorder vital or useful to the investigation?
- b) can the data be obtained from other sources?
- c) can a suitable copy of the data be made without the recorder being removed from the aircraft?
- d) If a copy of the recordings cannot be made at the aircraft location, how long can the aircraft operate before the desired data is overwritten?

Note.- Removal of CVR for Incidents: ICAO Annex 6 states that “flight recordings shall not be disabled during flight time”. Additionally, the Minimum Aircraft Equipment List (MEL) does not allow an aircraft to fly with a flight recorder "voluntarily" removed or disabled. The Bureau could take an unacceptable

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risk if the CVR is removed and the operator continues to fly without a replacement having been installed since, if the aircraft subsequently experiences another event, there would be no recording of the CVR.

8.3.6.1.2 The Bureau’s Transportation Safety Laboratory has mobile download equipment with capability for download of flight recorders in-situ (while installed) on the aircraft.

8.3.6.2 Handling and Transporting Flight Recorders

8.3.6.2.1 Flight recorders are handled in accordance with the provisions of this section and the Bureau’s Transportation Safety Laboratory Standard Operating Procedures.

NO ATTEMPT TO MANIPULATE OR READ AN FDR OR CVR IN THE FIELD SHOULD BE MADE. DATA COULD BE DELETED OR DAMAGED.

8.3.6.2.2 Protect the recorder from strong magnetic fields. It is important to remember that an airport security x-ray transmitter can damage data.

Therefore, the investigator-in-charge in coordination with the Director-General/CEO should make prior arrangement with the management of the airport security to ensure the exemption of the flight recorders from passing through the x-ray screening machine.

8.3.6.2.3 If a recorder, tape, or solid-state memory unit is being mailed, please mark the package.

8.3.6.2.4 Do not open the recorder or allow anyone to remove the tapes or the solid-state memory unit.

8.3.6.2.5 **If the recorder is dry and in good condition** , use a shipping container obtained from the aircraft operator if possible. If not, pack it carefully for shipment, unless it is to be carried by hand. It is not necessary to pack an undamaged recorder for transport by hand.

8.3.6.2.6 **If the casing is broken** , do not remove the tape or solid-state memory unit from the device. Wrap the entire logger and its contents in polythene or similar material or heavy paper before packing for shipment.

8.3.6.2.7 **If tape reels or solid-state memory cards are separated from the unit** , wrap them in polythene or paper before applying the sealing tape. Never apply sealing tape directly to the recording medium. Do not remove the recording medium from the reels or from the case.

8.3.6.2.8 **If the recording is a tape and it is separated from the recorder** , try not to bend or crease it. Wrap it carefully on a spool or cardboard tube or something similar. Wrap it in polythene or paper and pack it carefully. Join all tape fragments, regardless of size. Never pack the tape randomly in a box or container. Data degrades easily; creases and wrinkles can cause electronic noise and permanent data loss.

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8.3.6.2.9 If flight recorders are in water, they should not be dried, but should be kept submerged in fresh or distilled water until designated flight recorder specialists assume responsibility. In order to prevent the recording medium from being damaged, please ensure that flight recorders that have been immersed in water do not dry out before reaching the recording laboratory. Ship them to the laboratory submerged in fresh or distilled water in sealed containers.

8.3.6.3 Digital Copying and Retention of On-Board Recordings

8.3.6.3.1 Where it is not possible to retain the recording material, a digital copy of the on-board recording must be obtained. A copy of all of the information in the recorder is preferred, but a copy of a defined segment of the recording can be obtained under certain circumstances.

8.3.6.3.2 Unless otherwise authorized by the Director-General/CEO, the data relating to the occurrence under investigation must be erased from the flight recorder after it has been downloaded to another medium for use in the context of this investigation.

8.3.6.3.3 On-board recordings in usable format must be stored electronically in the restricted access folder.

8.3.6.3.4 Anyone who has custody of on-board recordings must implement protective measures to prevent unauthorized persons from gaining access to them.

8.3.6.3.5 In the context of an investigation, the investigator-in-charge may grant access to an on-board recording to a third party whose expertise is necessary for its extraction or analysis, if the Head of the investigation office authorizes it .

8.3.6.3.6 When the Bureau is investigating an occurrence, no access to the on-board recordings is granted to the operator or the company.

8.3.6.3.7 Refer to the Bureau’s transportation safety laboratory standard operating procedures manual.

8.3.7 Removal of Wreckage and Personal Effects

8.3.7.1 Notwithstanding the requirement to preserve evidence, the Director-General/CEO or Designated Investigator may authorize the removal of wreckage, as necessary for the following purposes:

- a) extract people or animals;
- b) remove mail, valuables or dangerous goods carried by the aircraft for safekeeping;
- c) prevent destruction by fire or any other cause;
- d) prevent any danger or obstacle to the public, air navigation or other transport;

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8.3.7.2 If a request is received from the accredited representatives of the States of Design or Manufacture that the aircraft or its wreckage should not be disturbed until their arrival, the investigator-in-charge should oblige the request unless when it is not possible to do so due to need to salvage the aircraft/wreckage from further damage by fire, or the wreckage obstructs traffic or poses danger to public safety, etc.

8.3.7.3 If the wreckage is in the water, the aircraft or its contents may be removed, if possible, for transport to a safe place.

8.3.7.4 Detailed information regarding planning, equipment and procedures for the removal of disabled aircraft from airports is contained in the Airport Services Manual (Doc 9137), Part 5 – Removal of Disabled Aircraft.

8.3.7.5 Aerodrome operators have a procedure for removing accidentally immobilized aircraft approved by the civil aviation authority which incorporates the relevant provisions of Doc 9137 and the national regulations in force providing for the prior authorization of the [investigation office] before any removal.

8.3.8 Submerged Wrecks

8.3.8.1 Initial Measures

8.3.8.1.1 As soon as it is determined that the wreckage is in the water, the Director-General/CEO makes arrangements to obtain the best technical advice available.

8.3.8.1.2 Operations in a sea/river/lake is an expensive venture which require specific equipment, suitable and available ships/boats and experienced personnel, to be determined according to the circumstances.

8.3.8.1.3 The Bureau uses the services of the Navy, major Construction Companies (Julius Berger) or other organizations having specialized knowledge, including local Divers to locate and recover the submerged wreckage and the flight recorders. The Director-General/CEO has signed MoU with the Nigerian Navy and uses the accident investigation authorities of other States to identify the search organizations qualified for this type of activity.

8.3.8.1.4 Where the water is not very deep [less than 60 m (196 ft)] divers may be used for search and recovery of wreckage and side scan sonar to ensure their safety.

8.3.8.1.5 Where the wreck is in very deep water or where conditions are not conducive to the use of divers, the use of the following equipment is considered:

- e) underwater locator beacon detector used to locate underwater locator beacons (ULBs) or underwater acoustic basil (Pingers) of flight recorders;
- f) video cameras and cameras for taking underwater shots;

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- g) side scan sonar;
- h) submersibles with or without crew (remotely guided) used for the detection and mapping of submerged wrecks. (AUV – autonomous underwater vehicle; ROV – Remotely Operated Vehicle).

8.3.8.2 Decision to Salvage the Wreckage

8.3.8.2.1 The circumstances and location of the accident determine whether wreckage recovery is feasible and necessary.

8.3.8.2.2 The Director-General/CEO makes every effort (obtaining funding, the necessary personnel and specialized equipment, etc.) to recover a wreck when it contains clues useful to the investigation and when the lessons to be learned justify the expense and effort of the operation.

8.3.8.3 Breakdown of the wreckage

8.3.8.3.1 When the wreckage is located, the survey team draws up a map showing how the wreckage dispersed.

8.3.8.3.2 The condition of the various elements of the wreckage, their connection by means of cables or tubes, the severing of connections during search and rescue operations in particular must be noted before they rise to the surface.

8.3.8.4 Preservation of the wreck

8.3.8.4.1 The reaction rate of metals in sea/river/lake water varies according to the nature of the metal, the oxygen content and the temperature of the water.

8.3.8.4.2 Magnesium compounds react very quickly and unless recovered within the first few days, they can dissolve completely.

8.3.8.4.3 Aluminum and most other metals are less sensitive to immersion in salt water. However, corrosion accelerates rapidly when the wreckage item is removed from the water unless steps are taken to avoid it.

8.3.8.4.4 When the wreckage is recovered, its components must be thoroughly rinsed with fresh water. However, a fresh water rinse does not stop all forms of corrosion.

8.3.8.4.5 When a heavy aircraft is involved, it is sometimes impossible to apply all anti-corrosion measures to large structural components. However, all components requiring metallurgical examination must be subject to additional protection.

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protection can be provided by applying a seawater-displacing liquid; fracture surfaces must be coated with an anti-corrosion layer (oil or inhibited lanolin).

8.3.8.4.6nWhen organic deposits in the form of soot or stains are to be analyzed, the use of organic protective substances should be avoided.

8.3.8.4.7 The component should be rinsed with fresh water and then air dried. Once completely dry, it should be put in a plastic bag with desiccant/desiccant packets like silica gel.

8.3.8.4.8 Flight recorders should not be dried out; they should be kept in fresh water until the logger specialists take responsibility for them.

8.3.9 Retention and Return of Aircraft/Wreckage, Components or other Material Assets

8.3.9.1 Collection of Material Goods

8.3.9.1.1 The effectiveness of an investigation depends, in large part, on the examination and testing of physical assets, such as wreckage associated with an occurrence and components of an aircraft involved in the occurrence.

8.3.9.1.2 The Investigator-in-charge is responsible for the management of the occurrence site and is the only person who can authorize the removal of wreckage or any component of the aircraft or any other relevant material property involved in the occurrence.

8.3.9.1.3 The wreckage must remain in the custody of the Bureau until it is returned to the aircraft owner or owner's representative (or insurance company).

8.3.9.1.4 When retaining wreckage and/or parts of wreckage, the aircraft/wreckage and/or component retention form (NSIB.01.20) is filled in by representatives of the investigation team and the owner.

8.3.9.1.5 Aircraft items/components requiring detailed examination or testing are normally sent to an appropriate laboratory. The Investigator-in-Charge shall consult with the Director- of Engineering and the Human Resources and Admin department that in charge of logistics in support of operations before making any preparations or shipping material assets for examination or testing at a laboratory located outside Nigeria.

8.3.9.1.6 The investigator-in-charge ensures that all material assets collected and seized by the Bureau's investigators of the are properly listed in the investigation file.

8.3.9.1.7 The wreckage can be returned gradually, depending on the needs of the investigators in terms of testing certain components.

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8.3.9.2 Handling and Retention of Material Assets

8.3.9.2.1 Investigators ensure that measures are taken to protect all material assets held while they are under the responsibility of the Bureau.

8.3.9.2.2 The Investigator-in-Charge may grant supervised access to physical assets at the request of other government departments and agencies that conduct lawful investigations or research for purposes other than determining the causes and contributing factors of a transportation occurrence (e.g., regulators, coroners, and occupational health and safety agencies), so that they can gather necessary data and photos for their own purposes.

8.3.9.2.3 The Investigator-in-charge may grant supervised access to the physical assets held to accredited representatives, Minister's observers and other invited observers who participate in the investigation .

8.3.9.2.4 When such supervised access is granted, the investigator-in-charge imposes conditions and restrictions in order to maintain the integrity of the Bureau 's investigation .

8.3.9.2.5 Other outside persons who are not involved in the investigation will not have access to the physical assets that are under the responsibility of the Bureau.

8.3.9.2.6 Before proceeding with a test to destruction or irreversible disassembly of significant components, the investigator shall take all appropriate steps to invite the owner of the retained items and other persons or organizations who may reasonably expect to be entitled to witness such tests (e.g. manufacturer and maintenance organization).

8.3.9.2.7 Detained physical assets related to an investigation are retained until all appropriate tests and examinations have been conducted and documentation completed. Normally, these physical assets are disposed of during or after the analysis stage of the investigation. Material assets directly related to a fact established in the investigation could be kept until the Bureau has completed the examination of the observations presented by the persons named in the draft confidential report.

8.3.9.2.8 The Director-General/CEO may authorize the retention of particular material assets until the investigation is completed and the final report published.

8.3.9.2.9 The investigator-in-charge notifies the owner when retained items must be retained for more than one year.

8.3.9.3 Disposal and Return of Material Goods

8.3.9.3.1 The Bureau is not responsible for the removal or disposal of wreckage and other material property remaining at the occurrence site once the material property necessary for the [Investigation Office] investigation has been collected.

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8.3.9.3.2 For accidents to aircraft registered and operated by other States that occur in Nigeria, the Bureau shall facilitate the return of the aircraft, its contents or certain parts, as soon as they are no longer necessary for the investigation, to one or more persons designated by the State of Registry or the State of the Operator.

8.3.9.3.3 This provision is particularly important when dealing with minor damage to an aircraft that needs to be repaired and returned to service.

8.3.9.3.4 The wreckage and/or parts of the wreckage may be returned in part or in full, using the Aircraft/Wreckage and/or Component Return Form (NSIB.01.20) in which the accident and the aircraft are identified and information on the investigator-in-charge , the owner of the aircraft or his accredited representative is given.

8.3.9.3.5 When the wreckage is to be returned in its entirety, the Investigator-in-Charge signs the Aircraft/Wreckage and/or Component Release Form (NSIB.01.20) and obtains the signature of the aircraft owner or his representative who accepts the wreckage.

8.3.9.3.6 When only parts of the wreckage are to be returned, the Aircraft/Wreckage and/or Components Return Form (NSIB.01.20) lists the components that are returned and also those retained for further examination, with the appropriate signatures to trace the returned and retained parts.

8.3.9.3.7 Whenever part of the wreckage is returned, an Aircraft/Wreckage and/or Components Return Form (NSIB.01.20) is completed to document the transfer.

8.3.9.3.8 The investigator-in-charge obtains the prior agreement of all parties to the investigation, including the police, before it is transmitted to the owner of the aircraft or his representative.

8.3.9.3.9 The designated investigator coordinates this decision with the technical administrator and the head of the investigation office .

8.3.9.3.10 If the owner does not wish to have the material asset back, or if the owner cannot be identified or found, the Director-General/CEO will arrange for the proper disposal of the material asset.

8.3.9.3.11 The investigator-in-charge ensures that the disposal of all physical assets is recorded in the investigation file.

8.3.10 Autopsy and Medical Examinations

8.3.10.1 In the event of fatal accidents, the investigator-in-charge may request from the competent authorities a complete autopsy of the body of the fatally injured persons.

8.3.10.2 In the event of fatal accidents, the investigator-in-charge may request the competent authorities to carry out medical examinations on passengers, persons involved in the operation of the aircraft and air traffic control. This request for examination on the flight crew or air traffic controller

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can also intervene in the event of incidents related to an identified physical or mental incapacity problem.

8.3.10.3 The results of the said operations are communicated to the hospital or the doctor attached to the Bureau for processing in accordance with the code relating to civil aviation.

8.3.10.4 The Director-General/CEO has signed a memorandum of understanding with University of Abuja Teaching Hospital in order to have access to health experts whenever necessary during its activities. The Director-General shall ensure the medical experts are given relevant training in aviation medicine and accident investigation.

8.3.10.5 When a judicial investigation is opened, coordination with the judicial authorities is required. If an autopsy or a medical examination has been commissioned by the judicial authority and the investigator-in-charge considers that its results could be relevant for the continuation of the technical investigation, he makes a request to the judicial authority for their transmission, through the Director-General/CEO and with the support of the doctor concerned. The Director-General has signed MoU with the Judicial authorities in this regard to ensure the investigator-in-charge is given a copy of the report of the autopsy commissioned by the judicial authorities.

8.3.11 PROTECTION AND USE OF WITNESS STATEMENTS

The effectiveness of investigations depends, in part, on the collection and processing of witness statements.

8.3.11.1 Protection and Use of Witness Statements

The name, identity and statements of witnesses are protected and will not be released by the Bureau unless the witness consents in writing or unless the competent authority administering balancing test (High Court) orders the Bureau to do so.

The investigator-in-charge shall ensure that notes taken by the persons conducting the interview are collected and made part of the report of the witness sub-group.

8.3.11.2 Use of Testimony in Bureau's Final Reports

In its final reports, the bureau favors formulations that do not allow witnesses to be identified.

The Bureau's final reports and communication releases do not contain direct references or citations of witness statements.

Exceptionally, if testimony is essential to support a fact established by the Bureau and if it is impossible to transmit the required information without providing details which could lead to the

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identification of a witness, the Bureau may include such testimony in a final report if it considers this necessary in the interest of transport safety.

8.3.11.3 Disclosure of Witness Statements

8.3.11.3.1 The Investigator-in-charge in coordination with the Legal Adviser and with the approval of the Director-General/CEO may provide witnesses with a copy of their statements if they request it in writing. In such a case, the witnesses are advised that the Bureau cannot ensure the protection of their statements.

8.3.11.3.2 Only witnesses can request a copy of their statements. No other person or third party may request a copy of a witness statement.

8.3.11.3.3 When it receives an access to information (Freedom of Information) request to obtain a copy of a witness statement, the Director-General/CEO in coordination with the Legal Adviser notifies the witness of this request and asks for consent of the witness for the release of the requested witness statement. The witness gives consent in writing.

8.3.11.3.4 When the witness does not consent to the disclosure of his statement, the Director-General/CEO continues to ensure the protection of the statement of the witness and does not disclose it.

8.3.11.3.5 When, in the context of legal proceedings, one of the parties requests the disclosure of witness statements, the notifies the witnesses. The Director-General/CEO always opposes this type of request.

8.3.11.3.6 When a court or coroner orders the production of witness statements, the Director-General/CEO in coordination with the Legal Adviser will require confidentiality orders limiting the use of those statements.

8.3.11.3.7 When a court or a coroner orders that statements be disclosed, the Director-General/CEO in coordination with the Legal Adviser notifies the witnesses.



8.4 COOPERATION WITH THE MEDIA

8.4.1 All major aircraft accidents and most small accidents generate a high degree of interest from the public and the media. A good rapport with the media is usually an asset to the investigation. It may be necessary to enlist the cooperation of the local media to withhold precise details of the location of an aircraft accident until adequate crowd-control measures can be implemented. It may also be necessary to enlist the aid of the media in obtaining further information about the local area, the names of possible witnesses or when seeking the public's assistance in recovering missing pieces of the aircraft wreckage.

8.4.2 To promote dissemination of factual information and to minimize speculation and rumour about the accident, the Bureau will provide the media, on a regular basis, with details of the progress of the investigation and facts that can be released without prejudice to the investigation. For this reason, the IIC and the Bureau will establish a single point of contact for media inquiries. This contact is usually the Director-General/CEO or a person designated by the Director-General/CEO. The Bureau, in consultation with the Accredited Representatives, should provide non-prejudicial facts and circumstances to the media. Nevertheless, it is necessary to ensure that the needs of the media do not interfere with the proper conduct of the investigation. The media should be informed that a preliminary (factual) report will be released about 30 days after the accident.

8.4.3 Other agencies and organizations involved or affected by the accident (such as airlines, airport authorities, emergency services, and aircraft manufacturers) may also need to release information to the media about their involvement, and such efforts should be coordinated, to the extent possible, among the agencies and organizations involved. Nonetheless, the Bureau is the primary point of contact and the only organization permitted to release information on the progress and findings of the investigation.

8.4.4 For accident investigations outside the country and conducted by other States, the Bureau-appointed Accredited Representative and his/her advisers participating in the investigation shall not give the media or the public access to any information or documents obtained during the investigation without the express consent of the State conducting the investigation. The release of such information by the Bureau or other Nigerian officials, without the consent of the State conducting the investigation, would undermine the mutual confidence and cooperation among the States involved and must therefore be avoided.

8.5 DEALING WITH FAMILIES OF ACCIDENT VICTIMS

8.5.1 *ICAO Policy on Assistance to Aircraft Accident Victims and their Families* (Doc 9998), the *Manual on Assistance to Aircraft Accident Victims and their Families* (Doc 9973) contain internationally accepted guidance and practices for States to follow when dealing with aircraft accident victims and their families and *ICAO Circular 285 Guidance on Assistance to Aircraft Accident Victims and their Families* contains internationally accepted guidance and practices for States to follow when dealing with aircraft accident victims and their families.

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8.5.2 Victims and their families are not permitted to participate in the investigation; however, Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, paragraph 5.19.7, “Participation of States having suffered fatalities or serious injuries to its citizens”, provides certain rights and entitlements to States, which have a special interest in an accident by virtue of fatalities or serious injuries to its citizens. Specifically, such States, upon making a request to do so, are permitted to appoint an “expert”, who shall be entitled to:

- a) visit the scene of an accident;
- b) have access to the relevant factual information, which is approved for public release by the State conducting the investigation, and information on the progress of the investigation;
- c) Assist in the identification of victims;
- d) Meet with surviving passengers who are citizens of the expert’s State; and
- e) receive a copy of the Final Report.

8.5.3 This should not preclude the State from also assisting in the identification of victims and in meeting with survivors from that State.

8.5.4 These provisions do not permit the appointed expert to actively participate in the investigation.

Note.— For accidents that occur outside country that involve Nigerian citizens, it may be necessary for Nigeria to send experts to assist the other State with the identification of victims. This task is not directly related to accident investigation and does not fall under the mandate of the Bureau. Although the Bureau may not be required to provide an expert(s) for this task, the Bureau should encourage the relevant Nigeria’s foreign affairs authorities and personnel to provide such assistance, normally through the Nigerian Embassy in the other State.

8.5.5 Annex 9 *Facilitation*, Chapter 8, Section I *Assistance to aircraft accident victims and their families*, contains SARPs related to States’ obligations to facilitate entry into their territory, on a temporary basis, of family members of victims of aircraft accidents. Nigeria will extend all necessary assistance, such as issuing emergency travel documents, arranging transport, and clearing customs for families of aircraft accident victims.

8.5.6 The general responsibilities for dealing with the families and aircraft accident victims lie with the airline (operator), which should have in place a plan for dealing with families and victims of aircraft accidents. However, the Bureau will provide oversight of such activities. Therefore, the Bureau will establish liaison with relevant family members, or their representatives, to facilitate the provision of briefings on the investigation findings and the progress of the investigation, release of human remains, release of personal effects held as part of the investigation to the families and the accident so far as it is practicable, and to facilitate the necessary access for other States’ experts, in accordance with the provisions of Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, paragraph 5.19.7, and ICAO *Manual on Assistance to Aircraft Accident Victims and their Families* (Doc 9973). The Bureau will coordinate with relevant agencies such as police, judicial authorities, medics, NEMA, the Airline Operator and the airport authority to facilitate these.

