ACCIDENT INVESTIGATION BUREAU

INVESTIGATION TRAINING MANUAL

JULY 2018

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CHAPTER 1 MANUAL ADMINISTRATION

1.1 PREAMBLE

This Training Program Manual is an internal document of the Accident Investigation Bureau (hereinafter called "the Bureau"). It contains the training policy, program, plans, processes and recording of trainings relating to the technical personnel of the Bureau for the purpose of acquiring and maintaining competence and qualification in the conduct of their assigned duties of Air Safety Investigations.

The objective of the training program is to train investigators to acquire knowledge; skills and experience to enable them independently conduct major aircraft accident investigation. It is understood that systematic training and exercises are key factors for enhancing the Bureau's performance.

The training program is systematic and structured to provide oversight and management of Air Safety Investigators' carrier development from new hire status the time they are newly hired into the AIB, through the attainment of Investigator-In-Charge, and throughout their careers to retirement. It is also designed to prepare new hires for their new role as Air Safety Investigators and to ensure that individual investigator training is documented and retained.

This document provides means of establishing the training requirements for all investigators. These requirements include both formal classroom training courses, and on-the-job training, including simulation of aircraft crash exercises and attachment to foreign Accident Investigation Authorities (AIA).

This training program manual also provides the procedures required to identify training needs, select training methods, accomplish the training; record the training and measure the effectiveness of the training program. It also describes how to identify job functions, required tasks and skills within each task.

This training program establishes the criteria for initial and recurrent training, monitoring the training courses and curricula. It can be a tool to be used by the management of AIB to enhance employee capabilities and competency.

This training program manual in principle adopts the guidance provided by ICAO Circular 298. The Circular discusses the experience and employment background required for the training as an aircraft accident investigator. It also outlines the progressive training that is considered necessary to qualify a person for the various investigation roles, including appointment as the investigator-in-charge (IIC) of an investigation into a major accident involving a large transport category aircraft.

This manual supplements AIB's Investigation Policy and Procedures Manual (iPPM).

Except for material which has been approved for public distribution, the contents of this Manual are not intended to be communicated to persons outside the Bureau without the consent of the Commissioner/CEO.

This manual will be revised as necessary based on periodic reviews to ensure that it contains up to date materials consistent with Nigerian laws, Regulations, Directives, international best practices, evolution of new technology and changes in the aviation industry. Therefore, comments and recommendations for revisions/amendments to this publication for its improvement are hereby welcomed.

The Commissioner/CEO of the Bureau is accountable for approving the contents of this manual and any subsequent amendments thereto.

This training program is non-binding in nature and should be treated as a recommended training path for AIB investigators.

Throughout this manual, with the exception of the definitions in Chapter 1, the use of the male gender should be understood to include male and female persons and the term “accident” should be understood to include “incident”.

Engr. Akin Olateru M.SC., CMILT, FRAeS
Commissioner/CEO

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01	0	26/07/2018	All	Abdullahi Babanya

1.5 DEFINITION OF TERMS

The definition of the terminology is hereby given to ensure that the readers understand the intended meaning of the term used in the context of this manual.

Accident Investigation Authority	The State organization responsible for conducting aircraft accident investigations within the context of Annex 13
Accident 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
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
Body of Knowledge	Overall understanding and competency of a subject or competency to perform a task, established through training, education and/or experience
Certificate	A document issued as evidence of completion of a course of study, or to certify that a person may officially practice a job function
Classroom Training	Teaching in the form of instruction in a course environment also referred to as Formal Training
Competence	Demonstrated ability to perform the skills or accomplish the task associated with a job assignment
Demonstrate	To establish or show by experiments, examples, practical application, explanations, illustrations or other methods as applicable
Developmental Investigator	1) A person who has been hired as an investigator by the Bureau, but who does not meet all of the minimum recruitment standards specified by the AIB. The individuals in this category will continue to develop their training and experience under the guidance of the AIB until meeting the minimum requirements for new investigators.