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8.5.2 Provision of Information to Aircraft Accident Victims and Their Families

8.5.2.1 Upon receipt of the notification of an accident and decision to conduct the investigation, the Duty Officer will call by phone the contact person of the aircraft operator involved (refer to the list of airline operators in Nigeria for contact information of the person in charge of the operator's family assistance plan within two (2) working days from the date of receipt of notification. The Duty Officer will pass the information to the investigator-in-charge of the investigation.

8.5.2.2 The Bureau's Duty Officer will call the operator's family assistance contact person to request the relevant information on all persons on board as soon as practicable but not later than five (5) days from the date of receipt of the notification. The person in charge of the operator's family assistance plan shall provide to the investigator-in-charge relevant contact information of victims and their families and the Duty Officer should pass it to the investigator-in-charge as soon as the information is collected

On the other hand, the investigator-in-charge will - while carrying out the initial actions at the accident site- call the operator's family assistance contact person to request the relevant information on all persons on board and pass it to the Duty Officer as soon as the information is collected.

8.5.2.3 The Director-General/CEO in coordination with the investigator-in-charge will determine the channel to be used for the first interaction with victims and families within five (5) working days after the accident.

Note: When the first interaction takes place through a face-to-face meeting, close coordination must be maintained with the operator (especially in relation to logistical issues) and the Bureau's team (IIC and the Family Assistance Coordinator).

8.5.2.4 The Director-General/CEO in coordination with the investigator-in-charge will conduct the first interaction with the victims and their families either by:

- a) Face-to-face meeting to be conducted within the first fifteen (15) days after the accident.

Note 1: Unless there is a special request from the victims and / or their families, or a request from the operator with the consent of the victims and their families, all face-to-face meetings will take place at the facility determined by the Director-General/CEO.

Note 2: When adopting face-to-face meetings for interaction, the Director-General/CEO should ensure close coordination is maintained with the investigator-in-charge, Director of Human Resources Department (for the purposes of organization), the operator and the Nigeria Civil Aviation Authority.

Note 3: After a face-to-face meeting, a documentary record must be made to be filed at the time of the investigation and which shall contain, at least: the date, time and place of the meeting, the list of presence of the victims and family, and an extract from the information disclosed at the event.

- b) Bureau's Website: Within 20 working days after the accident, being all victims and families previously informed of the date of the publication, either by e-mail or by phone.

Note: All information to be released for victims and families shall be sent to the Head of ICT by email, with copy to the IIC, at least three (3) working days in advance of the publication date.

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8.5.2.5 The Director-General/CEO in coordination with the investigator-in-charge will determine, within twenty (20) working days after the first interaction, the channel to be used for the subsequent interactions, by assessing:

- a) the pace of the investigation
- b) the availability of the Director-General/CEO or the investigator-in-charge
- c) the availability of victims and families, and
- d) the effectiveness of each of the authorized channels

8.5.2.6 Subsequent interactions will be conducted by the Director-General/CEO in coordination with the Bureau's team in accordance with the selected channel, each one observing the following criteria:

- a) Face-to-face meetings - To be conducted in periods of not less than ninety (90) days from the previous meeting.

Note1: Unless there is a special request from the victims and/or their families, or request from the operator with the consent of the victims and their families, all face-to-face meetings will take place at the facility determined by the Director-General/CEO.

Note 2: When adopting face-to-face meetings for interaction, the Director-General/CEO should ensure close coordination is maintained with the investigator-in-charge, Director of Human Resources Department (for the purposes of organization), the operator and the Nigeria Civil Aviation Authority.

Note 3: For each face-to-face meeting, a documentary record must be made to be filed at the time of the investigation and which shall contain, at least: the date, time and place of the meeting, the list of presence of the victims and family, and an extract from the information disclosed at the event.

- b) Bureau's Website: to be published within ten (10) working days after the appearance of relevant information, and every 2 months if no relevant information appears, being all victims and families previously informed of the date of the publication, either by email or by phone.

- c) Telephone: within five (5) working days after the appearance of relevant information.

Note: All interactions made by telephone shall be registered and maintained in the electronic folder of the investigation.

- d) E-mail: within five (5) working days after the appearance of relevant information, through a standardized message to ensure that each recipient receives the same information.

Note: All interactions made by e-mail shall be archived in the electronic folder of the investigation.

8.5.2.7 The Director-General/CEO in coordination with the investigator-in-charge will decide on any special requests for interaction (for example, unplanned interaction, use of a channel other than the established one, meeting in a location other than the place determined by the Director-General/CEO in coordination with the Bureau's team, etc.) of victims and families, the operator or other sources within ten (10) working days after receiving the formal request.

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Note: The decision shall be made considering, among other aspects, the pace of the investigation, the availability of the Director-General/CEO, the availability of the investigator-in-charge, the availability of victims and families, the impact of the accident in the media, the available budget, and the logistical support from the operator.

8.5.3 Publication of the Final Report

8.5.3.1 Information on the investigation

This information on the progress of the investigation is provided either in response to a request from families or to inform them on the occasion of the anniversary date of the occurrence. It is carried out by the legal adviser in consultation with the investigator-in-charge.

8.5.3.2 Publication of the Final Report

8.5.3.2.1 If the investigation report is technically complex and contacts with relatives show that they will have difficulty understanding it or if they request it during the investigation, a presentation meeting is offered to them. This is held on the premises decided by the Director-General/CEO prior to the publication of the final report.

8.5.3.2.2 These meetings are prepared and led by the investigator-in-charge or designated investigator as appropriate with the support of the Director of Human Resources and administration.

8.5.3.2.3 If not, the report is sent by e-mail to the relatives on the day of its publication on its site. This dispatch is made by the Legal Adviser who will have taken care to announce it to the relatives a few days before.

8.5.3.2.4 However, when the investigator-in-charge or designated investigator has been in contact with victims, in the event of a non-fatal accident, or relatives of victims to collect their testimonies, he/she can, if he/she wishes, inform them of the publication of the report. Otherwise he/she makes sure that the Legal Adviser has the contacts of the people to whom the report is addressed.

8.5.3.2.5 When the accident is fatal and the Bureau has no address of the relatives, the report is published without any particular information in advance.

8.6 CO-ORDINATION WITH EXTERNAL RESOURCE PERSONNEL AND FACILITIES

8.6.1 The Bureau typically extends participation to those individuals and organizations that can provide the necessary technical assistance to the investigation. Such may include the aircraft Operator, Civil Aviation Authority, Airports Authority, approved hospitals, Military, Police, International Red Cross etc. To facilitate this, the Bureau uses the instrumentality of agreements or MoUs as the arrangement in place prior to the accidents.

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8.6.2 The personnel from these organizations are co-opted on part time basis when the need arises in the investigation of an accident. The personnel from the Operator usually serve as ‘*Technical Observers*’ in the investigation. Requests for the personnel to be co-opted are made through letters to the relevant organizations. Such organizations should ensure that these personnel are relieved of their regular duties. Personnel co-opted from these organizations will be responsible to the IIC to avoid any possible conflict of interest during the investigation.

8.6.3 The Civil Aviation Authority cooperates with the Bureau’s investigation and takes immediate regulatory action as necessary to prevent a recurrence.

8.6.4 The Airports Authority in conjunction with other medical institutions/facilities usually provides expeditious assistance in the areas of rescue/firefighting, medical personnel, mortuaries and wreckage storage. Also autopsy of examination of flight crew and where the need arises, of fatally injured passengers and cabin attendant is usually carried out by pathologists preferably experienced in accident investigation.

8.6.5 Furthermore, when appropriate, medical examinations of the crew, passengers and involved aviation personnel are conducted by physicians, experienced in accident investigation, the autopsy and medical examinations conducted are usually expeditious and complete. Police, City Firefighters, National Emergency Management Agency (NEMA), Military Personnel, Red Cross and other Agencies also provide assistance at the scene but are not made parties to the investigation. The Bureau may from time to time enter into Memorandum of Understanding (MoUs) with these agencies.

8.7 TECHNICAL EXPERTISE FROM FOREIGN PARTNERS

8.7.1 In carrying out an investigation, the Director-General/CEO may source for technical expertise from where they are available when such expertise is lacking in the Bureau.

8.7.2 The areas of expertise in consideration includes the following:

- a) Human factors specialist;
- b) Engine design specialist;
- c) Aircraft design specialist;
- d) Aircraft structures specialist;
- e) material scientist;
- f) Fire/explosives specialist;
- g) Aircraft/engine maintenance specialist;
- h) Check airman; etc.

8.7.3 In order to achieve this, the Director-General/CEO has entered Memorandum of Understanding (MoU) with other accident investigation authorities. For example, the Director-General/CEO has signed MoU with BEA of France, AIB of Saudi Arabia.

8.7.4 Requests for such assistance are normally sent by the quickest means possible usually through electronic means, such as email, which can be followed by phone calls.

8.7.5 Normally, In the spirit of international cooperation to enhance safety, the accident investigation authorities of member States are always willing to offer technical expertise to the needy States. The Accredited Representatives of the States of Design and manufacture are normally accompanied by technical advisers nominated by the organizations responsible for type design and final assembly of aircraft/ engines.

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CHAPTER 9

9.0 TESTS AND COMPONENT EXAMINATIONS

9.1 LABORATORY TESTING OF AIRCRAFT SYSTEMS AND COMPONENTS

9.1.1 In many cases, specialist examinations or testing of specific components will be required. Although the Bureau has established its material laboratory, in the meantime, the laboratory is not fully functional. The Bureau depends on facilities and expertise of other States' investigation authorities for testing and analysis of aircraft components. It is expected that the other States whose facilities will be used for the testing or examination of the aircraft parts or components should ensure the movement of such part or parts is effected without delay.

9.1.2 If the investigator-in-charge determines that specialist examination or testing of specific components is required, the investigator-in-charge should ensure close coordination with the judicial authorities in the event of parallel investigations before, the removal of any part of the wreckage. For components requiring destructive testing, it may be advisable to obtain written authorization from both the owner of the aircraft and the insurance company.

9.1.3 The same policies and procedures for tests and component examinations as used for the accident site phase of the investigation will be followed. The ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part I, paragraph 5.7, contains guidance on planning specialists' off-site examinations of components.

9.1.4 Specialist examinations may range from a scanning electron microscope (SEM) examination of a failed part to chemical analysis, and/or aircraft systems testing or flight testing.

9.1.5 The Director-General/CEO in coordination with the investigator-in-charge may give consideration to using the component manufacturer's facilities where specialized equipment and trained personnel are readily available. However, this should require close supervision by the Bureau's Air Safety Investigators, or by Investigators designated by the State in whose territory the facility is located on behalf of the Bureau to ensure that there is no real or perceived conflict of interest.

9.1.6 All activities, particularly disassembly and testing phases, should be documented and photographed for evidence purposes.

9.1.7 Examinations by specialists may also be necessary to read and decode information from other electronic devices, such as satellite navigation equipment (GPS, GLONASS, GPWS, TAWS, FMS, etc.).

9.1.8 Laboratory testing should not be limited to standard tests. In addition to testing for compliance with appropriate specifications, it may sometimes be necessary to determine the actual properties of the specimen (such as metal, material, fuel and oil). Occasionally, it is necessary to devise special tests that fully exploit the components capabilities. A wide range of specialized testing equipment permit simulation of a variety of malfunctions.

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9.1.9 When Air Safety Investigators send failed parts or components for laboratory testing, they should provide as much information as possible relative to the circumstances contributing to the failure of such parts or components, including their own hypotheses/suspicions. The information provided by the Air Safety Investigator is intended only as a guideline to the specialist who should, nevertheless, explore all relevant aspects. It is not sufficient for a Safety Investigator to send parts for specialist examination with the innocuous instructions “for testing”.

9.1.10 The Air Safety Investigator should provide a detailed history of the part or component, covering such items as:

- a) the date it was installed on the aircraft;
- b) the total number of service hours;
- c) the total number of hours since the last overhaul or inspection;
- d) previous difficulties reported; and
- e) any other pertinent data that might shed light on how and why the part or component failed.

Note.— If not accompanied by a Bureau’s Safety Investigator, the investigator-in-charge shall make arrangements for supervision by a Safety Investigator from the State where the testing is to take place, or a Safety Investigator from another State, or properly designated independent person.

9.1.11 In order to preserve evidence, it is essential that failed parts and components requiring specialist examination be extracted from the wreckage with care. Consultations with experts from the aircraft manufacturers and airlines should be held to ensure proper decisions. Aircraft systems, whether mechanical, electrical, hydraulic or pneumatic, will be removed in sections as large as practicable. Relevant sections should preferably be dismantled rather than cut off. Paint smears, which are often extremely important in collision accidents and in-flight failures, require protection. This also applies to smoke or soot smears.

9.2 PRACTICAL ARRANGEMENTS

9.2.1 The nature of the specialist examinations and the type of components and systems to be tested should determine the facility to be chosen.

9.2.2 The air safety investigator must be confident that the facility chosen is capable of providing the required examination and testing.

9.2.3 Prior arrangements should be made with the facility as far in advance as practicable so that the management of the facility can plan the tests and assign personnel and equipment.

9.2.4 When choosing a system and components for specialist examination and testing, the air safety investigator should ensure to include as many components of the system as practicable, e.g. wiring harnesses, relays, control valves and regulators. Tests conducted on a single component should reveal

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information about the operation of that particular unit only, whereas the problem may actually have been in one of the related components. The most valid test results should be obtained by using as many of the original system components as possible.

9.2.5 Each component should be tagged with its name, part number, serial number and the accident identifier. The Safety Investigator should maintain a listing, descriptive notes and photographs of all components, which are to be tested; the components themselves should be kept in protective storage until ready for shipment.

9.2.6 Components should be packaged in a manner to minimize damage during transport. Particular care should be taken to ensure that fracture surfaces are protected by appropriate packing material so that surfaces coming into contact with each other or with other parts do not suffer any damage.

9.2.7 Whenever possible, power plants should be shipped in their special stands and containers. Other heavy components, such as flight control power units, stabilizer screw jack assemblies and actuators, should be packed in protective wrapping and placed in separate wooden containers. Blocks or bracing should be installed inside the containers to prevent any movement of the component during transport.

9.2.8 Smaller and lighter components should be shipped in the same manner with more than one to a box, but in a way which should prevent them from coming into contact with one another. Very light units should be packed in heavy corrugated pasteboard cartons with packing material sufficient to prevent damage from mishandling during transport.

9.2.9 The air safety Investigators should label all boxes and cartons appropriately and should make an inventory list for each container.

9.2.10 Occasionally, it may be necessary to send a part, or parts, of a damaged aircraft to another State for technical examination or testing. In accordance with Annex 9 *Facilitation*, Chapter 8, Section B, each State concerned shall ensure that the movement of such part, or parts, is effected without delay. The States concerned shall likewise facilitate the return of such part, or parts, to the State conducting the investigation.

9.3 NOTES AND TEST RESULTS

9.3.1 Prior to conducting the examinations and tests, the Safety Investigator(s) and the facility personnel involved should be briefed on the type and extent of the tests to be carried out and should review the test procedures to ensure their adequacy. Basically, a written test plan should be prepared and agreed to by all participants before proceeding with any testing. The test plan becomes a written record of the planning and conduct of the component investigation.

Note.— A good technique for developing a test plan is to ask the manufacturer of the component to prepare a draft test plan protocol, which should then be reviewed and agreed upon by all participants in the examination. However, the final decision on the test plan rests with the Bureau.

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9.3.2 A test /exam plan writing is prepared and accepted by all participants prior to any testing. It specifies in particular:

- a) The date, time and place of the examination;
- b) The organization responsible for carrying out the examination;
- c) List of review participants and responsibilities;
- d) The methods/techniques and procedures for carrying out the examination
- e) The procedures for monitoring/monitoring the examination; And
- f) Provisions relating to the confidentiality of information.

9.3.3 Any discrepancies found during testing should be photographed and documented with an explanation as to their bearing on the operation of the system or component. It should be kept in mind that the tolerances called for in the test procedures may only apply to new or overhauled components and that components which have been in service for some time may have acceptable limits outside these tolerances.

9.3.4 If the nature of the discrepancy so warrants, a component should be disassembled following completion of the tests to ascertain the cause of failure. Photographs should be taken of the parts prior to and during disassembly, and the findings should be documented in writing.

9.3.5 Consideration should be given to x-ray components before disassembly if the position of springs, contacts, etc., could be lost during the disassembly.

9.3.6 Off-scene tests and examinations should be completed under the same rules and procedures for the on-scene phase, which excludes non-technical personnel. However, in some cases, other personnel, not part of the investigation team, may be ordered to participate or observe by a judicial authority. In such cases, Safety Investigators must ensure that they do not discuss their opinions, or make comments on any findings or analyses in the presence of these non-technical third parties.

9.3.7 If insurance loss assessors or other parties, who are not part of the investigation team, have been approved to attend and observe the disassembly, the Safety Investigator and test facility personnel must take extreme care. Findings and analyses should not be discussed in the presence of non-investigation personnel, because they may use such information inappropriately.

9.3.8 Following completion of the testing, the Safety Investigator(s) and facility personnel should review and discuss the results. When there is agreement that the data gathered present a true and factual picture of the condition and capabilities of the components, the notes and test results should be reproduced into field notes to serve as a record of the examination and testing of the system or component.

9.3.9 The air safety investigator shall submit report of the tests/examinations carried out to the investigator-in-charge as appropriate which should be the recording medium for information relating to the tests and examinations of components/ parts.

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CHAPTER 10

10.0 WRITING FINAL REPORT AND MAKING SAFETY RECOMMENDATIONS

10.1 GENERAL

10.1.2 The Nigerian Safety Investigation Bureau will issue a Final Report for all investigations. The format and content of the Final Report should be in accordance with guidance contained in the Appendix 1 to Annex 13 and in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV *Reporting*. The circumstances of an occurrence and the safety issues involved should determine the size and scope of the Final Report. For all occurrences involving aircraft registered, operated, designed, or manufactured outside Nigeria, full adherence to the ICAO format should be maintained. In accordance with Annex 13, the report should be clear and concise.

10.1.2 The circumstances of an event and the safety issues involved determine the size and scope of the final report (refer to 5.4.2.1.2 for classification of the occurrence and 5.4.2.2 for determination of the scope and extend of an investigation).

10.1.3 After the completion of the field phase of the investigation, the Investigator-in-charge (IIC) should develop a report completion schedule that includes target dates for completion of the Final Report. Target dates should be consistent with the complexity of the safety issues involved in the occurrence. The general target date for completion of “Minor” CAT 1 occurrence investigations with minimal safety issues is not more than six months from the date of the occurrence. The target date for completion of “Major” CAT 1 occurrences with complex safety issues is usually twelve months, or as soon as possible.

10.1.4 Within [thirty (30) days] following the opening of an investigation into the accidents and serious incidents, the Director-General/CEO publishes a preliminary report based on the factual data collected. This report is transmitted in particular to the States concerned and to the ICAO.

10.1.5 If for some reason the Final Report cannot be made publicly available within twelve months, the Director-General/CEO will make an interim statement publicly available on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues raised. The Director-General/CEO may also issue interim reports and/or safety recommendations, at any time deemed necessary to highlight any safety issues that may be of interest to other States and/or organizations.

10.2 TRACKING OF OPEN INVESTIGATION REPORT

10.2.1 The status of all open or ongoing investigations are monitored using Microsoft Excel (Spreadsheet) Gmail tracking of the progress of the investigation to indicate their anniversary dates. The up-to-date status of each ongoing investigation should be reported by the IIC during the monthly reporting to management for its review meetings.

10.2.2 The on-going or open investigations are also subject to Gmail investigation report tracking, which is setup to send email alerts to selected recipients on the attainment of 14 days to the target

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dates set for issuance of Preliminary Report, Investigation Report Completion (Target) dates, 60-days Consultation with stakeholders and Interim Statement due date. Normally, key management staff, the concerned IIC and investigation team members are the recipients of the Gmail alerts.

10.2.3 The Bureau has established an accident and incident database that is used as a means of tracking the status of open investigations. The Director of Engineering is responsible for updating and maintenance of the database. The Director of Engineering or an authorized officer of the Bureau will conduct a monthly review of the database to identify all the open investigations that are one month to their anniversary. The Director of Engineering or an authorized officer of the Bureau will direct the concerned IIC to draft an Interim Statement, detailing the progress of the investigation and any safety issues that are raised. The Director-General shall make the Interim Statement public on the anniversary of the date of occurrence.

10.2.4 In addition, if during monthly reporting to management for review of all open investigations, it appears that for some reason the target date for releasing Final Report within 12 months cannot be feasible, the Director of Engineering or an authorized officer of the Bureau will request the concerned IIC to draft an interim statement to be made publicly available on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues that are raised.

10.3 REVIEW MEETINGS

10.3.1 Technical Review

10.3.1.1 Once the investigation is complete and all group reports and other factual data are available, the Director-General/CEO or any officer designated by the CEO should convene a technical review meeting at which all of the factual materials collected during the investigation should be reviewed one last time, before the writing of the Final Report is initiated. Accredited Representatives and their advisers, and other parties that participated in the investigation have one more opportunity to ensure that the factual record of the investigation is complete, objective, and accurate. The IIC should attempt to achieve full concurrence with all of the factual material before moving to the Final Report writing phase.

10.3.1.2 In some “minor” accident cases, the technical review meetings could be held by conference call or by email and correspondence. However, for major airline accidents with complex safety issues, a full technical review meeting should be convened.

10.3.1.3 At the completion of the technical review, if full concurrence about the factual data collected cannot be reached, the investigation may need to be re-opened to resolve disagreements. Any unresolved differences should be noted in the factual record of the investigation.

10.3.2 Investigation Planning Meeting

10.3.2.1 Subsequent to the field phase, significant investigation work remains, and the Investigator-in-charge must work diligently to maintain and manage the progress of the investigation. In general, the post-field phase involves:

- a) the continued collection and validation of evidence;

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- b) the examination of all pertinent personnel, company, aircraft, facility, government and other records;
- c) the examination of selected wreckage in the laboratory;
- d) the testing of selected components and systems;
- e) the reading and analysis of recordings; the conduct of further interviews; the determination of the sequence of events;
- f) the analysis of all investigation information; and completion of technical and group reports, if any.

10.3.2.2 The post-field phase can take many months, depending on the size and complexity of the investigation.

10.3.2.3 It is always a challenge to ensure that the investigation continues to progress following the field phase, for the most part because the members of the investigation team are no longer centrally located, and subject matter expertise is no longer readily available. As a result, the group chairpersons and the Investigator-in-charge will have to increase their efforts to maintain communication with team members and to ensure that investigation tasks are completed on time.

10.3.2.4 In this regard, the Investigator-in-charge should have frequent, regularly scheduled, decision oriented team meetings, and have additional meetings for significant issues or for issues that will require a change to the investigation plan.

10.3.2.5 Specifically, it is prudent for the Investigator-in-charge to convene an investigation planning meeting soon after the team returns from the accident scene. The meeting should be attended by the group chairmen and senior management and should provide for a discussion of the scope of the investigation, the primary issue areas, and the scheduling of future investigative tasks. All team members should understand that they do not have to wait for a meeting to communicate significant, new information.

10.3.2.6 Thus, investigation planning meeting should develop investigation project with timelines on Excel Spread Sheet covering all activities from date of occurrence to publishing the Final Report. This should be communicated to management and all investigation team members.

Note - To ensure the continued progress of the investigation, the Investigator-in-charge should ensure that all team members regularly refer to the Investigations Management System Event Flow Chart and the applicable sections of the Investigations Management System Event Checklist.

10.3.3 Management Review

10.3.3.1 Initial Management Meeting

10.3.3.1.1 In the first week after occurrence, the management should hold initial meeting with all available investigation team for brainstorming on investigation activities (and alternatives with pros and cons), evaluation of activities and making decisions.

10.3.3.1.2 The meeting should focus on:

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- a) purpose of the investigation;
- b) possible findings;
- c) cost estimates in terms of man-hour and finance required;
- d) whether to transfer the investigation of the occurrence to NCAA; and
- e) decide on investigation plan - WHO, HOW, WHERE, WHEN will it be ready/ finalized with time frame and milestones

10.3.3.2 Management Monthly Follow-up Review

The management a monthly follow-up meetings with all investigators-in-charge of open/ active investigations to brief management on the following:

- a) oral as well as short written progress report on all on-going investigations
- b) review accuracy of planned investigation time frame
- c) identify needs for more or other resources
- d) take measures to get a delayed/lagging investigation back on track
- e) allocate more resources

10.3.3.3 Investigation Quality Follow-up

10.3.3.3.1 Three (3) months after publishing the Final report, there should a quality review of the investigation process and layout of the final report vis-a-vis findings, causes and safety recommendations.

10.3.3.3.2 The investigation team and one (1) independent investigator should carry out the quality review. The review should ask the following questions:

- a) What was good and not so good?
- b) What should we have done differently?
- c) Was the allocated time frame reasonable?
- d) Was the cost reasonable?

10.3.3.4 Annual Bureau Quality Follow-up

The Bureau should conduct analysis of all investigation quality follow-ups to:

- a) Determine trends;

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- b) Identify successful procedures;
- c) Identify common mistakes;
- d) Identify lessons learned;
- e) Review comments received from Accredited Representatives and advisers; and
- f) Identify need for changes to governing documents (iPPM, Guidance Materials, etc.).

10.4 FORMAT OF THE FINAL REPORT

10.4.1 General

10.4.1.1 The Bureau issues Final Report of an aircraft accident investigation as the foundation for initiating the safety actions which are necessary to prevent further accidents from similar causes. Therefore, the Final Report on an accident must establish in detail what happened, how it happened and why it happened. The findings, causes and/or contributing factors of the Final Report should lead to safety recommendations so that appropriate preventive measures can be taken.

10.4.1.2 The investigator-in-charge in coordination with the investigation team is responsible for developing and drafting the Final report and each Final Report should provide:

- a) a record of all the relevant facts (including any conflicting evidence);
- b) an analysis of the relevant facts;
- c) conclusions in the form of findings, causes and/or contributing factors; and
- d) safety recommendations.

10.4.1.3 The findings, causes and/or contributing factors of a Final Report should point clearly to the safety issues that need to be addressed.

10.4.1.4 All the Bureau's accident and incident reports should contain the following reference to the objective of the investigation in the Introduction or Foreword:

In accordance with Annex 13, it is not the purpose of aircraft accident and incident investigation to apportion blame or liability. The sole objective of the investigation and the Final Report is the prevention of accidents and incidents. (Reference: Annex 13, Chapter 3, paragraph 3.1.)

10.4.1.5 The Appendix 1 of Annex 13 contains the general format for the Final Report. Furthermore, detailed guidance regarding the format and content of the Final Report is contained in the ICAO *Manual of Aircraft Accident and Incident Investigation* (Doc 9756), Part IV - *Reporting*, Appendix 1 to Chapter 1. The ICAO format and guidance is being followed by the Bureau for most of its Final Reports. For some incidents and non-major accidents, the format of the report may differ, as all of the Annex 13 headings may not be applicable.

10.4.1.6 The principles of writing the investigation report are as follows:

- a) Impartiality
 - Presentation without judgment
 - Positive statements

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- Neutrality: no superlatives or useless qualifiers
- b) Clarity
 - Unambiguous drafting
 - Simplicity: one idea per sentence
 - Verbiage tempting but to be banned
- c) Concision
 - Short sentences
 - Write useful
- d) Consistency
 - Homogeneity of appellations
 - Numbering
 - General structure of the report: beware of contradictions

10.4.2 Format of the Final Report

10.4.2.1 Introduction

10.4.2.1.1 Cover Page and Title

The Final Report begins with a title comprising:

- a) Name of the operator;
- b) Manufacturer;
- c) Model;
- d) Nationality and registration marks of the aircraft; and
- e) Place and date of the accident or incident.

10.4.2.1.2 Synopsis

Following the title is a synopsis describing briefly all relevant information regarding:

- a) notification of accident to national and foreign authorities;
- b) about the Bureau and other participating States;
- c) organization of the investigation;
- d) authority releasing the report and date of publication; and
- e) a brief resume of the circumstances leading to the accident.

10.4.2.1.3 Body

The body of the Final Report comprises the following main headings:

- a) chapter 1: Factual information
- b) chapter 2: Analysis
- c) chapter 3: Conclusions
- d) chapter 4: Safety recommendations

Note: Each heading consisting of a number of subheadings as outlined below.

10.4.2.1.4 Appendices.

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Supporting documents that are required to support the facts, analysis, conclusions, and recommendations should be included in appendices to the Final Report as much as appropriate.

The investigator-in-charge should ensure that:

- a) all information relevant to an understanding of the factual information, analysis and conclusions is included under each appropriate heading;
- b) where information in respect of any of the items in 1.– Factual information is not available, or is irrelevant to the circumstances leading to the accident, a note to this effect is included under the appropriate subheadings.

10.4.2.2 Chapter 1: Factual Information

Chapter 1 of the Final Report is subdivided into 19 sections and each section can be subdivided into sub-sections depending the need.

1.1 History of the flight.

A brief narrative giving the following information:

- Flight number, type of operation, last point of departure, time of departure (local time or UTC), point of intended landing.
- Flight preparation, description of the flight and events leading to the accident, including reconstruction of the significant portion of the flight path, if appropriate.
- Location (latitude, longitude, elevation), time of the accident (local time or UTC), whether day or night.

1.2 Injuries to persons.

Completion of the following (in numbers):

Injuries	Crew	Passengers	Total in the aircraft	others
Fatal				
Serious				
Minor/ None				
Tortal				

Note.– Fatal injuries include all deaths determined to be a direct result of injuries sustained in the accident. Serious injury is defined in the definition section of this manual.

1.3 Damage to aircraft.

Brief statement of the damage sustained by aircraft in the accident (destroyed, substantially damaged, slightly damaged, no damage).

1.4 Other damage.

Brief description of damage sustained by objects other than the aircraft.

1.5 Personnel information:

- a) Pertinent information concerning each of the flight crew members including: age, validity of licence, ratings, mandatory checks, flying experience (total and on type) and relevant information on duty time;

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- b) Brief statement of qualifications and experience of other crew members;
- c) Pertinent information regarding other personnel, such as air traffic services, maintenance, etc., when relevant.

1.6 Aircraft information:

- a) Brief statement on airworthiness and maintenance of the aircraft (indication of deficiencies known prior to and during the flight to be included, if having any bearing on the accident);
- b) Brief statement on performance, if relevant, and whether the mass and centre of gravity were within the prescribed limits during the phase of operation related to the accident. (If not and if of any bearing on the accident give details.);
- c) Type of fuel used.

1.7 Meteorological information:

- a) Brief statement on the meteorological conditions appropriate to the circumstances including both forecast and actual conditions, and the availability of meteorological information to the crew;
- b) Natural light conditions at the time of the accident (sunlight, moonlight, twilight, etc.).

1.8 Aids to navigation.

Pertinent information on navigation aids available, including landing aids such as ILS, MLS, NDB, PAR, VOR, visual ground aids, etc., and their effectiveness at the time.

1.9 Communications.

Pertinent information on aeronautical mobile and fixed service communications and their effectiveness.

1.10 Aerodrome information.

Pertinent information associated with the aerodrome, its facilities and condition, or with the take-off or landing area if other than an aerodrome.

1.11 Flight recorders.

Location of the flight recorder installations in the aircraft, their condition on recovery and pertinent data available therefrom.

1.12 Wreckage and impact information.

General information on the site of the accident and the distribution pattern of the wreckage, detected material failures or component malfunctions. Details concerning the location and state of the different pieces of the wreckage are not normally required unless it is necessary to indicate a break-up of the aircraft prior to impact.

Diagrams, charts and photographs may be included in this section or attached in the appendices.

1.13 Medical and pathological information.

Brief description of the results of the investigation undertaken and pertinent data available therefrom.

Note.— Medical information related to flight crew licence should be included in 1.5 – Personnel information.

1.14 Fire.

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If fire occurred, information on the nature of the occurrence, and of the fire fighting equipment used and its effectiveness.

1.15 *Survival aspects.*

Brief description of search, evacuation and rescue, location of crew and passengers in relation to injuries sustained, and failure of structures such as seats and seat-belt attachments.

1.16 *Tests and research.*

Brief statements regarding the results of tests and research.

1.17 *Organizational and management information.*

- a) Pertinent information concerning the organizations and their management involved in influencing the operation of the aircraft. The organizations includes:
- b) the operator; the air traffic services;
- c) Aerodrome;
- d) weather service agencies; and
- e) the regulatory authority.

The information could include, but not be limited to, organizational structure and functions, resources, economic status, management policies and practices, and regulatory framework.

1.18 *Additional information.*

Relevant information not already included in 1.1 to 1.17.

1.19 *Useful or effective investigation techniques.*

When useful or effective investigation techniques have been used during the investigation, briefly indicate the reason for using these techniques and refer here to the main features as well as describing the results under the appropriate subheadings 1.1 to 1.18.

10.4.2.3 Chapter 2 of the Final Report

10.4.2.3.1 Analysis should contain the significance of the relevant facts and circumstances that contributed to the accident or incident.

10.4.2.3.2 The investigator-in-charge should ensure that Analysis is carried out as appropriate only the information documented in chapter 1. – Factual information and that is relevant to the determination of conclusions and causes and/or contributing factors. In other words, no new information should be introduced in the analysis section except it is first documented in chapter 1 of the Final Report.

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10.4.2.4 Chapter 3 of the Final Report – Conclusions

10.4.2.4.1 Chapter 3 of the Final Report will include a list of findings, the Causes and Contributory factors established in the investigation. The list of causes and contributory factors should include both the immediate and the deeper systemic causes.

10.4.2.4.2 *It is imperative to use the guidance provided in the ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part IV Reporting, and Appendix 1 to Chapter 1, Table 1-3 Example of causal statements, and Appendix 2 to Chapter 1 Report Writing Conventions, in the formation of its findings, causes and contributing factors.*

10.4.2.4.3 The following statement will be included at the appropriate location in Chapter 3: *The identification of causes does not imply assignment of fault or the determination of administrative, civil or criminal liability.*

10.4.2.5 Chapter 4 of the Final Report – Safety Recommendations

10.4.2.5.1 Chapter 4 of the Final Report is divided into two parts: “Safety Actions Taken” and “Safety Recommendations”. Safety actions taken may result from formal safety recommendations issued during the course of the investigation or as the result of corrective actions taken by the airline, manufacturer, Civil Aviation Authority (CAA), etc., without the issuance of formal safety recommendations.

10.4.2.5.2 Chapter 4 of the Final Report will include both safety recommendations made for the purpose of accident prevention, as well as any safety (corrective) actions taken during the course of the investigation.

10.4.2.5.3 It is imperative to use the guidance provided in ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756), Part IV Reporting, Chapter 1, when issuing safety recommendations during the course of the investigation and in the Final Reports. (See 10.8 for further details on safety recommendations).

10.4.3 Procedures for Developing and Drafting of the Final Report

10.4.3.1 Upon completion of the technical review (refer to 10.3.1), the investigator-in-charge shall immediately convene meetings of the investigation team to begin putting the final report together.

10.4.3.2 The investigator-in-charge should, in coordination with the investigation team members, convene meeting to arrange the report of the investigation in line with the format indicated in 10.4.2 above.

10.4.3.3 The team should review the factual information to highlight significant events that have played roles in the occurrence of the accident/ serious incident and should arrange them in chronological order to form topics for analysis of the established facts relating to the occurrence. Then followed by drafting of conclusion and safety recommendation based on the analysis of the factual information.

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10.4.3.4 Upon completion of the drafting of the final report, the investigation team will conduct final review, including proofreading of the draft report.

10.4.3.5 The investigator-in-charge should as soon as practicable, in coordination with the Director of Engineering or Director of Operations convene a meeting of all investigators available to conduct a general review of the draft report to ensure that the team had considered all facts relating to the occurrence and that the analysis, conclusions and safety recommendations were relevant and logical. If certain portions of the draft report needs fixing, the investigator-in-charge in coordination with the heads of the groups or sub-groups as appropriate, should re-visit the matters and obtain resolution without much delay.

10.4.3.6 Thereafter, the investigator-in-charge should forward the final version of the draft report to the Director of Engineering or Director of Operations for vetting. The appropriate Director will forward the draft report to the Director-General/CEO for approval.

Upon approval, the draft report will be subject to consultation with participants and stakeholders in line with Annex 13 as per section 10.5 of the manual).

10.4.4. Format of Safety Bulletin

10.4.4.1 When an occurrence is classified as an incident “minor” and that such type of incident keeps recurring. The Director-General/CEO might decide to institute an investigation. However, the conduct of the investigation might be slightly different from the full Annex 13 type of investigation.

- a) The decision to embark on the conduct of this type of investigation is predicated on the following:
- b) The occurrence is classified as an incident
- c) The occurrence keeps repeating over a short successive period of time
- d) The occurrence involves same aircraft type or the same operator or the same aerodrome, etc.

10.4.4.2 The Director-General/CEO appoints designated investigator with one or two investigators to assist in the conduct of the investigation.

10.4.4.3 The designated investigator, in coordination with other team members may decide the scope and extend of the investigation as per section 6.2.2 of this manual.

10.4.4.4 The format of the final report of such investigation might be different from the Annex 13 format, however, the designated investigator should follow the Annex 13 format while eliminating the sections or sub-sections that do not apply in each case. For example, there might be no need for the team to conduct analysis, etc.

10.4.4.5 Generally, the report should contain factual information, conclusion and safety recommendations.

10.4.4.5 The outcome of the investigation is a Safety Bulletin with one or more safety recommendations as appropriate.

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10.4.4.6 The Safety Bulletin does not need to pass through the Annex 13 consultation requirement.

10.4.4.7 the draft report of incident should pass through similar procedures for drafting, adoption and approval as per 10.4.3 above.

10.4.5 Security and Access Control Measures for Draft Reports and Investigation Documents

10.4.5.1 The investigator-in-charge shall ensure that the investigation Report is drafted only on an investigator’s password enabled computer. The draft Report shall then be transferred to the Review computer which in the custody of the Director of Engineering (DOE) or Director of Operations (DOO) or any officer designated by them. Access to the computer shall be restricted and only a member of the investigation team who signs the appropriate register, shall have access to it for the review

Note 1. - All safety investigation reviews shall be carried out using the Bureau’s dedicated computers.

Note 2. - Draft Final Report shall have “Confidential” water mark inscribed.

10.4.5.2 Back up of all the reviews of accident/incident draft reports shall be in external hard drives stored with Archives section. All Back up shall be retained in the archive for as long as there is space to keep even after the Final Report has been published and made public.

10.4.5.3 Access to the investigation review areas shall be restricted to authorized persons.

10.4.5.4 Upon receipt of draft report or any part thereof or any documents obtained during an investigation of an accident or incident, the Director-General/CEO shall take measures to ensure that the it is not circulated, released or given unauthorized access to it, without the express consent of the State, which conducted the investigation, unless such report or documents have been published or released by the investigating authority.

10.4.5.5 The Designated investigator/investigator-in-charge when transmitting the draft Final Report or any documents obtained during investigation should brief the recipient on the need to maintain its confidentiality until the Final Report is made publicly available by the Bureau or authority conducting the investigation.

10.4.5.6 In addition, the Bureau’s letter of transmittal of draft Final Report has the statement “This draft final report is confidential and should not be disclosed or shared to the public.” as its watermark. Refer to Appendix E3 of this manual.

10.5 CONSULTATION

10.5.1 Consultation - Domestic Investigation

10.5.1.1 The Bureau follows the consultation provisions of Annex 13, Chapter 6. A confidential draft Final Report. Upon approval by the Director-General/CEO, the IIC in coordination with the Director of Engineering or Director of Operations is responsible to forward the confidential draft Final Report to all States that participated in the investigation using email, requesting their substantive and relevant comments within 60 days from the date of transmittal. The recipient States include:

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- a) the State that instituted the investigation;
- b) the State of Registry;
- e) the State of the Operator;
- f) the State of Manufacture; and
- g) any State that participated in the investigation as per Annex 13, Chapter 5 as transposed in Part 5 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations.

10.5.1.2 In order to obtain substantive technical consultation on the draft Final Report, the IIC will send, through the State of the Operator, a copy of the draft Final Report to the Operator to enable the operator to submit substantial comments. Similarly, the IIC, in coordination with the Director of Engineering or Director of Operations, will send through the State of Design and the State of Manufacture, a copy of the draft Final Report to the organizations responsible for the type design and the final assembly of the aircraft to enable them to submit substantial comments.

10.5.1.3 The letter of transmittal for the draft Final Report will indicate that the State receiving the draft Final Report shall forward it to the airline operator, organizations responsible for design and assembly of the aircraft for their substantial comments (refer to Appendix E2 of this manual - *Template Letters*). The letter of transmittal should also state that comments should be received within sixty (60) days, unless a mutually agreed delay is agreed upon or granted.

10.5.1.4 at national level, the draft Final Report will be forwarded to the key parties to the investigation within Nigeria (the airline operator, Nigeria Civil Aviation Authority (NCAA), Federal Airports Authority of Nigeria (FAAN), Nigerian Airspace Management Agency (NAMA), etc.) that participated or provided significant information in the investigation, or a safety recommendation is addressed to, in order to obtain their substantive and relevant comments. The same procedures for timing of receipt of comments and handling of the comments as specified in Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Chapter 6 will be followed for the parties within the country.

Note. –The Bureau’s intended safety recommendations shall always be included as Chapter 4 of the Draft Final Report, inviting comments from recipients.

10.5.1.5 The letter of transmittal for the draft Final Report should state that comments should be received within sixty days, unless a mutually agreed delay is granted.

10.5.1.6 Upon receipt of comments within 60 days of the date of the transmittal letter, the IIC in coordination with the Directors of Engineering and Operations should conduct analysis of the comments received. Following the analysis of the comments received, the IIC should forward recommendation to the Director-General on either to accept the comments or reject the comments. The Director-General/CEO should approve the recommendation by the IIC on the comments received.

10.5.1.7 If the comments received from any of the States are accepted, the IIC, in coordination with investigation team members, should amend the draft Final Report to include the substance of the comments received or, if desired by the State that provided comments, append the comments

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to the Final Report. Comments to be appended to the Final Report are restricted to non-editorial specific technical aspects of the Final Report upon which no agreement could be reached.

10.5.1.8 If the Bureau's team does not agree with the comments, in part or in whole, then the IIC, in coordination with investigation team members, should append the comments from that State to the Final Report, unless that State elects not to have their comments appended.

10.5.1.9 If no comment is received within 60 days, unless an extension of that period has been agreed by the States concerned, the IIC shall subject the updated draft final report into general review by a team of investigators into the Final Report.

10.5.1.10 Thereafter, the investigator-in-charge shall immediately forward the final version of the draft final report to the Director-General for approval.

10.5.1.11 The Director-General shall proceed to the issuance of the Final Report.

10.5.2 Consultation - International Investigation

10.5.2.1 Upon receipt of a draft Final Report from the State of Occurrence or State that conducted the investigation, the appointed accredited representative of the investigation shall immediately submit it the Director-General/CEO for onward forwarding in a transmittal letter of the copies of the confidential draft Final Report to all affected parties of the investigation within Nigeria (Airline Operator, Federal Airport Authority of Nigeria/affected Aerodrome operator, Nigeria Airspace Management Agency, NCAA, etc.) requesting their substantive and relevant comments.

10.5.2.2 The transmittal letter shall remind all recipients of the draft Final Report of their obligation to maintain the confidentiality of the draft Final Report or any part thereof or any documents obtained during an investigation of an accident or incident.

10.5.2.3 The Director-General should request the recipients to submit to the Bureau their comments on the draft Final Report within sixty (60) days from the date of the transmittal letter issued by the State forwarding the draft Final Report.

10.5.2.4 If it remains 15 working days to the 60-day dateline without response from the recipients of the draft final report, the Accredited representative shall inform the Director-General/CEO who may send a reminder to the recipients requesting for their response or should indicate if they need additional time. If the recipient indicate need for additional time, the Director-General/CEO shall require the accredited representative of the investigation to contact the investigator-in-charge and request for additional time. Any decision by the State conducting the investigation on this regard (extension or no extension) shall be forwarded to the recipients.

10.5.2.4 The Bureau's Accredited representative of the investigation is responsible for coordinating responses from the recipients of the draft Final Report to ensure they are forwarded to the State that issued the draft Final Report within the stipulated sixty (60) days.

10.5.2.5 The Bureau and its personnel shall not communicate, make public, or allow consultation of a draft report or part of a draft report and any document obtained during a technical investigation of an accident or incident without the formal consent of the State conducting the investigation, unless these reports or these documents have already been made public or disseminated by the latter.

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10.5.2.6 The Bureau's Accredited representative should keep the records of correspondences on the consultation in the file opened for the investigation.

10.6 RECIPIENTS OF THE FINAL REPORT

In addition to the publication on its internet website, the IIC in coordination with the Director of Engineering or Operations will forward with minimum delay a copy of the Final Report to:

- a) the State that instituted the investigation;
- b) the State of Registry;
- c) the State of the Operator;
- d) the State of Design;
- e) the State of Manufacture;
- f) any State that participated in the investigation;
- g) any State having suffered fatalities or serious injuries to its citizens;
- h) any State that provided relevant information, significant facilities or experts; and
- i) ICAO, where the accident or incident involves an aircraft of a maximum mass of over 5,700 kg.