	2) A new-hire investigator who meets all of the recruitment standards but who has not yet completed the core training requirements for an Investigator
Education	Knowledge or skill obtained by a learning process
Experience	Competency gained through participation in activities leading to the accumulation of knowledge, skill, or practical wisdom
Expert/Specialist	A person invited to participate in an investigation, on the basis of his or her specialized knowledge, skills or experience.
Formal Training Course	A course of training conducted in a classroom environment in accordance with an Approved Curriculum and most courses conducted by approved training institutions
In-House Training	Training conducted by the AIB including OJT, Case studies, classroom training, mentoring, self study, specialized training tutoring or other methods considered by the AIB
Initial Training	Learning the subject matter for the first time
Investigation	A process conducted for the purpose of accident prevention. It includes the gathering and analysis of information, the drawing of conclusions, the determination of causes and the making of safety recommendations
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
Observer	A person permitted to be present in an investigation for the purpose of observing the investigation process
Job	A single position with documented attributes
Job Function	A classification that consists a group of jobs with related assignments, but with varying levels of expertise

Job Task Analysis	A document that provides a description of the task, required supporting documents, and a step-by-step listing of the subtasks that must be performed to accomplish the task
On-the-job-Training	Acquiring knowledge and skills in an actual work environment by authorized instructor or experienced investigator
Qualification	The body of knowledge associated with accomplishing the assigned job
Recurrent Training	Reinforce or refresh previously learned subjects, principles or skills
Self Study	Material absorbed on one's own through workbook, tape, or Compact Disc (CD) and examinations or demonstration that the knowledge gained
Seminar	Training by an expert in the field transferring knowledge to the attendees
Skill	Technique required to accomplish a task
Tasks	Series of steps used in an assigned duty. The actual steps conducted to achieve a result
Training	Processes of impacting knowledge, skills and attitude for making employees proficient in assigned duties using instruction and/or practice
Tutoring	One-on-one instruction in an organized manner

1.6 ABBREVIATIONS AND ACRONYMS

ACCREP	Accredited Representative
ADREP	Accident Data Reporting
AIA	Accident Investigation Authority
AIB	Accident Investigation Bureau (Nigeria)
AIPB	Accident Investigation and Prevention Bureau
AOC	Air Operator Certificate
ATC	Air Traffic Control
ATS	Air Traffic Services
CAA	Civil Aviation Authority
CAD	Civil Aviation Department
CEO	Chief Executive Officer
CVR	Cockpit Voice Recorder
DNA	Deoxyribonucleic Acid
ECCAIRS	European Coordination Centre for Accident and Incident Reporting Systems
FAAN	Federal Airports Authority of Nigeria
FCAA	Federal Civil Aviation Authority
FDR	Flight Data Recorder
ICAO	International Civil Aviation
IDP	Individual Development Plan
IIC	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
ODC	On-Duty Card
OJT	On-the-Job-Training
PM	Post Mortem
RAIO	Regional Accident and Incident Investigation Organisation
RS	Reporting Systems
SAA	Singapore Aviation Academy
SARPs	Standards and Recommended Practices
SDCPS	Safety Data Collection and Processing System
SCSI	Southern California Safety Institute
SSP	State safety Programme
TCB	Technical Cooperation Bureau
UK AAIB	United Kingdom Air Accident Investigation Branch
USC	University of Southern California
US NTSB	United States National Transportation Safety Board
USOAP	Universal Safety Oversight Audit Programme

1.7 MANUAL AMENDMENT PROCEDURES

The management of AIB recognises that aviation is a high tech industry that is continuously evolving with new innovations. It is acknowledged that this training program manual and the guidelines contained therein are also evolutionary in nature and will need to be updated periodically. This is to ensure compliance with the National, International and Industry requirements all the time.

Thus, this manual will be revised as necessary based on periodic reviews to ensure that it contains up-to-date materials consistent with Nigerian laws, Regulations, Directives, international best practices, evolution of new technology and changes in the aviation industry.

Individual or group comments and suggestions are welcome. It is believed that such comments and suggestions could be helpful to the overall improvement of the standards of this Manual.

All comments/suggestions are made in Manual Change Request Form AIB.01.20 (Refer to Appendix I). The completed Form should be forwarded by hand or email to the Training Coordinator.

The training Coordinator is responsible for incorporating changes to this manual. The Commissioner/CEO or any officer duly designated by the CEO will approve any change to this manual.