10.7 DISTRIBUTION AND PUBLICATION OF FINAL REPORTS AND ISSUANCE OF INTERIM STATEMENT

10.7.1 Distribution and Publication of Final Reports

10.7.1.1 The Director-General will cause the report of an investigation into an accident or incident, including an accident or incident whose investigation was delegated to Nigeria by another State or RAIQ, to be made public in the shortest time possible (and, if possible, within 12 months of the date of the occurrence) and in such manner as he/she considers fit.

10.7.1.2 Lessons learned during the investigation contained in the Final Report are important for improving aviation safety. Wide distribution of the Final Report is essential for the prevention of future occurrences and to inform the general public. Transparent distribution to the general public helps maintain public confidence in the aviation system.

10.7.1.3 The Director-General shall forward a copy of the Final Report to the President of the Federal Republic of Nigeria through the Minister supervising civil aviation.

10.7.1.4 The IIC will distribute copies of the Final Report to all States and parties that participated in the investigation, as well as to the families of the victims of the accident when requested. The

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Bureau will also forward copies of the Final Report to ICAO, when the aircraft involved has a maximum mass of over 5 700 kg.

10.7.1.5 Transparent distribution to the general public assists in maintaining public confidence in the aviation system. The Director-General should direct the Head of ICT to make the Final Report available to the general public on the Bureau's internet website.

10.7.1.6 If the Final Report cannot be made publicly available in twelve (12) months, the Director-General will direct the Head of ICT to make an interim statement publicly available on the Bureau's website on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues raised.

10.7.2 Interim Statement Tracking

10.7.2.1 The status of all open or ongoing investigations are monitored using Microsoft Excel (Spreadsheet) Gmail tracking of the progress of the investigation to indicate their anniversary dates. The up-to-date status of each ongoing investigation should be reported by the IIC during the monthly reporting to management for its review meetings.

10.7.2.2 The on-going or open investigations are also subject to Gmail investigation report tracking, which is setup to send email alerts to selected recipients on the attainment of 14 days to the target dates set for issuance of Preliminary Report, Investigation Report Completion (Target) dates, 60-days Consultation with stakeholders and Interim Statement due date. Normally, key management staff, the concerned IIC and investigation team members are the recipients of the Gmail alerts.

10.7.2.3 The Bureau has established an accident and incident database that is used as a means of tracking the status of open investigations. The Director of Engineering is responsible for updating and maintenance of the database. The Director of Engineering or an authorized officer of the Bureau will conduct a monthly review of the database to identify all the open investigations that are one month to their anniversary. The Director of Engineering or an authorized officer of the Bureau will direct the concerned IIC to draft an Interim Statement, detailing the progress of the investigation and any safety issues that are raised. The Director-General shall make the Interim Statement public on the anniversary of the date of occurrence.

10.7.2.4 In addition, if during monthly reporting to management for review of all open investigations, it appears that for some reason the target date for releasing Final Report within 12 months cannot be feasible, the Director of Engineering or an authorized officer of the Bureau will request the concerned IIC to draft an interim statement to be made publicly available on each anniversary of the occurrence, detailing the progress of the investigation and any safety issues that are raised.

10.7.2.5 The IIC should forward the draft Interim Statement to the Director-General for approval.

10.7.2.6 Upon approval of the Interim Statement, the IIC in coordination with the Head of the ICT Unit should, on the anniversary day of the occurrence, publish the interim statement on the Bureau's internet website.

10.7.2.7 If the Final Report can not be released for another 12 months, a second Interim Statement shall be made public on the second anniversary of the occurrence being investigated.

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10.7.2.8 The eventual release of the Final Report terminates the need for an Interim Statement.

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10.8 SAFETY RECOMMENDATIONS

10.8.1 General

10.8.1.1 The sole objective of accident and incident investigations conducted by the Bureau shall be the prevention of accidents and incidents. One very important tool to achieve this objective is the issuance of timely safety recommendations. The intended purpose of a safety recommendation is the prevention of accidents or incidents and the reduction of the consequences of such occurrences. It, in no case, has the purpose of creating a presumption of blame or liability for an accident or incident.

10.8.1.2 If, at any stage of an investigation, the IIC becomes aware of a critical safety issue, the IIC should consult with the Directors of Engineering or Operations and inform the Director-General without much delay. Upon reaching a decision on the critical safety issue, the Director-General will direct the IIC to forward in a dated transmittal letter to the appropriate authorities within Nigeria, as well as in other States, recommendation of any prevention action that it considers necessary to be taken promptly to enhance aviation safety.

10.8.1.3 Any safety recommendations arising from the investigations in situations wherein immediate action is not needed, or wherein the deficiency is not clearly defined and justified until the Final Report stage, such safety recommendations would normally be included in chapter 4 of the Final Report. Hence the IIC will formally forward the Final Report (safety recommendations inclusive) in a dated transmittal correspondence to the accident investigation authorities of other States concerned and, when ICAO documents are involved, to ICAO.

10.8.1.4 In addition, the Bureau may also make safety recommendations arising from safety studies or other fact finding and analysis exercises.

10.8.1.5 The openness of Annex 13 investigations and the involvement of stakeholders in the investigation process should encourage the involved organizations/stakeholders to take action before a recommendation is made.

10.8.1.6 Furthermore, the Bureau's Safety Investigators will provide information on any safety issues identified, safety actions already taken, and proposals for safety recommendations to be considered for inclusion in the draft Final Report for comments by relevant States and entities concerned.

10.8.1.7 Although precedence for the issuance of safety recommendations from an accident or incident investigation is given to the State conducting the investigation; however, in the interest of safety, the Bureau as a participant in an investigation conducted by another State, shall be entitled to issue safety recommendations after coordinating with the State conducting the investigation. Effective coordination of draft safety recommendations would avoid issuance of conflicting safety recommendations by the States participating in the investigation.

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10.8.2 Validation of a Safety Issue/Deficiency

The following are steps that would assist in determining the requirement and bases for a safety recommendation:

- a) using the information determined by the investigation, determine the history of the flight of the aircraft and the Pre-flight, in-flight and post-flight events that contributed to the adverse consequences related to the occurrence;
- b) from the list of events, determine the safety significant events. Safety significant events would include but not be limited to events:
 - (i) that are undesirable from a risk perspective;
 - (ii) that are potentially linked as an antecedent to another undesirable event;
 - (iii) that are non-standard or unusual; or
 - (iv) where one or more alternative actions or options are available;
- c) for the safety significant event of interest, determine the underlying factors that contributed to or facilitated the event;
- d) for the underlying factor of interest, determine the level of risk. Risk can be defined in terms of two components: the probability that the underlying factor will lead to an adverse consequence and the severity of that adverse consequence;
- e) for the underlying factor of interest, determine the availability and the effectiveness of physical or administrative defences needed to limit, reduce or prevent unwanted consequences;
- f) for the underlying factor of interest, validate the safety deficiency. This validation is based on the results of risk analysis and defence analysis above. A safety deficiency is an underlying factor with risks for which the defences are less than adequate;
- g) for each safety deficiency, determine possible risk-control options that have the potential to mitigate the risk of the safety deficiency contributing to a future occurrence. Each risk-control option must be critically evaluated to determine the benefits that would result from the control option, the administrative and financial feasibility and the reasonableness of the control option; and
- h) based on the preceding analyses, determine the risk-control option that has the best potential for mitigating the risk associated with the validated safety deficiency.

10.8.3 Safety Recommendations Addressees

10.8.3.1 Safety recommendation must be communicated to an entity or organization that is best able to take action to mitigate the risks, has the authority and responsibility to take remedial action and has the mandate to take action that will have the broadest impact.

10.8.3.2 There should only be one principal action addressee for each recommendation. Having multiple to avoid a situation where there could be uncertainty as to what addressee is responsible

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for taking safety action; and to avoid making it difficult to track and evaluate action taken in response to the recommendation. In such situations, it would be preferable to send the recommendation independently to each addressee. Alternatively, one addressee could be designated as the lead action addressee and the other addressees designated as support action addressees.

10.8.3.3 For safety recommendations of global concern (SRGC), the action addressee normally would be the State civil aviation authority responsible for the certification and oversight, in part, of the design, manufacture, maintenance and/or operations of the aircraft or facilities involved in the occurrence. For other safety recommendations, the action addressee could be, but not be limited to, the air operator, manufacturer, maintenance organization, air traffic services provider and airport operator. ICAO would be the action addressee for recommendations related to the international Standards and Recommended Practices contained in the Annexes to the Convention on International Civil Aviation and perceived deficiencies in ICAO guidance material.

10.8.3.4 For the purpose of advancing the safety of operations, copies of the safety recommendation also should be sent to those persons or organizations of the aviation community that have a direct interest in the safety issue or who would benefit from the information that was the basis for the safety recommendation. Information addressees could be, but is not limited to, the following: involved government departments; involved States and accident investigation authorities; and involved stakeholders, such as the airline, maintenance organization, manufacturer, air traffic services provider, and airport operator.

10.8.3.5 The timing of safety communication is influenced by the degree of risk associated with the underlying safety issue.

10.8.4 Writing Safety Recommendations

10.8.4.1 Framework of a Safety Recommendation

Safety recommendations should be formulated using the SMART principle (such that it is Specific, Measurable, Achievable, Realistic and Time-bound). To be effective, a safety recommendation must present a compelling argument for safety action to mitigate the risks identified by the investigation. A clear, succinct and well-structured safety communication would facilitate this objective. The following is a suggested framework for a safety recommendation, including guidelines as to the type of information that should be included:

a) The background section should include the following:

i) a summary of the occurrence, including the date, aircraft type and location of the occurrence.

This summary should describe what happened, not why it happened. This section should also identify the investigation authority, the investigation number and the status of the investigation;

ii) the safety significant event associated with the safety issue, along with the adverse consequence(s) that resulted from the associated unsafe condition;

iii) the associated safety deficiency(ies), if any; and

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- iv) the immediate circumstances that led to the adverse consequence.
- b) The supporting information section should include the following:
 - i) historical evidence of the risks and consequences, by referring to other occurrences where similar circumstances resulted in adverse consequences, to demonstrate that this was not just an isolated occurrence;
 - ii) information as to how the number of such accidents has varied over time, by geographic area, by aircraft type and by type of operation. This section should also include a description of the adverse consequences associated with the occurrences. This information establishes the probability of adverse consequences, and the severity of the consequences in terms of historical evidence; and –
 - iii) the risk control options currently in use and the effectiveness of these options, if applicable.
- c) The deficiency analysis section should include the following:
 - i) the unsafe condition/factor underlying the safety significant event;
 - ii) the shortcomings of prior actions taken, if any;
 - iii) the inadequacies of existing defences; and
 - iv) the residual risk.
- d) The safety recommendation section should include the following:
 - i) a summary of the safety deficiency statement, including the unsafe condition, inadequacies of defences, and the residual risk (of adverse consequences) if no action is taken; and
 - ii) the recommended safety action (risk-control options), including the performance expectations.
- e) Attachments supporting the integrity of the factual information and argument for change could be appended to the recommendation document, such as, but not limited to, statistics, lists of similar previous occurrences, technical and scientific analyses, and flight data recorder printouts and analyses.

Note.— For safety recommendations issued in Final Reports, the above information is included in the factual information, analysis, conclusions, recommendations and attachments sections of the Final Report.

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10.8.4.2. Transmittal/Covering Letter for Safety Recommendations

10.8.4.2.1 All safety recommendations which are made as a result of conducting investigation do not need separate a transmittal/covering letter. However, stand-alone safety recommendations such as emanating from safety studies, safety bulletins, analysis of safety data, etc. need to have a separate transmittal/cover letter.

10.8.4.2.2 The covering letter for the safety recommendation shall include the following information:

- a) the specific addressee for a safety recommendation should be the head official of the organization who is best suited to implement the required safety action This could be, but not be limited to, the government minister, director general, secretary general or chief executive officer;
- b) the safety recommendation letter must be dated;
- c) occurrence summary (see framework section);
- d) purpose of the safety recommendation;
- e) safety deficiency statement;
- f) recommended safety action(s); and
- g) requirement to respond within 90 days regarding:
 - i. Actions taken;
 - ii. Actions planned including alternative actions, if applicable; or
 - iii. Reasons why no action will be taken.

Note.— For safety recommendations issued in the Final Report, cover letter of the final report should be sent to each head official deemed responsible for taking action on a safety recommendation.

10.8.4.3 Distribution of Safety Recommendations

10.8.4.3.1 The purpose of safety communication is to ensure that identified risks are communicated to those entities or organizations best able to effect change and to convince them to take remedial safety action. The openness of Annex 13 investigations and the involvement of stakeholders in the investigation process should encourage the involved organizations/stakeholders to take action before a recommendation is made.

10.8.4.3.2 Copies of the safety recommendation (normally included in the final report) should be sent to persons or organizations in the aviation community that have a direct interest in the safety issue which was the basis for the safety recommendation, as well as to other members of the

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aviation community who would benefit from the information, including but not limited to, the following:

- a) the safety recommendation action addressee;
- b) involved government departments;
- c) involved States and accident investigation authorities;
- d) involved stakeholders, such as, but not limited to, the airline, maintenance organization, manufacturer, air traffic services provider and airport operator; and
- e) others who may benefit from lessons learned.
- f) ICAO Accident Investigation Section for Safety recommendation of global concern (SRGC).

Note.- Although the Bureau may post its safety recommendations on its website, however, for the purpose of advancing the safety of operations, copies of the safety recommendations will also be sent to those persons or organizations of the aviation community that have a direct interest in the safety issue or who would benefit from the information that was the basis for the safety recommendation.

10.8.4.3.3 The Bureau's safety recommendations will be transmitted in dated letters to the appropriate entities or organizations within the country, as well as authorities or entities in other States concerned and, to ICAO, when international standards and recommended practices contained in the Annexes and ICAO guidance materials are perceived deficient.

10.8.4.4 Qualities of a Good Safety Recommendation

The following are some qualities of a good safety recommendation:

- a) there is a clear and positive link to a safety significant event;
- b) data are accurate and indisputable;
- c) the analysis is sound;
- d) the safety recommendation is addressed to the entity best able to take the corrective action;
- e) the recommendation is achievable;
- f) there is a significant risk in being too prescriptive;
- g) a performance-based recommendation will make the action taken in response to a recommendation more measurable by both the accident investigation authority and the safety recommendation action addressee
- h) a good recommendation is one that is written in a way that clearly states the deficiency, the action required to mitigate the risk and the expected result of action being taken.

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10.8.4.5 Characteristics of a Weak Safety Recommendation

The following are some characteristics of a weak safety recommendation:

- a) the action addressee is not identified;
- b) too many action addressees;
- c) the action addressee does not have the mandate to mitigate the identified deficiency;
- d) the addressee is not the one that can correct the deficiency on a systemic level;
- e) the factual information is incorrect or inappropriately skewed;
- f) the logic linking facts, analysis and conclusions is flawed;
- g) the risk or consequences are exaggerated;
- h) the recommendation is not based on a finding or a cause/contributing factor ;
- i) the recommendation is too specific;
- j) the recommendation is too broad;
- k) the recommended action is not achievable;
- l) the performance expectations of the recommendation is unclear;
- m) too many recommendations in a report;
- n) recommendations made on low-risk issues;
- o) recommendation based on a single, local event; and
- p) the recommendation is not clearly identified.

10.8.5 Monitoring of Safety Recommendations

10.8.5.1 The purpose of a safety recommendation is to ensure that identified risks are communicated to those entities or organizations best able to effect change and to convince them to take remedial safety action. In this regard, the issuance of safety recommendations by the Bureau can be viewed as the most important output of the investigation.

10.8.5.2 The full potential of recommendations to prevent future accidents and incidents cannot be realized until appropriate safety action to mitigate the risks underlying the recommendation is taken by the entity to which the recommendation was issued.

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10.8.5.3 Measuring the effectiveness of safety recommendations to achieve positive changes requires an evaluation of the actions taken against the performance expectations of the safety recommendation. Refer to Figure 10-1 below for a typical flow diagram for tracking safety recommendations.

10.8.5.4 The Bureau has a Safety Recommendation “Tracking System” using Microsoft Excel Sheet (Form number NSIB.01.4) for monitoring and recording of all the safety recommendations issued to organizations in Nigeria and to other States, to determine if safety actions have been taken to satisfy the recommendations, if actions are planned, or the reasons why the recipients are not taking actions.

10.8.5.5 The Director-General/CEO has established a Safety Data, Research and Statistics Unit charged with the responsibility for among others, the monitoring of monitoring the implementation and effectiveness of the safety recommendations made. The Unit does that by periodic review of the safety recommendation tracking system, including periodic visits to the joint committee for update. Upon release of Final Report containing safety recommendation, the investigator-in-charge should forward a memo to the Head of Safety Data, Research and Statistics Unit, being the office in charge of the tracking system to input the details of the new safety recommendation. The Head of the Unit should confirm the receipt of the details of the safety recommendation and to ensure its input into the tracking system. Any new changes relating to the action(s) taken to implement the requirement of the safety recommendation input in the tracking system.

10.8.5.6 The Bureau had jointly with the NCAA established a Safety Recommendation Monitoring Committee saddled with the responsibility of monitoring implementation and effectiveness of the Safety recommendations made. The Committee conducts visits to aviation organizations within Nigeria on a periodic basis to assess and record implementation and effectiveness of the safety recommendations made to the addressees. The Committee shall establish a direct staff-level liaison with the accident investigation authority of the State responsible for responding to the recommendation in order to arrange for routine updates as to the status of the action taken and/or action planned. The Head of the Safety Data, Research and Statistics Unit receives reports of the activities of the joint committee and ensures the tracking system is updated.

10.8.5.7 For situations where a response is not received within the prescribed 90 days, the Investigator-in-charge in coordination with the Director of Engineering will inform the Director-General/CEO of the situation. The Director-General/CEO will formally request a status report from the action addressee to which the safety recommendation was made.

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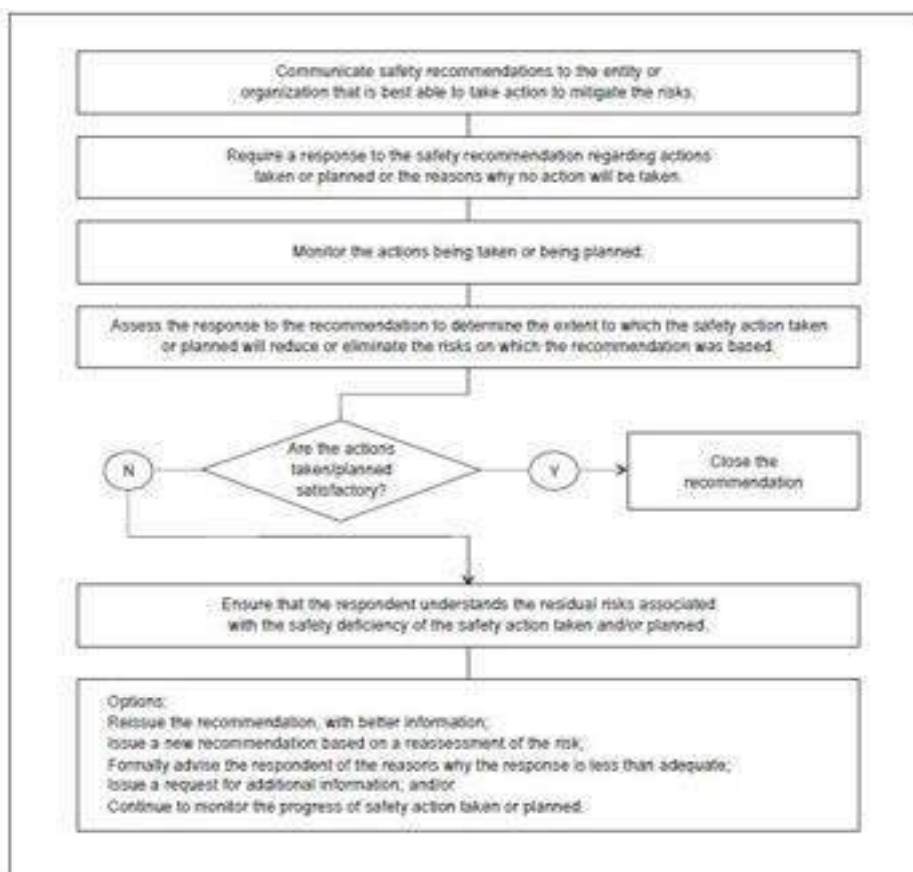


Figure: 10-2: Typical Flow Chart for Tracking Safety Recommendations

10.8.5.8 If there is a significant change in the action taken or under consideration, the Director-General/CEO should request the addressee of the recommendation to inform the Bureau of the changes, including reasons why the proposed action has changed.

10.8.5.9 The Director-General/CEO will forward response received to the Investigator-in-charge, who will forward details to the Director of Engineering for updating the safety recommendation tracking system.

10.8.5.10 Records of all outgoing and incoming safety recommendation follow-up correspondence with the addressees within Nigeria and in the other States concerned are maintained as integral part of the corresponding accident/incident investigation files.

10.8.6 Mandating Responses To Safety Recommendations

Annex 13 requires that a State that receives safety recommendations shall inform the proposing State, within 90 days of the date of the dated transmittal correspondence, of the preventive action taken or under consideration, or the reasons why no action will be taken. The Nigerian Safety Investigation Bureau (NSIB) is the entity responsible for ensuring compliance with this standard in Nigeria.

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10.8.7 Assessing Responses to Safety Recommendations and Actions Taken

10.8.7.1 The purpose of evaluating the safety action taken and/or planned is simply to determine whether further safety action is required.

10.8.7.2 The following is a process for assessing responses to recommendations:

- a) review the recommendation to confirm the performance expectations of the recommendation;
- b) review the response to the recommendation to determine the extent to which the addressee has accepted the existence of the safety deficiency underlying the recommendation;
- c) assess the extent to which the safety action taken or planned will reduce or eliminate the risks on which the recommendation is based;
- d) reassess the residual risks associated with the safety deficiency, taking into account the safety action taken and/or planned; and
- e) categorize the response in terms of risk mitigation.

10.8.7.3 The Director of Engineering will on behalf of the Bureau, inform the State responding to a recommendation, in writing, of the assessment of the response as well as post the assessments of the responses to the recommendations on the Bureau's website.

Note.— Prior to making public its assessment of responses to its recommendations, the Director of Engineering shall provide advance notice to the State responding to the recommendation of its intent to do so.

10.8.7.4 For each SRGC, the Director of Engineering will provide the ICAO Accident Investigation Section with a copy of the responses to the recommendation and the status of the recommendation.

10.8.7.5 If it is assessed that a response to a safety recommendation is less than adequate, the Director of Engineering will contact the authority responsible for taking action on the recommendation to ensure that:

- i. the recipient of the recommendation understands the recommendation and the risk level associated with the safety deficiency;
- ii. the Bureau's concerned personnel understands the substance of the response to the recommendation, including the potential of the action taken and/or action planned to mitigate risk; and
- iii. the recipient of the recommendation understands the residual risks associated with the safety deficiency, taking into account the safety action taken and/or planned.

10.8.7.6 The follow-up options to a less-than-adequate response would vary based on the level of residual risk and the urgency for additional safety action. The Director of Engineering should consider some of the options as follows:

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- a) reissue the recommendation, with changes, additional clarification and/or better information;
- b) issue a new recommendation based on a reassessment of the risk of the underlying deficiency;
- c) formally advise the action addressee of the recommendation as to the investigation authority's assessment of the response, including the reasons why the response is less than adequate;
- d) if appropriate, inform ICAO and/or other States about a less-than-adequate response to a recommendation;
- e) issue a request for additional information from the safety recommendation action addressee; and/or
- f) continue to monitor the progress of the safety action taken or planned.

10.8.7.7 The Head of Safety Data Research and Statistics Unit will keep records of transmittal of the correspondences with other States and organizations regarding the above procedures and processes of follow-up actions to the safety recommendations issued and received.

10.8.8 Handling Safety Recommendations Received from Other States

10.8.8.1 Upon receipt of letter of transmittal of safety recommendations from another State, the Bureau's Accredited representative to that investigation in coordination with the Director-General, will in not later than 7 days, forward copies of the transmittal letter to the addressees in Nigeria (NCAA, Airline Operator, Airport Operator, Air Traffic Services Provider, etc.) within Nigeria requesting them to provide their responses in terms of acceptance of the safety recommendations, proposed corrective action plan before the elapse of the prescribed ninety (90) days.

10.8.8.2 Simultaneous with 10.8.8.1, the Bureau's Accredited representative to that investigation will also forward the details of the safety recommendations received from another State to the Head of Safety Data Research and Statistics through the Director of Engineering for inclusion into the Safety Recommendation Tracking System for monitoring and recording of responses and follow-up.

10.8.8.3 Upon receipt of response from the addressees of the safety recommendation, the Bureau's accredited representative in coordination with the Director of Engineering will inform the proposing State, within ninety (90) days of the transmittal correspondence, of safety actions taken or under consideration, or the reasons why no actions will be taken.

10.8.8.4 If the safety recommendation remains open after the initial response from the addressees of the safety recommendations and a period of one hundred and eighty (180) days has elapsed thereafter with no new update on the actions taken by the addressees, the Accredited representative shall send a reminder to the addressees requesting for update on the safety actions taken to address the safety recommendation.

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10.8.8.5 if the Bureau receives new update on the actions taken by the addressees of the safety recommendation, the Accredited representative in coordination with the Director of Engineering should forward to the proposing State the new update on the safety recommendation as soon as practicable. This follow-up activity should continue until the safety recommendation is fully addressed.

10.8.8.6 The Accredited representative shall forward updates to the Director of Engineering for inclusion into the safety recommendation tracking system.

10.8.8.7 the Accredited representative shall keep copies of the safety recommendations, monitoring and follow-up on actions taken and related communications in the corresponding investigation file.

10.9 REOPENING OF AN INVESTIGATION

10.9.1 If, after the Final Report has been released, new factual information becomes available, or if the original analyses were determined to be in error, the Director-General will reopen the investigation to examine any new evidence or erroneous analyses, using the same procedures for the original investigation.

10.9.2 The Director-General in coordination with the Directors of Engineering and Operations, will form a team of experienced investigators to conduct thorough review of the new information or the erroneous analysis without delay.

10.9.3 Upon validation of the new factual information or the veracity of the erroneous analysis, the team will forward its recommendations to the Director-General/CEO for reopening of the investigation.

10.9.4 If the Director-General/CEO accepts the recommendation of the team to reopen the investigation, the Director-General/CEO will direct the team to conduct a review of the final report in consideration of the new factual information or to correct erroneous analysis in the initial final report. A revised draft Final Report shall be forwarded to the Director-General.

10.9.5 The Director-General will direct the IIC of initial investigation or the new team leader to inform the States that participated in the initial investigation in a transmittal letter, of the emergence of significant factual information or existence of erroneous analysis and forward to the States a revised draft Final Report, inviting their substantial comments within 60 days.

10.9.6 Any substantial comments received within 60 days from the States shall be analyzed in accordance with the procedures in section 10.5 - *Consultation* of this Manual.

10.9.7 Upon completion of the consultation process, the Director-General/CEO shall forward to the States the revised Final Report and cause the ICT Unit to publish it in the Bureau's internet website.

Note:- A closed investigation may also be reopened, if the wreckage of the aircraft earlier declared missing has been found.

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CHAPTER 11

11 REPORTING TO THE ICAO ACCIDENT/INCIDENT DATA REPORTING (ADREP) SYSTEM

11.1. ADREP Reporting System - General

11.1.1 Annex 13 – *Aircraft Accident and Incident Investigation*, requires States to report data obtained during the early stages of an investigation of an accident. ICAO also gathers information on aircraft incidents for safety and accident prevention. For ease of reference, the term “occurrence” refers to accidents, serious incidents and incidents.

11.1.2 The ICAO ADREP system collects data from States in order to enhance safety by means of analysis, which is accomplished either by validation of known safety issues or identification of emerging safety trends, leading to recommendations for accident prevention purposes.

11.1.3 In accordance with Annex 13, States report to ICAO information on all aircraft accidents which involves aircraft of a maximum certificated take-off mass of over 2 250 kg. ICAO also gathers information on aircraft incidents considered important for safety and accident prevention. Thorough accident and incident investigations identify safety issues in the aviation system, both at the airline level and at the national level. However, it is sometimes difficult to differentiate between isolated manifestations of a problem and systemic unsafe conditions with a potential for loss of life or property damage. Such safety issues must be validated; in part, this is done by comparing the accident and incident experience in question with the broader experience of the airline, the State and other States. This type of comparative analysis requires reliable and complete data. The ADREP System operated by ICAO provides States with the data that will assist them in validating safety issues. Based on this validation process with its attendant assessment of risk, accident investigation authorities can offer meaningful recommendations for correcting unsafe conditions in the aviation system.

11.1.4 There are two different stages when an ADREP report to ICAO is required after an occurrence. These are:

- a) ADREP Preliminary Report; and
- b) Data Report

11.2 ADREP PRELIMINARY REPORTS

11.2.1 When the aircraft involved in an accident is of a maximum mass of over 2 250 kg, the investigator-in-charge, in coordination with the Director of Operations will send the Preliminary Report in English language (reference to Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Chapter 7, paragraph 7.1 and Bureau’s forwarding of notification procedures in chapter 5.4.3 of this manual) to:

- a) the State of Registry or the State of Occurrence, as appropriate;
- b) the State of the Operator;

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- c) the State of Design;
- d) the State of Manufacture;
- e) any State that provided relevant information, significant facilities or expert; and
- f) ICAO.

11.2.2 When an aircraft involved in an accident has a mass of less than 2 250 kg and when airworthiness or matters considered being of interest to other States are involved, the investigator-in-charge, in coordination with the Director of Operations will forward the Preliminary Report (reference to Annex 13, Chapter 7, paragraph 7.2) to:

- a) the State of Registry or the State of Occurrence, as appropriate;
- b) the State of the Operator;
- c) the State of Design;
- d) the State of Manufacture; and
- e) any State that provided relevant information, significant facilities or expert.

11.2.3 The Preliminary Report should be sent within 30 days of the date of the accident. When matters directly affecting safety are involved, the Preliminary Report will be sent as soon as the information is available and by the most suitable and expeditious means available (reference to Annex 13, Chapter 7, paragraph 7.4).

11.2.4 Depending on the classification of the security event, the investigator-in-charge/designated investigator checks whether the occurrence meets the criteria for transmission of an ADREP preliminary report. As a reminder, he/she enters the deadline for transmission of the ADREP preliminary report to the aforementioned interested parties in the Notification and reporting checklist.

11.2.5 The designated investigator collects all the relevant information and gradually integrates it into the draft preliminary report, over the course of [twenty-five (25)] days following the accident. From the 25th day, the draft preliminary report is consolidated by the investigator-in-charge in coordination with the other members of the investigation team and sent to the management team of the (Director-General/CEO an Director of Engineering and Director of Operations).

11.2.6 The designated investigator sends on the 30th day following the accident, by e-mail, the preliminary ADREP report to all the States involved and to ICAO, if necessary, in coordination with the Director-General/CEO. The investigator-in-charge retains a copy of the correspondence in the investigation file.

11.2.7 If notification to ICAO is required, then forward the notification to - ALGInbox@icao.int Cc: adrep@icao.int; cstjohn@icao.int or via the following link: https://www.icao.int/safety/Reporting/formapp/index_ml.html.

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11.2.8 For the other States, the **designated investigator** refers to the list of contact details for the accident/incident investigation authorities of the ICAO Member States via the link on the Bureau's website. www.icao.int/safety/AIA/pages.

11.2.9 The table below gives guidance as to the type of report to be sent to the States concerned and to ICAO, in accordance with ICAO Annex 13, Chapter 7, paragraphs 7.1 to 7.4.

Sender	Category	type of communication	Recipients	Re	Time limit
NSIB (representing the State conducting the investigation)	Accident	Preliminary report	<ul style="list-style-type: none"> – State of registration – State of occurrence – Operator status – state of design – State of construction – State providing information, significant resources or experts – ICAO 	Accidents to aircraft over 2,250 kg	Within 30 days of the date of the accident*
	Serious incident		As above except ICAO	Accidents to aircraft of 2,250 kg or less, if airworthiness issues or matters of special interest are involved	Within 30 days of the date of the serious incident*
	Incident	Not applicable			

* If within 30 days the accident data report has been compiled and sent to ICAO, no preliminary report is required.

11.2.10 The investigator-in-charge, in coordination with the Director of Operations will dispatch the Preliminary Report to the States involved and ICAO, in accordance with Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Chapter 7, paragraphs 7.1 to 7.4.

11.3 ADREP ACCIDENT/INCIDENT DATA REPORTS

11.3.1 General

11.3.1.1 When the aircraft involved in an accident is of a maximum mass of over 2 250 kg, the IIC in coordination with the Directors of Engineering or Operations will send, as soon as practicable after the investigation is completed, the ADREP Accident/Incident Data Reports to:

- a) the State of Registry or the State of Occurrence, as appropriate;
- b) the State of the Operator;
- c) the State of Design;
- d) the State of Manufacture;
- e) any State that provided relevant information, significant facilities or expert; and
- f) ICAO.

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Further, the IIC should, upon request, provide other States with pertinent information in addition to that made available in the Accident/Incident Data Report (reference to Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Chapter 7, paragraphs 7.5 and 7.6) as follows.

11.3.1.2 When an aircraft involved in an accident has a mass of 2 250 kg or less, and when airworthiness or matters considered being of interest to other States are involved, the IIC will forward the Preliminary Report (reference to Annex 13, Chapter 7, paragraph 7.2) to:

- a) the State of Registry or the State of Occurrence, as appropriate;
- b) the State of the Operator;
- c) the State of Design;
- d) the State of Manufacture; and
- e) any State that provided relevant information, significant facilities or expert.

11.3.1.3 When the Bureau conducts an investigation into an incident to an aircraft of a maximum mass of over 5,700 kg, the IIC in coordination with the Directors of Engineering or Operations will send, as soon as is practicable after the investigation, the Incident Data Report to ICAO (reference to Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Chapter 7, paragraph 7.6).

11.3.1.4 The investigator-in-charge/designated investigator, in coordination with the Head of Safety Data, Research and Statistics Unit, will dispatch the Accident/Incident Data Report to the States involved and ICAO, in accordance with Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, Chapter 7, paragraphs 7.5 to 7.6. The table below shows the reporting line for the accident/incident data to ICAO.

<i>Sender</i>	<i>Category</i>	<i>type of communication</i>	<i>Recipients</i>	<i>Re</i>	<i>Time limit</i>
NSIB (representing the the State conducting the investigation)	Accident	Data report	ICAO	Accidents involving an aircraft over 2,250 kg	Once the investigation is completed and the final report published
	Incident			Accidents involving aircraft over 5,700 kg	

11.3.2 Procedures for Forwarding of ADREP Accident data Reports to ICAO

11.3.2.1 The Head of Safety Data, Research and Statistics, in coordination with the investigator-in-charge/designated investigator will direct the designated ECCAIRS officer to register the occurrence in ECCAIRS, by inserting the information available from the notification in up to 10 working days after the receipt of the notification, informing the Investigator-in-charge of the registration.

11.3.2.2 The Investigator-in-charge in coordination with the designated ECCAIRS Officer, will insert all the pertinent information resulting from the investigation into the corresponding ECCAIRS occurrence record in up to 15 working days after the publication of the final report.

11.1.2.3 The Investigator-in-charge in coordination with the designated ECCAIRS Officer, will generate the ADREP data report by creating the corresponding ECCAIRS data file for the event

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(format: e4f, e5f, or other available in the system for the ADREP report) in up to 3 working days after feeding the occurrence record (task 11.3.2.2), informing the Designated ECCAIRS Officer by e-mail when Report has been created.

11.3.2.4 The Designated ECCAIRS Officer will forward the report to ICAO (to the e-mail AIInbox@icao.int Cc: ADREP@icao.int, adrep@icao.int; cstjohn@icao.int or via the following link: https://www.icao.int/safety/Reporting/formapp/index_ml.html with copies to the Director-General/CEO and the Investigator-in-charge) in up to 5 working days after the being informed that the Report has been created (task 11.3.2.3).

11.3.2.5 The Designated ECCAIRS Officer will file the forwarding message to and, if available, the confirmation of receipt from ICAO in the electronic folder of the occurrence (PDF format to be saved in the secure server of the Unit), as well as in the printed hard copy folder of the occurrence in up to 5 working days after the forwarding of the report or immediately after the confirmation of receipt from ICAO (whichever comes first).

11.3.2.6 The Investigator-in-charge will close the investigation process by completing, dating, signing, and saving the checklist of the occurrence in the secure server (soft copy) and hard copy printed folder (original) in up to 5 working days after the forwarding of the report, communicating by e-mail to the Director-General/CEO on the closure of the process.

11.3.2.7 The investigator-in-charge/designated investigator will then enters the date of transmission of the report and the confirmation of receipt of the document in the Investigation file.

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11.4 GENERAL INSTRUCTIONS FOR COMPILING

11.4.1 Basic Rules

The Head of Safety Data, Research and Statistics Unit should ensure the accurate report accurate and complete data in accordance with Annex 13 and the guidance in this manual. Some basic rules to observe when reporting occurrences in ECCAIRS format (ADREP compatible format) are as follows:

- a) Determine the appropriate occurrence classification, i.e. whether it is an accident, serious incident or incident, based on injury level, aircraft damage and other information available.
- b) Complete the basic data such as date, time, State and location of occurrence, airport (if relevant), severity, aircraft type, operator, operation type and flight phase.
- c) Choose the appropriate units for the attributes before entering values, e.g. ft, MSL or FL for altitude.
- d) If more than one aircraft is involved in an occurrence, provide the information about the other aircraft. When entering event types for more than one aircraft, be sure to select the appropriate aircraft (1 or 2). All events must be in time sequence and care should be taken not to exclude vital events.
- e) Align events with occurrence category(ies).
- f) Use “Unknown” entries only if it is established after investigating that no information was found.
- g) Use “Blank” entries to indicate that the investigation is ongoing to find information that is currently not available.

11.4.2 ADREP Taxonomy

The ADREP taxonomy was developed by ICAO and contains definitions and terminology for aviation accident and incident reporting systems.

11.4.3 Dispatch of the Reports

11.4.3.1 When information on the occurrence is available in an ADREP-compatible format (e.g. ECCAIRS format), a copy of the electronic file (e.g. .E5F) should be attached to the notification e-mail and sent to adrep@icao.int. Cc: AIGInbox@OACI.onmicrosoft.com.

11.4.3.2 Reports that are completed on paper forms are to be sent to ICAO to the following address:

International Civil Aviation Organization
 999 Robert-Bourassa Boulevard,
 Montréal, Quebec H3C 5H7,
 Canada.

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11.5. SPECIAL INSTRUCTIONS FOR COMPILING

11.5.1 Occurrence Category Coding

11.5.1.1 The ADREP occurrence category taxonomy is part of ICAO accident and incident reporting system. The occurrence categories are a set of terms used by ICAO to categorize accidents and incidents in order to conduct safety trend analysis. The goal of such analysis is to take pre-emptive action to prevent recurrence of similar accidents or incidents.

11.5.1.2 Most accident and incident sequences involve multiple events. Therefore, strictly coding an accident or incident under a single category can be difficult. For instance, abrupt manoeuvring (AMAN) may also result in a loss of control in flight (LOC-I). In this case, the event is coded under both categories, AMAN and LOC-I. ICAO's occurrence category coding philosophy allows the reporter to code multiple categories for a single accident or incident in order to consider or study all events that led to the accident or incident.

11.5.2 Event Type Coding

11.5.2.1 In order to determine why an accident or incident happened, it is critical to study factors leading up to, during and after the occurrence. It is therefore vital that all event data known at the time of reporting is accurately included.

11.5.2.2 To further describe an event, "descriptive factors" can be entered for each event. Descriptive factors describe, in detail, what happened during an event by listing all phenomena present. If possible, the descriptive factors should be coded in chronological order below each event type.

11.5.2.3 To explain an event, "explanatory factors" can be entered for each descriptive factor. These factors explain why the event happened and include the human factor aspects in the coding of events. They are used to determine what preventive action may be required. The complete set of event types and descriptive and explanatory factors, with their detailed descriptions, can be found on the ICAO ADREP taxonomy web page.

11.5.2.4 General considerations when reporting events include the following:

- a) Be as specific as possible; for example, if the nose landing gear did not extend, use the event "nose/tail landing gear-related event" and not "landing gear-related event";
- b) Align occurrence categories with events; for example, if the occurrence category is System or Component Failure - Non-Powerplant (SCF-NP), then there must be an event of failure of a non-power plant component/system;
- c) Align events and descriptive factors: events and descriptive factors describe what went wrong, what did not work, what was out of the ordinary and what contributed to the occurrence; for example, the event "central warning-related event" can be used for events where the system malfunctioned, and the descriptive factor "central computers" can be used to specify the event;



- d) Complete the sequence of events in chronological order: an occurrence must be described by the way it is coded. In essence, the event coding should provide a similar image of the occurrence sequence, as is found in the narrative.

11.5.3 Narratives

11.5.3.1 The narrative provides a brief description of the occurrence, including emergency circumstances, significant facts and other relevant information. The narrative shall not exceed 200 words. It is important that events be described in chronological (time) order and be brief and specific.

11.5.3.2 The study and analysis of the sequence of events that led to the occurrence can help to better understand the nature of the occurrence. Therefore, narratives should include a concise summary of all events in order to provide information regarding the events that led to the occurrence. The information provided in a Preliminary Report narrative need not necessarily be repeated in a Data Report. However, any new information obtained subsequent to the Preliminary Report submission must be included in the Data Report. Seen together, the two narratives should provide the complete history of the flight and conclusions of the investigation.

11.5.3.3 When a Preliminary Report has not been submitted (either in the case of an incident or when an accident investigation has been completed within 30 days), the narrative in the Data Report must provide the history of the flight (and the description and analysis of how and why the event occurred), conclusions of the investigation, and findings and causes/contributing factors. In such cases, ideally a total of up to 400 words may be used in the narrative of the Data Report submitted.

11.5.4 Safety Recommendations

The reporter should correlate safety recommendations, including safety recommendations of global concern, and actions to the relevant findings, as applicable. The safety recommendation attributes on the Data Report should include any corrective action taken or under consideration. If possible, the safety recommendation should specify how this corrective action would resolve the identified safety problem. Include a summary of preventive action already taken.

11.5.5 Notification and Reporting Checklist

In this checklist, the following terms have the meanings indicated below:

- a) *International occurrences*. Accidents and serious incidents occurring in the territory of a Contracting State to aircraft registered in another Contracting State.
- b) *Domestic occurrences*. Accidents and serious incidents occurring in the territory of the State of Registry.

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- c) *Other occurrences.* Accidents and serious incidents occurring in the territory of a non-Contracting State, or outside the territory of any State.



CHAPTER 12

12 ACCIDENT PREVENTION MEASURES – ACCIDENT/INCIDENT DATABASE SYSTEM

12.1 INCIDENT REPORTING SYSTEMS

12.1.1 In accordance with Annex 19, Nigeria has established a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies. Nigeria has also established a voluntary incident reporting system that is non-punitive and affords protection to the sources of the information. The Bureau joins the mandatory and voluntary incident reporting system (platform) of the Nigeria Civil Aviation Authority (NCAA) to facilitate the collection of information that may not be captured by a mandatory incident reporting system.

12.1.2 The Bureau has arrangement with with the Authority (NCAA) to maintain and implement a reporting database to facilitate effective analysis and management of information on actual or potential safety deficiencies and to determine any preventive action required in accordance with the relevant Regulations shall similarly be maintained. It should be accessible to the Bureau and the Authority (NCAA), being the authorities responsible for the implementation of the State Safety Program (SSP of Nigeria. The database shall be in accordance with the ICAO ADREP compatible taxonomy.

12.1.3 The Director-General has established a Safety Data Analysis, Research and Statistics Unit responsible to conduct periodic analysis of information contained in accident and incident investigation reports and in incident reporting database(s) to determine any preventive actions required.

12.1.4 The database provides information on:

- a) aircraft operator/owner;
- b) the type of aircraft involved;
- c) the serial number;
- d) registration mark;
- e) the location of the accident/incident;
- f) the date and time of occurrence of the accident/incident;
- g) Number of fatally/seriously injured, and
- h) the nature of the accident/incident.

12.1.5 If the analyses of data identify safety matters of interest to other States, the Director-General/CEO will direct Head of the of the Unit to forward such safety information to other States as soon as possible.

12.1.6 The information contained in the occurrence database is analyzed every six months by the Head of the Unit in coordination with the experienced air safety investigators in order to determine the necessary preventive actions.

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12.1.7 In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources including safety studies.

12.1.8 Regardless of the source of safety recommendations (accident/incident reports, database analyses, or safety studies), if safety recommendations are addressed to an organization in another State, the Director-General/CEO will direct the investigator concerned to forward such recommendations through that State's investigation authority.

12.2 ACCIDENT AND INCIDENT DATABASE

12.2.1 In compliance with Annex 13, Chapter 8, Nigeria has established and maintains an accident and incident database to facilitate the effective analysis of information on actual or potential safety deficiencies and to determine any preventive actions required. The Bureau and the Nigerian Civil Aviation Authority, being the State authorities responsible for the implementation of the State Safety Programme (SSP) have access to this database to support their safety responsibilities and fulfil their duties.

12.2.2 The Bureau has adopted an ICAO ADREP compatible system for collection, sharing and exchange of safety information from its accident and incident database.

Note 1.— In accordance with Annex 19, Chapter 5, States are required to establish safety data collection and processing systems (SDCPS) to capture, store, aggregate and enable the analysis of safety data and safety information. State authorities responsible for the implementation of the SSP, which include accident investigation authorities, have access to the SDCPS to support their safety responsibilities.

Note 2.— SDCPS refers to processing and reporting systems, safety databases, schemes for exchange of information, and recorded information including but not limited to:

- a) data and information pertaining to accident and incident investigations;*
- b) data and information related to safety investigations by State authorities or aviation service providers;*
- c) mandatory safety reporting systems;*
- d) voluntary safety reporting systems; and*
- e) self-disclosure reporting systems, including automatic data capture systems.*

12.2.3 A team of experienced investigators are established by the Director-General to analyse the information contained in accident and incident investigation reports to determine any preventive actions required. If the analyses of data identify safety matters of interest to other States, Director-General will direct a member of the team to forward such safety information to other States as soon as possible.

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12.2.4 Regardless of the source of safety recommendations (accident/incident reports, database analyses, or safety studies), if they should be sent to another State, they will be transmitted to that State's accident investigation authority.

Note.—In accordance with Annex 19, Chapter 5, if a State, in the analysis of the information contained in its SDCPS, identifies safety matters considered to be of interest to other States, that State is required to forward such safety information to them as soon as possible. Prior to sharing such information, States will agree on the level of protection and conditions on which safety information will be shared.

[[Note.— Information on the sharing of safety information can be found in the ICAO “Code of conduct on the sharing and use of safety information” in the Global Aviation Safety Plan (Doc 10004)].

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12.3 EUROPEAN CO-ORDINATION CENTRE FOR AVIATION INCIDENT REPORTING SYSTEMS (ECCAIRS) DATABASE, ANALYSES AND SHARING OF DATA

Nigeria has adopted the European Co-ordination Centre for Aviation Incident Reporting System (ECCAIRS) software, which is fully compatible with the ICAO ADREP system in order to meet Annex 13, Chapter 8 requirements for States to establish and maintain an accident and incident database to facilitate the effective analysis of information on actual and potential safety deficiencies obtained, including that from its incident reporting system, and to determine any preventive actions required.

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APPENDICES

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APPENDIX A: THE PRIMARY LEGISLATION ON INVESTIGATION OF TRANSPORT OCCURRENCES

Refer to the Bureau's internet website www.nsib.gov.ng for the current Nigerian Safety Investigation Bureau (Establishment) Act.



APPENDIX B: OPERATING REGULATIONS

Refer to the Bureau's internet website: www.nsib.gov.ng for the current Civil Aviation (investigation of Air Accidents and Incidents) Regulations.



APPENDIX C: AGREEMENTS AND MEMORANDA OF UNDERSTANDING (MOU) WITH OTHER ORGANIZATIONS

Refer to the office of the Legal Adviser of the Bureau for copies of MoUs and other arrangements regarding assistance and cooperation between the Bureau and other organizations within and outside Nigeria to ensure timely investigation of aircraft accidents and serious incidents.



APPENDIX D: EXAMPLES OF SERIOUS INCIDENTS

(As per attachment C to the Annex 13)

1. The term “serious incident” is defined as follows:

Serious incident. An incident involving circumstances indicating that there was a high probability of an accident and associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an Unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down.

2. There may be a high probability of an accident if there are few or no safety defences remaining to prevent the incident from progressing to an accident. To determine this, an event risk-based analysis (that takes into account the most credible scenario had the incident escalated and the effectiveness of the remaining defences between the incident and the potential accident) can be performed as follows:

- a) consider whether there is a credible scenario by which this incident could have escalated to an accident; and
- b) assess the remaining defences between the incident and the potential accident as:
 - effective, if several defences remained and needed to coincidentally fail; or
 - limited, if few or no defences remained, or when the accident was only avoided due to providence.

2.1 Consider both the number and robustness of the remaining defences between the incident and the potential accident.

Ignore defences that failed, and consider only those that worked and any subsequent defences still in place.

Note 1.— The most credible scenario refers to the realistic assessment of injury and/or damage resulting from the potential accident.

Note 2.— Defences include crew, their training and procedures, ATC, alerts (within and outside the aircraft), aircraft systems and redundancies, structural design of the aircraft and aerodrome infrastructure.

2.2 The combination of these two assessments helps to determine which incidents are serious incidents:

		b) Remaining defences between the incident and the potential accident	
		Effective	Limited
a) Most credible scenario	Accident	Incident	Serious Incident
	No accident	Incident	



3. The incidents listed are examples of what may be serious incidents. However, the list is not exhaustive and, depending on the context, items on the list may not be classified as serious incidents if effective defences remained between the incident and the credible scenario.

- a. Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.
- b. Collisions not classified as accidents.
- c. Controlled flight into terrain only marginally avoided.
- d. Aborted take-offs on a closed or engaged runway, on a taxiway¹ or unassigned runway.
- e. Take-offs from a closed or engaged runway, from a taxiway¹ or unassigned runway.
- f. Landings or attempted landings on a closed or engaged runway, on a taxiway¹ or unassigned runway or on unintended landing locations such as roadways.
- g. Retraction of a landing gear leg or a wheels-up landing not classified as an accident.
- h. Dragging during landing of a wing tip, an engine pod or any other part of the aircraft, when not classified as an accident.
- i. Gross failures to achieve predicted performance during take-off or initial climb.
- j. Fires and smoke in the cockpit, in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.
- k. Events requiring the emergency use of oxygen by the flight crew.
- l. Aircraft structural failures or engine disintegration, including uncontained turbine engine failures, not classified as an accident.
- m. Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.
- n. Flight crew incapacitation in flight:
 - i. for single pilot operations (including remote pilot); or
 - ii. for multi-pilot operations for which flight safety was compromised because of a significant increase in workload for the remaining crew.
- o. Fuel quantity level or distribution situations requiring the declaration of an emergency by the pilot such as insufficient fuel, fuel exhaustion, fuel starvation or inability to use all usable fuel on board.
- p. Runway incursions classified with severity A. The Manual on the Prevention of Runway Incursions (Doc 9870) contains information on the severity classifications.
- q. Take-off or landing incidents. Incidents such as under-shooting, overrunning or running off the side of runways.
- r. System failures (including loss of power or thrust), weather phenomena, operations outside the approved flight envelope or other occurrences which caused or could have caused difficulties controlling the aircraft.
- s. Failures of more than one system in a redundancy system mandatory for flight guidance and navigation.
- t. The unintentional or, as an emergency measure, the intentional release of a slung load or any other load carried external to the aircraft.

1. Excluding authorized operations by helicopters.

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APPENDIX E: TEMPLATE LETTERS

APPENDIX E1: TEMPLATE LETTER REQUESTING FOR INFORMATION FROM THE OPERATOR



NIGERIAN SAFETY INVESTIGATION BUREAU

P.M.B 7009, Area 1, Garki, Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-7430099, Mob: +234-8077090900 Hotline: +234-8077090909
 Website: www.oib.gov.ng Email: commissioner@oib.gov.ng

[DATE]

[Operator]

[Address]

Dear Sir,

REQUEST FOR INFORMATION ON THE [OCCURRENCE TYPE] INVOLVING YOUR [AIRCRAFT TYPE] WITH NATIONALITY AND REGISTRATION MARKS [REG. NO.] WHICH OCCURRED AT [LOCATION] ON [DATE]

Nigerian Safety Investigation Bureau (NSIB) wishes to request for the following information:

a) manufacturer, model, nationality and registration marks, serial number of the aircraft	
b) qualification of the pilot-in-command, and nationality of crew and passengers	
c) last point of departure and point of intended landing of the aircraft	
d) number of crew	
e) number of passengers onboard the aircraft	
f) are dangerous goods carried on board the aircraft	
g) description of the dangerous goods (type/nature)	
h) identification, markings and packaging of the dangerous goods	
i) location(s) of the dangerous goods	
j) quantity of the dangerous goods	
k) Documentation of the dangerous goods	
l) Any other pertinent information	

Please accept the assurances of the highest regards of the Director General/CEO.

[Name of Signatory]

[Designation]

For: Director General/CEO

Please forward acknowledgements of receipt of this letter to: commissioner@oib.gov.ng, afw@oib.gov.ng, ohd@oib.gov.ng, eei@oib.gov.ng, eei@oib.gov.ng



APPENDIX E2: TEMPLATE LETTER OF TRANSMITTAL OF DRAFT FINAL REPORT TO OTHER STATES



NIGERIAN SAFETY INVESTIGATION BUREAU

P.M.8 7009, Area 1, Garki, Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-7430099, Mob: +234-8077090900 Hotline: +234-8077090909
 Website: www.sib.gov.ng Email: commissioner@aib.gov.ng

[DATE]

[Stakeholder]
 [Address]

Dear Sir,

LETTER OF TRANSMITTAL

DRAFT FINAL REPORT ON THE [OCCURRENCE TYPE] INVOLVING [AIRCRAFT TYPE] WITH NATIONALITY AND REGISTRATION MARKS [REG. NO.] OPERATED BY [OPERATOR'S NAME] WHICH OCCURRED AT [LOCATION] ON [DATE]

Nigerian Safety Investigation (NSIB) Nigeria is hereby inviting the under listed stakeholders for their respective, significant and substantial comments on the captioned report in compliance with ICAO Annex 13, sub section 6.3.

The Bureau invites you to provide comments on the report within sixty (60) days from the date of this transmittal letter, to amend or to include substance of comments received in accordance with sub section 6.3 of ICAO Annex 13.

This transmittal letter requests you to kindly forward this draft report to the operator and the organization responsible for the type design and final assembly of the aircraft as applicable, for their comments.

This draft final report is confidential and should not be disclosed or shared to the public.

Please accept the assurances of the highest regards of the Commissioner/CEO.

[Name of Signatory]

[Designation]

For: Director General/CEO

PARTICIPATING STAKEHOLDERS IN THE INVESTIGATION [List all stakeholders here]

- a. Nigeria Civil Aviation Authority (NCAA)
- b.
- c.

Please forward acknowledgements of receipt of this letter to: commissioner@aib.gov.ng
 cc: alfawals@aib.gov.ng, danrakadaryabu@aib.gov.ng, sani.kahir@aib.gov.ng



APPENDIX E3: TEMPLATE LETTER OF TRANSMITTAL OF DRAFT FINAL REPORT TO AUTHORITIES AND ORGANIZATIONS WITHIN NIGERIA



NIGERIAN SAFETY INVESTIGATION BUREAU

FM 8 7009, Area 1, Garki, Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-7430099, Mob: +234-8077090900 Hotline: +234-8077090909
 Website: www.aib.gov.ng Email: commissioner@aib.gov.ng

[DATE]

[Stakeholder]
 [Address]

Dear Sir,

LETTER OF TRANSMITTAL

DRAFT FINAL REPORT ON THE [OCCURRENCE TYPE] INVOLVING [AIRCRAFT TYPE] WITH NATIONALITY AND REGISTRATION MARKS [REG. NO.] OPERATED BY [OPERATOR'S NAME] WHICH OCCURRED AT [LOCATION] ON [DATE]

Nigerian Safety Investigation (NSIB) Nigeria is hereby inviting the under listed stakeholders for their respective, significant and substantial comments on the captioned report in compliance with ICAO Annex 13, sub section 6.3.

The Bureau invites you to provide comments on the report within sixty (30) days from the date of this transmittal letter, to amend or to include substance of comments received in accordance with sub section 6.3 of ICAO Annex 13.

This draft final report is confidential and should not be disclosed or shared to the public.

Please accept the assurances of the highest regards of the Director-General/CEO.

[Name of Signatory]
 [Designation]
 For: Director General/CEO

PARTICIPATING STAKEHOLDERS IN THE INVESTIGATION [List all stakeholders here]

- a. Nigeria Civil Aviation Authority (NCAA)
- b.
- c.

Please forward acknowledgements of receipt of this letter to: commissioner@aib.gov.ng
 cc: aifawals@aib.gov.ng, danrakadaryyabu@aib.gov.ng, sani.kabir@aib.gov.ng



APPENDIX E4: TEMPLATE LETTER OF GRANTING OF OBSERVER/PARTICIPANT STATUS



NIGERIAN SAFETY INVESTIGATION BUREAU
 Plot 8, 70/70, Area 1, Clarks, Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-430099, Mails: +234-8077099900, Faxline: +234-8077099904
 Website: www.nsi.gov.ng Email: commissioner@nrib.gov.ng

[DATE]

Dear [NAME OF OBSERVER/PARTICIPANT],

GRANTING OF OBSERVER/PARTICIPANT STATUS

[ACCIDENT FILE NUMBER]
 [AIRCRAFT REGISTRATION]
 [LOCATION]

The Nigerian Safety Investigation Bureau (NSIB), herein referred to as the Bureau, is empowered to investigate aircraft accidents in Nigeria. The objective of the investigation is to advance aviation safety by identifying safety deficiencies and making recommendations designed to eliminate or reduce such deficiencies.

During the course of an accident investigation, the Bureau may authorize a person to attend as an observer when the person is designated as such by a Minister responsible for a government department having a direct interest in the investigation and/or another State Investigation Authority, or as a participant when, in the opinion of the Bureau, the person has a direct interest in the subject-matter of the investigation and will contribute to achieving the objective of the Bureau.

By this letter, you are granted the status of an observer or a participant to this accident and, subject to any conditions that the Bureau may impose and under the supervision of an investigator, you may:

- (a) attend at the accident site;
- (b) examine the aircraft, its component parts and contents;
- (c) unless otherwise prohibited by law, examine relevant documents; and
- (d) attend laboratory examination and testing.

Your attendance as an observer/participant is subject to the following conditions:

- (a) you shall limit your activities at the accident site to those outlined by the Investigator-in-charge;
- (b) you shall ensure that your activities do not restrict or otherwise interfere with the investigators in the performance of their duties; and
- (c) you shall ensure that the information you gain as a result of your observer/participant status is not disclosed to any unauthorized person.

Failure to comply with any of the above conditions and responsibilities could result in the immediate revocation of your observer/participant status.

You should also understand that the privileges of an observer/participant will be exercised at your own risk.

Please sign and return the attached copy of this letter to the Investigator-in-charge, indicating your understanding and acceptance of the above-mentioned conditions and responsibilities.

Please accept the assurances of the highest regards of the Director General/CEO.

Yours truly,

[NAME OF SIGNATORY]
 [Designation]
 For: Director General/CEO

I understand and accept the conditions outlined above with respect to my attendance as an observer/participant at the subject investigation.
 I also understand that the privileges of an observer/participant will be exercised at my own risk, and I hereby agree to indemnify and save harmless the Accident Investigation Bureau for any damage or injuries I may suffer as a result of my attending the investigation as an observer.

Signed:
 [NAME OF SIGNATORY]
 [Designation]

Please forward acknowledgments of receipt of this letter to: commissioner@nrib.gov.ng, or: af@nrib.gov.ng, nd@nrib.gov.ng, web@nrib.gov.ng



APPENDIX E5: TEMPLATE LETTER ACCEPTANCE OF ACCREDITED REPRESENTATIVE



NIGERIAN SAFETY INVESTIGATION BUREAU
 P.M. 8 7009, Area 1, Garki, Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-7430099, Mob: +234-8077090900 Hotline: +234-8077090909
 Website: www.oib.gov.ng Email: commission@oib.gov.ng

Dear [NAME OF ACCREDITED REPRESENTATIVE] [DATE]

LETTER OF ACCEPTANCE OF ACCREDITED REPRESENTATIVE

[ACCIDENT FILE NUMBER]
 [AIRCRAFT REGISTRATION]
 [LOCATION]

The Nigerian Safety Investigation Bureau (NSIB), herein referred to as the Bureau, is empowered to investigate aircraft accidents in Nigeria. The objective of the investigation is to advance aviation safety by identifying safety deficiencies and making recommendations designed to eliminate or reduce such deficiencies.

During the course of an accident investigation, the Bureau may authorize a person to participate as an accredited representative when the person is designated as such by a Minister responsible for a government department having a direct interest in the investigation and/or another State Investigation Authority in the subject-matter of the investigation and should contribute to achieving the objective of the Bureau.

Pursuant to the provisions of sections 5.19 and 5.20 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, and pursuant to your designation by your State, you are hereby granted the status of an accredited representative of your State to participate in the afore-referenced investigation.

You shall be subject to the supervision of the Investigator-in-charge (IIC) and be permitted to:

- (a) visit the accident site;
- (b) examine the aircraft/wreckage, its component parts and contents;
- (c) question witnesses;
- (d) receive copies of pertinent documents (saving all such exceptions as may be determined by the Commissioner);
- (e) have full access to all relevant evidence;
- (f) make submissions with respect to various elements of the investigation;
- (g) participate in read-out of recorded media;
- (h) participate in off-scene investigative activities such as component examinations, technical briefings, tests and simulations;
- (i) participate in progress meetings including deliberations related to analysis, findings, causes, contributing factors and safety recommendations; and
- (j) be accompanied by technical and other advisers as may be considered necessary by your State.

Your attendance as an accredited representative is subject to the following conditions:

- (a) you shall provide to the Bureau with all relevant information available to you; and
- (b) you shall not divulge information on the progress and the findings of the investigation without the express consent of the Bureau.

Failure to comply with any of the above conditions and responsibilities could result in the immediate revocation of your accredited representative status.

You should also understand that the privileges of an accredited representative will be exercised at your own risk.

Please sign and return the attached copy of this letter to the Investigator-in-charge, indicating your understanding and acceptance of the above-mentioned conditions and responsibilities.

Please accept the assurances of the highest regards of the Director General/CEO.

Yours truly,
 [NAME OF SIGNATORY]
 [Designation]
 For: Director General/CEO

I understand and accept the conditions outlined above with respect to my attendance as an accredited representative at the subject investigation.
 I also understand that the privileges of an accredited representative will be exercised at my own risk, and I hereby agree to indemnify and save harmless the Accident Investigation Bureau for any damage or injuries I may suffer as a result of my attending the investigation as an accredited representative.

Signed:
 [NAME OF SIGNATORY]
 [Designation]

Please forward acknowledgements of receipt of this letter to: commission@oib.gov.ng, or af@oib.gov.ng, or public@oib.gov.ng, or enquiries@oib.gov.ng



APPENDIX E6: TEMPLATE LETTER OF ACCEPTANCE OF ADVISER



NIGERIAN SAFETY INVESTIGATION BUREAU

P.M.B 7009, Area 1, Garki, Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-7430099, Mob: +234-8077090900 Hotline: +234-8077090909
 Website: www.aib.gov.ng Email: commissioner@aib.gov.ng

Dear [NAME OF ADVISER],

[DATE]

LETTER OF ACCEPTANCE OF ADVISER

[ACCIDENT FILE NUMBER]
 [AIRCRAFT REGISTRATION]
 [LOCATION]

The Nigerian Safety Investigation Bureau (NSIB), herein referred to as the Bureau, is empowered to investigate aircraft accidents in Nigeria. The objective of the investigation is to advance aviation safety by identifying safety deficiencies and making recommendations designed to eliminate or reduce such deficiencies.

During the course of an accident investigation, the Bureau may authorize a person to participate as an adviser to an accredited representative when the person is designated as such by a Minister responsible for a government department having a direct interest in the investigation and/or another State Investigation Authority in the subject-matter of the investigation and should contribute to achieving the objective of the Bureau.

Pursuant to the provisions of sections 5.19 and 5.20 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, And pursuant to your designation by your State, you are hereby granted the status of an Adviser to assist the accredited representative of your State to make his/her participation in the above-referenced investigation effective.

You shall be subject to the under the supervision of the accredited representative of your State, to participate in the investigation to the extent necessary.

Your attendance as an adviser to the accredited representative is subject to the following conditions:

- (a) you shall provide to the Bureau with all relevant information available to you; and
- (b) you shall not divulge information on the progress and the findings of the investigation without the express consent of the Bureau.

Failure to comply with any of the above conditions and responsibilities could result in the immediate revocation of your adviser status.

You should also understand that the privileges of an adviser will be exercised at your own risk.

Please sign and return the attached copy of this letter to the investigator-in-charge, indicating your understanding and acceptance of the above-mentioned conditions and responsibilities.

Please accept the assurances of the highest regards of the Director General/CEO.

Yours truly,

[NAME OF SIGNATORY]

[Designation]

For: Director General/CEO

I understand and accept the conditions outlined above with respect to my attendance as an adviser at the subject investigation. I also understand that the privileges of an adviser to the accredited representative will be exercised at my own risk; and I hereby agree to indemnify and save harmless the Accident Investigation Bureau for any damage or injuries I may suffer as a result of my attending the investigation as an adviser to the accredited representative.

Signed:

[NAME OF SIGNATORY]

[Designation]

Please forward acknowledgements of receipt of this letter to: commissioner@aib.gov.ng, cc: af@nsib.gov.ng, publicaffairs@aib.gov.ng, seniorlab@aib.gov.ng



APPENDIX E7: TEMPLATE LETTER OF ACCEPTANCE OF EXPERT



NIGERIAN SAFETY INVESTIGATION BUREAU
 P.M.B 7009, Area 1, Opposite Nnamdi Azikiwe International Airport, Abuja, Nigeria
 Tel: +234-1-7430099, Mob: +234-807-7090900 Hotline: +234-807-7090909
 Website: www.nsi.gov.ng Email: commissioner@nrib.gov.ng

Dear [NAME OF EXPERT], [DATE]

LETTER OF ACCEPTANCE OF EXPERT

[ACCIDENT FILE NUMBER]
 [AIRCRAFT REGISTRATION]
 [LOCATION]

The Nigerian Safety Investigation Bureau (NSIB), herein referred to as the Bureau, is empowered to investigate aircraft accidents in Nigeria. The objective of the investigation is to advance aviation safety by identifying safety deficiencies and making recommendations designed to eliminate or reduce such deficiencies.

During the course of an accident investigation, the Bureau may authorize a person to participate as an expert when the person is designated as such by a Minister responsible for a government department having a direct interest in the investigation and/or another State Investigation Authority in the subject-matter of the investigation and should contribute to achieving the objective of the Bureau.

Pursuant to the provisions of Section 5.21 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, and pursuant to your designation by your State, you are hereby granted the status of an Expert.

You shall be subject to the under the supervision of the Investigator-in-charge, to participate in the investigation to the extent necessary.

You shall be subject to the supervision of the Investigator-in charge (IIC) and be permitted to:

- (a) Visit the scene of the accident;
- (b) Have access to the relevant factual information, which is approved for public release by the State conducting the investigation and information on the progress of the investigation;
- (c) Assist in the identification of victims;
- (d) Meet with surviving passengers who are citizens of the expert's States; and
- (e) Receive a copy of the final report or duties under these Regulations.

Your attendance as an expert is subject to the following conditions:

- (a) you shall provide to the Bureau with all relevant information available to you; and
- (b) you shall not divulge information on the progress and the findings of the investigation without the express consent of the Bureau.

Failure to comply with any of the above conditions and responsibilities could result in the immediate revocation of your expert status.

You should also understand that the privileges of an expert will be exercised at your own risk.

Please sign and return the attached copy of this letter to the Investigator-in-charge, indicating your understanding and acceptance of the above-mentioned conditions and responsibilities.

Please accept the assurances of the highest regards of the Director General/CEO.

Yours truly,

[NAME OF SIGNATORY]
 [Designation]
 For: Director General/CEO

I understand and accept the conditions outlined above with respect to my attendance as an expert at the subject investigation. I also understand that the privileges of an expert will be exercised at my own risk, and I hereby agree to indemnify and save harmless the Accident Investigation Bureau for any damage or injuries I may suffer as a result of my attending the investigation as an expert.

Signed:

[NAME OF SIGNATORY]
 [Designation]

Please forward acknowledgements or receipt of this letter to: commissioner@nrib.gov.ng, or: af@nrib.gov.ng, ed@nrib.gov.ng, sc@nrib.gov.ng



APPENDIX F: WRECKAGE AND PARTS RELEASE FROM

ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, MURTALA MUHAMMED INTERNATIONAL AIRPORT P.M.B. 016 IKEJA- LAGOS, NIGERIA



WRECKAGE AND PARTS RELEASE FORM

Occurrence Reference: _____

The Bureau is conducting an investigation into the following aviation safety matter:

Investigation Title and/or other description: (aircraft make, model, registration, date of occurrence, etc)

The items listed below are no longer required by the Bureau as part of its safety investigation.

Note. – It is strongly recommended that components be inspected by authorized personnel where it is intended for them to be returned to operational service.

Items details (description and condition)	Date returned

Signature:
(IIC or Delegate)

Name:
(IIC or Delegate)

Date:

Phone:

Fax:

Email:

Please return a signed copy of this form to the above person at the Accident Investigation Bureau.

Owner or agent acknowledgement

I accept custody of the listed items:

Owner or agent's name:

Phone:

Signature of owner or agent:

Date:



APPENDIX G: LIST OF SAFETY INVESTIGATOR KITS, EQUIPMENT AND TOOLS

NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B, 7009 GARKI FCT- ABUJA; NIGERIA



S/N	INDISPOSABLE PERSONAL PROTECTIVE EQUIPMENTS	QUANTITY	LOCATION
1	Arm band		
2	Safety goggles		
3	First Aid box		
4	Reflective Jacket		
5	Safety Boot (old)		
6	Stainless cup		
7	Safety Helmet		
8	Safety Boots (New)		
9	Survival jacket		
10	PPE Coverall		
11	Mobile Tent		
12	AIB raincoat		
13	Safety Rainboot		
14	Chemical Respirator		
15	Safety jacket		
16	Rubber hand glove		
17	Fast fit gloves & Long hand gloves		
18	Flying Flags		



NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA- NIGERIA



S/N	DISPOSABLE PERSONAL PROTECTIVE EQUIPMENTS	QUANTITY	LOCATION
1	Biosult (disposable coverall)		
2	Trualr-vented Respirator		
3	Fitter masks		
4	DTC3W -0 FACE -MASK		
5	Chemical Respirator cartridge		
6	Mosquito Reppellant		

S/N	INVESTIGATION TOOLS OR EQUIPMENT	QUANTUTY	LOCATION
1	Evidence tube 1x9		
2	Evidence tools 75x6		
3	Evidence tube1x7		
4	Evidence (Bio hazard)		
5	Evidence Bag A131		
6	Evidence Bag B134		
7	Evidence Bag C131		
8	Evidence Bag D114		
9	Note book legal pad		
10	Industrial marker		
11	Industrial sharpie marker		
12	Wet eraser		
13	U line polybag		
14	Flash drive		
15	AIB caution banner		

S/N	INVESTIGATION TOOLS OR EQUIPMENT	QUANTUTY	LOCATION
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NIGERIAN SAFETY INVESTIGATION BUREAU



SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARO FCT- ABUJA- NIGERIA

16	Tripod		
17	GP monopad		
18	UM-MCW (joining belt)		
19	GP Wrist strap		
20	GP Buckle Mount		
21	GP Bike Handle Bar		
22	GP Head strap		
23	3 Ways grip		
24	Arm tripod		
25	Safety torch light		
26	Digital recorder with headphone		
27	2.2 High definition AF Telephone lens		
28	GoPro Medium case		
29	U/W Camera Housing		
30	55 mm Telephone		
31	Wide angled lens		
32	Rechargeable led torch light SRL 3400		
33	Pencil		
34	Screen Blocker		
35	Memory Cards for cameras		
36	Two-way(VHF & UHF) Air band Transceiver		
37	GPS MAP276 (Vehicle GPS)		
38	One-way (VHF) Air band Transceiver		
39	Go-Kit Bag		
40	GP.Chest strap		

S/N	INVESTIGATION TOOLS OR EQUIPMENT	QUANTUTY	LOCATION
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NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA



41	Floating Bobber		
42	GP 2xJ-Hook		
43	GP Helment Mount Kit		
44	GP 3xFlat +3x Curved		
45	Digital voice recoder		
46	Shutter Release (wireless)		
47	Digital Reader/writer		
48	Filter Kit (Bower)		
49	Digital Camera Accessories clean kit		
50	XIT Photo43" Monopod		
51	Close-up Macro lenses(55mm)		
52	Filter Kit(55mm)		
53	Filter kit (67mm)		
54	Digital slave flash		
55	GP under water housing		
56	(CT TEK) HD Portable DVR with 2.4" lens		
57	3 ways Adjustable Grip/Arm/Tripod		
58	Polaroid (16mp/Optical 4x zoom		
59	Nikon Camera		
60	Nikon Camera with lens on different pack		
61	13 E pro Hero stand		
62	45 Accessories Kit (camera)		
63	15 Accessories Kit (camera)		
64	Barska binoculars, Hookway Binoculars,Floating Binocular		
65	Camera Bag		

S/N	INVESTIGATION TOOLS OR EQUIPMENT	QUANTUTY	LOCATION
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NIGERIAN SAFETY INVESTIGATION BUREAU



SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA; NIGERIA

66	Led magnifier		
67	Go pro Hero & silver		
68	Swiss knife		
69	Torch Light		
70	Aluminium clip board		
71	Emergency Flare		
72	Casio calculator		
73	GP Suction cup		

S/N	SURVEY EQUIPMENT	QUANTITY	LOCATION
1	Ruler		
2	Caution Tape (small)		
3	Euro Tape 700mmX500mm		
4	Lazer measure		
5	Caution Tape (BIG)		
6	Drones		



NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA; NIGERIA



S/N	ITEMS IN GO-KIT BAGS	QUANTITY	LOCATION
1	Clip Board		
2	Digital camera		
3	Magnifying lens		
4	Calculator		
5	Voice Recorder		
6	Note pad		
7	Erasable Marker		
8	Permanent marker		
9	Binocular with compass		
10	Power Bank		
11	Torch light with batteries		
12	Nose mask		
13	Safety goggle		
14	Safety gloves		
15	Flash drives		
16	Market Flags		
17	Safety flare		
18	Mosquito Repellent cream		
19	Steel Ruler		
20	Steel cup (tumbler)		



APPENDIX H: GUIDELINES ON PERSONAL PROTECTIVE EQUIPMENT AGAINST BIOLOGICAL HAZARDS

The following provides general guidelines on the personal protective equipment to be used by accident investigators at the accident site. The protective equipment may also be required when performing off-site examinations and tests on wreckage parts.

Disposable latex gloves: Latex gloves should be durable even though they are to be worn under work gloves. All latex gloves should be properly disposed of prior to leaving the accident site.

Work gloves: Work gloves should be as durable as practical and provide the hand, wrist and forearm with puncture and abrasion protection. Leather, nitrile and kevlar gloves are commonly used. All three types should be disinfected or properly disposed of prior to leaving the accident site.

Face masks: Face masks should cover the nose and mouth. Masks come in disposable and reusable configurations and should be disinfected or properly disposed of prior to leaving the accident site.

Protective goggles: Protective goggles should enclose the eyes by sealing around the top, bottom and sides. Common safety glasses are not acceptable. Goggles should be fitted with one-way check valves or vents to prevent fogging and should be disinfected or properly disposed of prior to leaving the accident site.

Disposable protective suits: Protective suits should be durable and liquid-resistant and should fit properly. If possible, they should have elastic-type hoods and elastic pant cuffs. Duct tape can be used to alter the suits and to patch tears. Protective suits should be properly disposed of prior to leaving the accident site.

Disposable shoe covers and protective boots: Disposable shoe covers made of polyvinyl chloride (PVC) or butyl rubber are recommended. Leather, rubber or Gortex work boots are also acceptable. Disposable shoe covers and protective boots should be disinfected or properly disposed of prior to leaving the accident site.

Disinfection chemicals: Two chemical types are commonly used to disinfect personal protective equipment. Rubbing alcohol of 70 per cent strength is effective and is available in towelettes, as well as in large hand towels. The most effective disinfectant solution is a mixture of common household bleach and water, with one part bleach to ten parts of water. Never mix alcohol and bleach.

Biological hazard disposal bags: Biological hazard disposal bags must be used for disposal of contaminated personal protective equipment. The bags are red or orange and are labelled "Biological hazard". For transport, the disposed material should be double bagged.



APPENDIX I: ACCIDENT SITE HAZARD IDENTIFICATION AND RISK ASSESSMENT CHECKLIST

NIGERIAN SAFETY INVESTIGATION BUREAU
 SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA,
 NIGERIA
ACCIDENT SITE HAZARD IDENTIFICATION AND RISK ASSESSMENT CHECKLIST

INVESTIGATION NUMBER:	AIRCRAFT TYPE / REGISTRATION MARKS/ OPERATOR
DATE:	ASSESSMENT CONDUCTED BY:

ITEMS TO BE CHECKED	DANGER EXISTS	NO DANGER	NOT KNOWN	REMARKS
---------------------	---------------	-----------	-----------	---------

THE WRECKAGE

- | | | | | |
|--|--------------------------|--------------------------|--------------------------|--|
| 1. Danger of fire | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 2. Hot areas after fire | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. Flammable fuel | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 4. Other flammable liquids | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. Corrosive material | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 6. Dangerous goods | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. Risk of explosion | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 8. Ammunition or pyrotechnics | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 9. Risk of electricution/ Electric shock | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 10. Dangerous components | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. Toxic fumes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 12. Sharp glass and/or metal | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. Sharp composite material | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 14. Risk of collapsing structures | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 15. Risk of falling material | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 16. Bio-hazard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 17. Pressurized components | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 18. Electromagnetic radiation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 19. Radioactive radiation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 20. Pressurized systems | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 21. Composite ash | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

ENVIRONMENTAL RISKS

- | | | | | |
|------------------------------|--------------------------|--------------------------|--------------------------|--|
| 22. Other traffic | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 23. Rain | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 24. Heat | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 25. Darkness or bad lighting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 26. Slippery areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 27. Risk of injury | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 28. Risk of falling | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 29. Risk of drowning | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 30. Risk of violence | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 31. Dangerous wildlife | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

OTHER FACTORS

- | | | | | |
|---------------------------------------|--------------------------|--------------------------|--------------------------|--|
| 32. Protective equipment insufficient | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 33. Lack of resources | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 34. Lacking of proper tools | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 35. Rush and/or fatigue | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 36. Lack of vaccinations | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| 37. Other danger | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |



NIGERIAN SAFETY INVESTIGATION BUREAU



SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA,
NIGERIA

ACCIDENT SITE HAZARD IDENTIFICATION AND RISK ASSESSMENT CHECKLIST

RESULT OF RISK ASSESSMENT (Are the risks acceptable and actions required)

THIS DOCUMENT MUST BE FILED IN INVESTIGATION FOLDER



Investigation Policy and Procedures Manual (iPPM)	Approved by:	Director-General/CEO
Effective Date: 02 Sep 2023	Issue: 03	Revision: 01
		Page 330 of 358



APPENDIX J: REPORTING FORM AND REPORTING CHECKLIST

APPENDIX J1: AIRCRAFT ACCIDENT/ SERIOUS INCIDENT REPORT FORM

Murtala Muhammed International
Airport, P.M.B. 016 Reja, Lagos,
Nigeria.

24hrs Emergency Lines:
+234(0)8077090909, 8077090908
Fax:

Aircraft Accident / Incident Report Form



Accident Investigation
Bureau

Part 1

ACCIDENT DETAILS	
Occurrence:	.....
Date:	..... Time: Local/UTC (delete as appropriate)
Location:	.....
	Lat/Long or OS Grid (if not on airfield):
AIB File Reference:	.....

Please fill in this form in **CAPITAL LETTERS** and **black ink** only. We will electronically scan and store the information you provide. Use the reverse of the form as a continuation sheet if necessary. Please complete as much information as possible.

Notes:	1 AIRCRAFT
	1.1 AIRCRAFT DETAILS
	Registration: Manufacturer:
	Generic Name: Type and Series:
	Engine Model: No of Engines: Build Year:
	C of A Category: C of A Issue Date:
	1.2 CHECKS
	Total airframe hours: Last check type: Date:
	1.3 MAINTENANCE DETAILS
	Company: Tel:
Address: Fax:	
Post Code: Email:	
2 OPERATOR DETAILS	
Company:	
Address: Tel:	
Post Code: Fax:	
..... Email:	
3 COMPANY FLIGHT SAFETY OFFICER	
Name:	
Company:	
Address: Tel:	
..... Fax:	
Post Code: Email:	
4 FLIGHT	
6.1 FLIGHT DETAILS	
Purpose of flight: <input type="checkbox"/> Passenger <input type="checkbox"/> Cargo <input type="checkbox"/> Non-Revenue <input type="checkbox"/> Training	
Departure airfield: Departure time: Local/UTC:	
Planned destination:	
6.2 WEIGHTS AND LOADING DETAILS (attach Load Sheet if available)	
Basic: (kg) C of G:	
Max take-off weight: (kg) Max landing weight: (kg)	
No of Crew: Weight: (kg) No of Passengers: Weight: (kg)	
Fuel type: Weight: (kg) Baggage/Freight: Weight: (kg)	

FILE REFERENCE

AIB Form 001

REG Date of event

INVESTIGATION POLICY AND PROCEDURES MANUAL

NIGERIAN SAFETY INVESTIGATION BUREAU, SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT ABUJA



Murtala Muhammed International
Airport. P.M.B. 016 Ikeja, Lagos.
Nigeria.

Aircraft Accident / Serious Incident Report Form



Accident Investigation
Bureau

24hrs Emergency Lines:
+234(0)8077090908, 8077090908
Fax:

Part 1

5 WEATHER	
Issue time:	<u>Forecast</u> | <u>Actual</u>
Wind direction/Speed: .....	.....
Visibility (km): .....	.....
Weather: .....	.....
Cloud: .....	.....
Temperature/dewpoint: .....	.....
TEMPO information: .....	.....
Light conditions:	<input type="checkbox"/> Day <input type="checkbox"/> Twilight <input type="checkbox"/> Night
QNH: .....	.....
Obtained from: .....	.....
Tick appropriate boxes stating other if relevant	6 AIRFIELD DETAILS (complete only if relevant)
	Airfield name:
	ICAO Designator:
	Type of: <input type="checkbox"/> Departure <input type="checkbox"/> Approach
	Navigation aids used:
	Runway surface: <input type="checkbox"/> Grass <input type="checkbox"/> Asphalt <input type="checkbox"/> Concrete <input type="checkbox"/> Other
	Surface condition: <input type="checkbox"/> Wet <input type="checkbox"/> Damp <input type="checkbox"/> Dry <input type="checkbox"/> Contaminated <input type="checkbox"/> Firm <input type="checkbox"/> Soft
	Runway used:
	Runway slope:
	LVPs in force: <input type="checkbox"/> Yes <input type="checkbox"/> No
Delete as appropriate	7 FLIGHT CREW DETAILS
	<u>Commander</u> | <u>Co-Pilot</u>
	Name(including title):
	DOB:
	Pilot flying: <u>PF/PNF</u> | <u>PF/PNF</u>
Define 'Other' if appropriate	LICENCE: Type:
	Number:
	Issuing Authority:
	Valid until:
	MEDICAL: Class:
	Valid until:
	Limitations:
	RATINGS: Instrument Rating: <u>Valid until:</u> | <u>Valid until:</u>
	Type/Ratings:
	Other:
Enter valid until date	RECENCY: Licence Prof Check:
	Operator Prof Check:
	Annual Line Check:
	SEP/CRM:
	Company Qualifications:
Enter hours in hours and minutes	Hours: All types:
	All types PIC:
	On type:
	On type PIC:
	Last 90 days:
	Last 28 days:
	Last 24 hours:
	DUTY: Start of Duty Period (UTC):
	Length of Preceding Rest Period:

FILE REFERENCE

AIB Form 001

REG Date of event

2008



Murtala Muhammed International
Airport, P.M.B. 016 Ikeja, Lagos,
Nigeria.

Aircraft Accident/ Serious Incident Report Form



Accident Investigation
Bureau

24hrs Emergency Lines:
+234(0)8077090909, 8077090908

Part 1

IMPORTANT Please enter numbers of all persons on board (including those not injured)	8 INJURIES TO PERSONNEL TOTAL PERSONS ON BOARD: <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>None</th> <th>Minor</th> <th>Serious</th> </tr> </thead> <tbody> <tr> <td>Pilot in Command:</td> <td>.....</td> <td>.....</td> </tr> <tr> <td>Second Pilot:</td> <td>.....</td> <td>.....</td> </tr> <tr> <td>Cabin Crew:</td> <td>.....</td> <td>.....</td> </tr> <tr> <td>Passengers:</td> <td>.....</td> <td>.....</td> </tr> <tr> <td>Others:</td> <td>.....</td> <td>.....</td> </tr> </tbody> </table>	None	Minor	Serious	Pilot in Command:	Second Pilot:	Cabin Crew:	Passengers:	Others:
None	Minor	Serious																	
Pilot in Command:																	
Second Pilot:																	
Cabin Crew:																	
Passengers:																	
Others:																	
Tick damage type Tick damage type and define 'Other' if appropriate	9 SURVIVABILITY 9.1 Damage to cockpit area: <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Minor <input type="checkbox"/> None Details (if relevant): 9.2 Damage to flight deck area: <input type="checkbox"/> Severe <input type="checkbox"/> Moderate <input type="checkbox"/> Minor <input type="checkbox"/> None Details (if relevant): 9.3 Evacuation: Exit(s) used by crew: <input type="checkbox"/> Normal Exit <input type="checkbox"/> Slide <input type="checkbox"/> Other Exits used by pax: <input type="checkbox"/> Normal Exit <input type="checkbox"/> Slide <input type="checkbox"/> Other Which emergency services attended: <input type="checkbox"/> Police <input type="checkbox"/> Fire <input type="checkbox"/> Ambulance <input type="checkbox"/> Air Ambulance Other assistance provided by: 9.4 Emergency Equipment: Details of any items which failed: 9.5 Additional Comments:																		
List all airplane/engine damage	10 DAMAGE TO AIRCRAFT																		
	11 DAMAGE TO OTHER PROPERTY																		

FILE REFERENCE

AIB Form 001

REG Date of event



Murtala Muhammed International
Airport, P.M.8, 016 Ikeja, Lagos,
Nigeria.

24hrs Emergency Lines:
+234(0)8077090909, 8077090908
Fax:

Aircraft Accident / Serious Incident Report Form



Accident Investigation
Bureau

Part 1

Thank you for completing Part 1 of this form, a copy of which will be sent to the AIB Safety Data Department for inclusion in their database.

In Part 2, you are asked to provide a sketch of the site and a narrative description of the accident. Any accompanying photographs and or documents will be returned, at your request, once the investigation is complete.

If you do not want a copy of Part 2 to be sent to the NCAA please tick the box below.

Do not send a copy of Part 2 of the form to the NCAA

FILE REFERENCE

AIB Form 001

REG Date of event

Investigation Policy and Procedures Manual (IPPM)	Approved by:	Director-General/CEO
Effective Date: 02 Sep 2023	Issue: 03	Revision: 01
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Murtala Muhammed International
Airport, P.M.B. 016 Ikeja, Lagos,
Nigeria.

24hrs Emergency Lines:
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Fax:

Aircraft Accident / Serious Incident Report Form



Accident Investigation
Bureau

Part 2

<p>Show North and site elevation (amsl). If accident occurred on an airfield for which there is no published information, please provide as much detail as possible.</p> <p>Any photographs of the site and / or aircraft would greatly assist the investigation.</p>	<p>14 SKETCH ACCIDENT SITE</p> 
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FILE REFERENCE

AIB Form 001

REG Date of event



APPENDIX J2: NOTIFICATION AND REPORTING CHECKLIST

NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA



5

Note.— In this checklist, the following terms have the meaning indicated below:

— International occurrences: accidents and incidents occurring in the territory of a Contracting State to aircraft registered in another Contracting State.

— Domestic occurrences: accidents and incidents occurring in the territory of the State of Registry.

— Other occurrences: accidents and incidents occurring in the territory of a non-Contracting State, or outside the territory of any State.

NOTIFICATION AND REPORTING CHECKLIST			
1. ACCIDENTS, SERIOUS INCIDENTS AND INCIDENTS TO BE INVESTIGATED			
From	For	Send to	ICAO Annex 13 reference
State of Occurrence	International occurrences: all aircraft	State of Registry State of Operator State of Design State of manufacture ICAO (when aircraft over 2 250 kg or is a turbo-powered aeroplane)	4.1
State of Registry	Domestic and other occurrences	State of Operator State of Design State of manufacture ICAO (when aircraft over 2 250 kg or is a turbo-powered aeroplane)	4.8

Checklist: NSIB.01.02

Issue: 01

Revision: 03

Date: 28 Apr 2023

Page: 1 of 4



NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA; NIGERIA



NOTIFICATION AND REPORTING CHECKLIST				
2. FINAL REPORT				
Accidents and incidents wherever they occurred				
From	Type of report	Concerning	Send to	ICAO Annex 13 reference
State conducting the investigation	FINAL REPORT	All aircraft	State instituting the investigation State of Registry State of the Operator State of Design State of Manufacture Other States participating in the investigation State having suffered fatalities or serious injuries to its citizens State providing information, significant facilities or experts	6.4
		Aircraft over 5 700 kg	ICAO	6.7



NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA



NOTIFICATION AND REPORTING CHECKLIST

3. ADREP REPORT

Accidents and incidents wherever they occurred

From	Type of report	Concerning	Send to	ICAO Annex 13 reference
State conducting the investigation	PRELIMINARY REPORT	Accidents to aircraft over 2 250 kg	State of Registry or State of Occurrence State of the Operator State of Design State of Manufacture State providing information, significant facilities or experts ICAO	7.1
		Accidents to aircraft of 2 250 kg or less if airworthiness or matters of interest are involved	Same as above, except ICAO	7.2
	ACCIDENT DATA REPORT	Accidents to aircraft over 2 250 kg	ICAO	7.5
	INCIDENT DATA REPORT	Incidents to aircraft over 5 700 kg	ICAO	7.7



NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA



NOTIFICATION AND REPORTING CHECKLIST				
4. ACCIDENT PREVENTION MEASURES				
Safety matters of interest to other States				
From	Type	Concerning	Send to	ICAO Annex 13 reference
States making safety recommendations	Safety recommendations	Recommendations made to another State	Accident investigation authority in that State	8.8 8.3
		ICAO documents	ICAO	8.9



APPENDIX K: INITIAL ACTIONS AFTER NOTIFICATION CHECKLIST

NIGERIAN SAFETY INVESTIGATION BUREAU



SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA

INITIAL ACTIONS AFTER NOTIFICATION CHECKLIST

INVESTIGATION NUMBER	AIRCRAFT TYPE / REGISTRATION MARKS/ OPERATOR
DATE	COMPLETED BY

Action	Time	Action started	Action completed
Notification received			
Source of notification			
Contact accident site (police / Incident Commander)			
Guidance given to police/rescue			
<ul style="list-style-type: none"> - Secure the site including ground marks - Crew alcohol test - Drug test if needed - Avoid disturbing wreckage and ground marks - Do not remove bodies - Document all actions - Cover wreckage and pieces, marks from rain - Stop leaking fluids, collect samples in bottles - Start documenting (photos and videos) 			
Call Director-General/CEO			
Call Director of Engineering / Director of Operations			
Verbal decision to initiate preliminary investigation.			
Form the team for on site investigation			
Departure to accident site			
<ul style="list-style-type: none"> - check protective and investigation equipment needed - travelling arrangements - accommodation 			
Contact the Rescue Coordination Center for more information:			
1. SAR/SPOC: 0811981097			
2. SAR/CMC: 08119810974			
3. Rescue sub-center (RSC)PHC: Tel: 08111157524/ 09155090782 Email: srphc@nama.gov.ng			
4. Rescue sub-center (RSC)MAIDUGURI Tel: 09155090733 Email: srmaiduguri@nama.gov.ng			
5. NEMA MCC: 09139370263			
If accident on sea, contact Maritime Rescue Center: MARITIME MRCC: 07000700010 - 30 07053794383			
Information on Dangerous Goods from the operator, ATC or rescue forces			



NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7000 GARKI FCT- ABUJA, NIGERIA

INITIAL ACTIONS AFTER NOTIFICATION CHECKLIST

Action	Time	Action started	Action completed
Request from ATC - Radio recordings - Telephone recordings - Radar data - Flight plan			
Recordings - FDR and CVR - Military radar data if needed			
Contact airport authority and request - Document braking marks etc. on runway - Save all weather recordings			
Action	Time	Action started	Action completed
Contact operator or owner, request - Information of crew and passengers - Dangerous Goods			
Inform/Update Director-General/CEO and Head of Public Affairs frequently			
Notifications - State of the operator - State of registry - State of manufacturer and design - ICAO if required - States of victims			
Official decision to investigate - Investigation team formed - Document the decision - Dissemination of the decision			
Produce distribution list with contact information to all relevant parties			



APPENDIX L: NOTIFICATION FORM

NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA



Accident/ Incident Notification Form

Addressed to	
a) for accidents the identifying abbreviation ACCID, for serious incidents SINCID, for incidents INCID	
b) manufacturer, model, nationality and registration marks, serial number of the aircraft	
c) name of owner, operator and hirer, if any, of the aircraft	
d) qualification of the pilot-in-command, and nationality of crew and passengers	
e) date and time (local time or UTC) of the accident or serious incident.	
f) last point of departure and point of intended landing of the aircraft	
g) position of the aircraft with reference to some easily defined geographical point, and latitude and longitude ¹	
h) number of crew and passengers; aboard, killed and seriously injured; others, killed and seriously injured. ²	
i) description of the accident or serious incident and the extent of damage to the aircraft, so far as is known;	
j) an indication to what extent the investigation will be conducted or is proposed to be delegated by the State of Occurrence.	
k) physical characteristics of the accident or serious incident area, as well as an indication of access difficulties or special requirements to reach the site	
l) identification of the originating authority and means to contact the investigator-in-charge and the accident investigation authority of the State Occurrence at any time, and	
m) presence and description of dangerous goods carried on board the aircraft	

¹ It may be helpful to provide the elevation of the accident site, if it is known.

² It is useful to first provide the number of persons aboard (crew, passengers) and then the injuries they sustained



APPENDIX M: INVESTIGATION EVENT CHECKLIST AND ASSIGNMENT CHART

NIGERIAN SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT, ABUJA, NIGERIA



INVESTIGATION EVENT CHECKLIST

INVESTIGATION NUMBER	AIRCRAFT TYPE / REGISTRATION MARKS/ OPERATOR
DATE	COMPLETED BY

Status	Description
<input type="checkbox"/> Complete N/A	Make hotel and travel reservations
<input type="checkbox"/> Complete N/A	Complete initial notification form for the accident
<input type="checkbox"/> Complete N/A	Identify accident site terrain and climate
<input type="checkbox"/> Complete N/A	Identify on scene commander and phone number
<input type="checkbox"/> Complete N/A	Coordinate initial site security with local authorities
<input type="checkbox"/> Complete N/A	Coordinate toxicology and autopsy for the pilot
<input type="checkbox"/> Complete N/A	Coordinate time and place of media briefings
<input type="checkbox"/> Complete N/A	Secure weather, airport, aircraft, and pilot information
<input type="checkbox"/> Complete N/A	Print maps and get directions to the accident site
<input type="checkbox"/> Complete N/A	Identify insurance adjuster's name and phone number
<input type="checkbox"/> Complete N/A	Identify party members and coordinate an initial meeting
<input type="checkbox"/> Complete N/A	Identify key personnel and exchange contact information
<input type="checkbox"/> Complete N/A	Identify and coordinate special requirements for the investigation
<input type="checkbox"/> Complete N/A	Coordinate component recovery and hangar space
<input type="checkbox"/> Complete N/A	Request radar data and communication transcripts plus audio tapes
<input type="checkbox"/> Complete N/A	Request pilot briefing information, transcripts and audio tapes
<input type="checkbox"/> Complete N/A	Request witness names and statements from local authorities
<input type="checkbox"/> Complete N/A	Recover flight recorders
<input type="checkbox"/> Complete N/A	Request police and fire department reports, including photos
<input type="checkbox"/> Complete N/A	Locate and review pilot's log book and training records
<input type="checkbox"/> Complete N/A	Locate and review airframe, engine, and propeller logbooks
<input type="checkbox"/> Complete N/A	Establish an out-boring date, time, and place
<input type="checkbox"/> Complete N/A	Photograph the site from a minimum of eight points
<input type="checkbox"/> Complete N/A	Document terrain, weather and vegetation at the site
<input type="checkbox"/> Complete N/A	Document position and altitude of major components
<input type="checkbox"/> Complete N/A	Document wreckage distribution and impact markings
<input type="checkbox"/> Complete N/A	Document airframe impact, fire and aerodynamic damage
<input type="checkbox"/> Complete N/A	Document propeller or turbine blade signatures
<input type="checkbox"/> Complete N/A	Document airframe, engine and propeller data plate information
<input type="checkbox"/> Complete N/A	Document flight control positions and establish continuity
<input type="checkbox"/> Complete N/A	Document lifting device positions and settings
<input type="checkbox"/> Complete N/A	Document engine control positions and establish continuity
<input type="checkbox"/> Complete N/A	Document pressurization system and settings
<input type="checkbox"/> Complete N/A	Document landing gear system positions and settings
<input type="checkbox"/> Complete N/A	Document flight instruments and avionics
<input type="checkbox"/> Complete N/A	Document switches and circuit breakers positions
<input type="checkbox"/> Complete N/A	Document engine instruments and systems instruments
<input type="checkbox"/> Complete N/A	Document warning lights and annunciator statuses
<input type="checkbox"/> Complete N/A	Document oxygen system and establish continuity
<input type="checkbox"/> Complete N/A	Document hydraulic system and establish continuity
<input type="checkbox"/> Complete N/A	Document fuel system and establish continuity
<input type="checkbox"/> Complete N/A	Document power-plant and accessory items
<input type="checkbox"/> Complete N/A	Interviews (crew, ops and maintenance personnel) and request written statements
<input type="checkbox"/> Complete N/A	Give the pilot or operator form D01 with instructions
<input type="checkbox"/> Complete N/A	Victim identification
<input type="checkbox"/> Complete N/A	Interviews of next of kin
<input type="checkbox"/> Complete N/A	Analysis of flight recorders data
<input type="checkbox"/> Complete N/A	Interviews (Meteorology)
<input type="checkbox"/> Complete N/A	Interviews (ATC and Airport)
<input type="checkbox"/> Complete N/A	Interviews (passengers)
<input type="checkbox"/> Complete N/A	Crashworthiness
<input type="checkbox"/> Complete N/A	Aircraft performance
<input type="checkbox"/> Complete N/A	Firefighting operations



NIGERIAN SAFETY INVESTIGATION BUREAU



SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARI PCT- ABUJA, NIGERIA

Investigation Event Task-Assignment Chart

Investigation Group	Assignment Events						
Administrative Support							
Head Office Coordinator							
Media Coordinator							
Site Safety Coordinator		2					
Investigator-in-charge	1	2				64	65
Deputy Investigator-in-charge						64	65
Operations	3	17	31		50		64
Aircraft Performance				42			64
Human Factors	4	18	32	43	51		64
Medical and Pathology							64
Witness	5	19	33	44	52		64
Flight Recorders	6	20	34		53		64
Meteorology	7	21	35		54		64
Air Traffic Services	8	22	36	45	55		64
Airports							64
Survivability	9	23	37	46	56		65
Cabin Safety	10	24	38	47	57		64
Maintenance and Aircraft Records	11	25	39	48	58		65
Systems	12	26	40		59		65
Structures	13	27		49	60		65
Crashworthiness			41				65
Powerplants	14	28			61		65
Site Survey	15	29			62		65
Photo/Video	16	30			63		65

Chart: MSIB-DI-10

Issue: 01

Revision: 01

Date: 22 Dec 2023

Page 1 of 1



APPENDIX N: DOCUMENT AMMENDMENT FORM

DOCUMENT AMENDMENT FORM			
AMENDMENT ORIGINATOR USE			
Document Title:			
Section:	Page:	Paragraph:	Revision:
The Requested Change:			
<input type="checkbox"/> Additional Information attached Reason(s) for the Amendment:			
<input type="checkbox"/> Additional Information attached Originator Name & Sign. : _____ Date: _____			
DOCUMENT APPROVAL OFFICE USE			
Officers Consulted Regarding the Amendment		Sign. & Date	
Director of Human Resource			
Legal Adviser			
Head of Security and Safety			
Head of ICT			
Director of Engineering			
Director of Operations			
Commissioner/CEO			
Comments upon Review			
<input type="checkbox"/> DECLINED – Reason Provided: _____			
<input type="checkbox"/> APPROVED: _____			
Approval Authority Signature:			Date:
Change Incorporated in Revision Number:			Date:



APPENDIX O: TEMPLATES FOR INVESTIGATION OFFICIAL CREDENTIALS

APPENDIX O1: TEMPLATE OF INVESTIGATOR OFFICIAL CREDENTIAL (TEMPLATE)

NIGERIA SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT - ABUJA, NIGERIA

TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS



INVESTIGATOR OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU
OFFICIAL CREDENTIAL No: NSIB000

[NAME OF INVESTIGATOR]

INVESTIGATOR

AFIX
PHOTO
HERE

The person whose photograph and signature appear on this card is a duly accredited INVESTIGATOR assigned to duties of investigation Pursuant to Section 27(a), (b) and (c) of the Nigerian Safety Investigation Bureau (Establishment) Act, 2022. He/She shall:

a) Enter into any premises where there is a reasonable ground that a transportation occurrence has occurred, or there may be at the place, anything relevant to the investigation or where wreckage from the occurrence is located;

b) In The Cause Of The investigation, have unhindered access to Own relevant materials or pieces of evidence, including on-board recorders, either in air, marine, rail or such relevant traffic records related to a transport safety investigation under this Act ; and

(c) Have unhindered access to the site of any transportation occurrence, premises, location, facility, the transport vehicle, its contents or wreckage, constituting the subject of a safety investigation contemplated by this Act.

Signature: _____

THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]

BACK VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU

Form: NSIB.01.13

Issued under Section 5.10.1 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations in force.

If found return to: **NIGERIAN SAFETY INVESTIGATION BUREAU** P.M.B 7009, Area 3, Garki, Nnamdi Azikiwe International Airport FCT, Abuja or the nearest Police Station.

Director-General/CEO

Issued on:

Form: NSIB.01.13

Issue: 2

Revision: 0

Date: 10 June 2023

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NIGERIA SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA

TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS



TRAINEE INVESTIGATOR OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU
OFFICIAL CREDENTIAL No: NSIB000

[NAME OF INVESTIGATOR TRAINEE]

INVESTIGATOR TRAINEE

AFIX
PHOTO
HERE

The person whose photograph and signature appear on this card is a duly accredited INVESTIGATOR TRAINEE assigned to duties of investigation Pursuant to Section 27(a), (b) and (c) of the Nigerian Safety Investigation Bureau (Establishment) Act, 2022. He/She shall:

a) Enter into any premises where there is a reasonable ground that a transportation occurrence has occurred, or there may be at the place, anything relevant to the investigation or where wreckage from the occurrence is located;

b) In The Cause Of The Investigation, have unhindered access to Own relevant materials or pieces of evidence, including on-board recorders, either in air, marine, rail or such relevant traffic records related to a transport safety investigation under this Act ; and

(c) Have unhindered access to the site of any transportation occurrence, premises, location, facility, the transport vehicle, its contents or wreckage, constituting the subject of a safety investigation contemplated by this Act.

Signature: _____

THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]

BACK VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU

FORM: NSIB.01,13

Issued under Section 5.10.1 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations in force.

If found return to: **NIGERIAN SAFETY INVESTIGATION BUREAU** P.M.B 7009, Area 1, Garki, Nnamdi Azikiwe International Airport FCT, Abuja or the nearest Police Station.

Director-General/CEO

Issued on: _____



APPENDIX 02: TEMPLATE OF ACCREDITED REPRESENTATIVE OFFICIAL CREDENTIAL

NIGERIA SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI-CT, ABUJA, NIGERIA

TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS

ACCREDITED REPRESENTATIVE OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU
OFFICIAL CREDENTIAL

[NAME OF ACCREDITED REPRESENTATIVE]

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HERE

ACCREDITED REPRESENTATIVE

The person whose photograph and signature appear on this card is a duly accredited ACCREDITED REPRESENTATIVE attached To the Bureau for Accident Investigation Activities

Signature.....

THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]

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Form: NSIB.01.13

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Director-General/CEO Issued on:

Form: NSIB.01.13

Issue: 2

Revision: 0 Date: 10 June 2023

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NIGERIA SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA

TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS



ADVISER OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU
OFFICIAL CREDENTIAL

[NAME OF ADVISER]

ADVISER

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The person whose photograph and signature appear on this card is a duly accredited ADVISER attached To The Bureau For Accident Investigation Activities.

Signature.....

THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]

BACK VIEW



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NIGERIA SAFETY INVESTIGATION BUREAU

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TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS



OBSERVER OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW



NIGERIAN SAFETY INVESTIGATION BUREAU
OFFICIAL CREDENTIAL

[NAME OF OBSERVER]

OBSERVER

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PHOTO
HERE

The person whose photograph and signature appear on this card is a duly accredited OBSERVER attached To The Bureau For Accident Investigation Activities

Signature.....

THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]

BACK VIEW



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Effective Date: 02 Sep 2023	Issue: 03	Revision: 01
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NIGERIA SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT - ABUJA, NIGERIA

TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS



EXPERT OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW

	NIGERIAN SAFETY INVESTIGATION BUREAU OFFICIAL CREDENTIAL	EX 0.....
	<div style="background-color: blue; color: white; padding: 5px; display: inline-block;">[NAME OF EXPERT]</div> EXPERT	AFIX PHOTO HERE
The person whose photograph and signature appear on this card is a duly accredited EXPERT attached To The Bureau For Accident Investigation Activities.		
Signature:.....		
THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]		

BACK VIEW

	NIGERIAN SAFETY INVESTIGATION BUREAU	
	Form: NSIB.01.13	
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NIGERIA SAFETY INVESTIGATION BUREAU

SAFETY HOUSE, NNAMDI AZIKIWE INTERNATIONAL AIRPORT P.M.B. 7009 GARKI FCT- ABUJA, NIGERIA

TEMPLATES OF INVESTIGATION OFFICIAL CREDENTIALS



PARTICIPANT OFFICIAL CREDENTIAL (TEMPLATE)

FRONT VIEW

	NIGERIAN SAFETY INVESTIGATION BUREAU OFFICIAL CREDENTIAL	PA 0.....
	[NAME OF PARTICIPANT] PARTICIPANT	AFIX PHOTO HERE
The person whose photograph and signature appear on this card is a duly accredited PARTICIPANT attached To The Bureau For Accident Investigation Activities		
Signature.....		
THIS CREDENTIAL IS DECLARED VALID UNTIL [xx/xx/xxxx]		

BACK VIEW

	NIGERIAN SAFETY INVESTIGATION BUREAU	
	Form: NSIB.01.13 Issued under Section 5.10.1 of the Civil Aviation (Investigation of Air Accidents and Incidents) Regulations in force.	
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APPENDIX P: LIST OF FORMS AND CHECKLISTS

S/N	FORM NUMBER	DESCRIPTION
1	NSIB Form 001	AIB Accident Report Form
2	NSIB.01.001	Document Amendment Form
3	NSIB.01.02	Notification and Reporting Checklist
4	NSIB.01.03	Notification Form
5	NSIB.01.04	Safety Recommendation Follow-Up
6	NSIB.01.005	Initial Actions After Notification Checklist
7	NSIB.01.06	Accident Site Hazard Identification and Risk Assessment Checklist
8	NSIB.01.07	Investigation Event Checklist
9	NSIB.01.08	My Go Bag Pre-launch Checklist
10	NSIB.01.09	List of Kits, Equipment and Tools
11	NSIB.01.10	Investigation Event Task-Assignment Chart
12	NSIB.01.11	Safety Recommendation Index (Record)
13	NSIB.01.12	Human Factor Investigation Checklist
14	NSIB.01.13	Investigator Official Credential (Template)
15	NSIB.01.14	Accredited Representative Official Credential (Template)
16	NSIB.01.15	Adviser Official Credential (Template)
17	NSIB.01.16	Observer Credential (Template)
18	NSIB.01.17	Expert Official Credential (Template)
19	NSIB.01.18	Participant Official Credential (Template)
20	NSIB.01.19	Report Receiving Checklist
21	NSIB.01.20	Wreckage and Parts Release Form
22	NSIB.01.22	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 1
23	NSIB.01.23	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 2
24	NSIB.01.24	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 3
25	NSIB.01.25	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 4
26	NSIB.01.26	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 5
27	NSIB.01.27	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 6
28	NSIB.01.28	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 7
29	NSIB.01.29	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 8
30	NSIB.01.30	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 9
31	NSIB.01.31	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 10
32	NSIB.01.32	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 11
33	NSIB.01.33	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 12
34	NSIB.01.34	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 13
35	NSIB.01.35	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 14

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S/N	FORM NUMBER	DESCRIPTION
36	NSIB.01.36	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 15
37	NSIB.01.37	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 16
38	NSIB.01.38	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 17
39	NSIB.01.39	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 18
40	NSIB.01.40	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 19
41	NSIB.01.41	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 20
42	NSIB.01.42	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 21
43	NSIB.01.43	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 22
44	NSIB.01.44	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 23
45	NSIB.01.45	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 24
46	NSIB.01.46	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 25
47	NSIB.01.47	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 26
48	NSIB.01.48	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 27
49	NSIB.01.49	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 28
50	NSIB.01.50	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 29
51	NSIB.01.51	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 30
52	NSIB.01.52	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 31
53	NSIB.01.53	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 32
54	NSIB.01.54	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 33
55	NSIB.01.55	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 34
56	NSIB.01.56	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 35
57	NSIB.01.57	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 36
58	NSIB.01.58	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 37
59	NSIB.01.59	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 38
60	NSIB.01.60	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 39
61	NSIB.01.61	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 40
62	NSIB.01.62	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 41
63	NSIB.01.63	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 42
64	NSIB.01.64	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 43
65	NSIB.01.65	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 44
66	NSIB.01.66	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 45
67	NSIB.01.67	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 46
68	NSIB.01.68	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 47
69	NSIB.01.69	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 48
70	NSIB.01.70	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 49
71	NSIB.01.71	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 50
72	NSIB.01.72	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 51
73	NSIB.01.73	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 52

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S/N	FORM NUMBER	DESCRIPTION
74	NSIB.01.74	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 53
75	NSIB.01.75	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 54
76	NSIB.01.76	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 55
77	NSIB.01.77	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 56
78	NSIB.01.78	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 57
79	NSIB.01.79	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 58
80	NSIB.01.80	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 59
81	NSIB.01.81	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 60
82	NSIB.01.82	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 61
83	NSIB.01.83	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 62
84	NSIB.01.84	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 63
85	NSIB.01.85	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 64
86	NSIB.01.86	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 65
87	NSIB.01.87	INVESTIGATION EVENT MANAGEMENT CHECKLIST- EVENT 66
88	NSIB.01.99	METHODOLOGY FOR DETERMINING STAFFING NEEDS
89	NSIB.HR.09	DECLARATION OF INTEREST FORM
90	NSIB.HR.10	DECLARATION OF INTEREST EVALUATION FORM
91	NSIB.HR.11	CONFLICT OF INTEREST REGISTER

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