This Manual is declared as a control document of the Bureau to be used as aid and guide for the training of Air Safety Investigators. The Bureau will ensure that the investigators engaged in accident and serious incident investigations are trained using the latest amendment of this Manual.

CHAPTER 2 GENERAL INFORMATION

2.1 INTERNATIONAL OBLIGATIONS

Nigeria as a signatory to the Convention on International Civil Aviation (known as the *Chicago Convention*), is obligated to implement the Aircraft Accident and Incident Investigation requirements of ICAO which are contained in relevant Articles of the Convention and in the Standards and Recommended Practices (SARPS) in Annex 13 to the Convention. In addition to these, ICAO publishes many documents which contain *best practices* which serve as guidance for the operation of the AIB.

In order to fulfill its ICAO obligations, the Federal Government of Nigeria created the Accident Investigation Bureau (AIB) amongst other agencies. The AIB in particular, is then granted the responsibility and authority to implement the ICAO aircraft accident and incident investigation requirements on behalf of the Federal Government of Nigeria.

The work of AIB is accomplished by a group of highly skilled aviation professionals. Among these are the Aircraft Accident Investigators who accomplish many of the daily technical functions of the AIB as required by ICAO. In this regard, the Investigators represent the Federal Government of Nigeria and their role is critical to both local and international aviation safety.

Aircraft Accident Investigators are selected based on relevant extensive academic qualifications or from the aviation industry and considering their aviation experience, technical expertise, superior judgment, and high ethical standards.

In order to fulfill their responsibilities, Aircraft Accident Investigators require the continuous development of their knowledge and skills. After they are selected, they must complete a comprehensive training program provided by the AIB. This training ensures that the Investigators are fully qualified to accomplish the duties of the AIB and the Aircraft Accident Investigation responsibilities of the Federal Government of Nigeria as required by the Chicago Convention.

2.2 AIB TRAINING POLICY

The management of Accident Investigation Bureau (AIB) is committed to provide the Air Safety Investigators with the appropriate trainings, including Initial, OJT, Specialized, Crash site exercises and Recurrent trainings, to ensure the development of a highly skilled and qualified workforce through implementation of a comprehensive training program.

It is understood that systematic trainings and exercises are key to enhancing the Bureau's performance. Hence, the top management shall ensure all the necessary resources to achieve this goal are provided on time and efficiently utilized towards effective implementation of the training program.

The required training for each investigator will be assessed and provided in a continuous manner in order to optimize his capabilities through acquisition and upgrading of knowledge and skills. It is the intent that all employees will be fully trained in the essential Job Tasks, knowledge, and skills that are required to accomplish the AIB mission and to achieve the overall objectives of the organization.

The Training policy and procedures have been designed to provide the maximum flexibility to accommodate individual and office preferences whilst ensuring the fulfillment of Nigeria's obligations in ICAO Annex 13 and the needs of Bureau.

AIB has adopted the guidance contained in ICAO Circular 298 - Training Guidelines for Aircraft Accident Investigators, as a basis for its selection and training program. That guidance addresses background and experience of new investigators, as well as initial and recurrent training of investigators. A summary of that guidance has been incorporated into this manual to provide a policies and procedures for the AIB investigator selection and training program.

The AIB Investigators must complete the training requirements specified in this manual.

Engr. Akin Olateru
Commissioner/CEO

2.3 ROLES AND RESPONSIBILITIES

The Commissioner/CEO and certain designated staff members of the Bureau have overall responsibility for the successful implementation of this training program. These responsibilities include managing, coordinating, and developing training policies, procedures, plans, and budgets for all aspects of the training program. Roles and responsibilities are included in this section for the following positions:

1) Commissioner/CEO
2) Directors/ Heads of Departments or units
3) Training Coordinator
4) OJT Instructors
5) Trainees/ Investigators

2.3.1 Commissioner/CEO

The Commissioner/CEO is responsible for the following:

a) Staffing:
   i. Hire highly qualified individuals to serve as aircraft accident investigators
   ii. Provide attractive remuneration
   iii. Provide qualified and sufficient staff to ensure fulfillment of AIB objectives
   iv. Assign office resources: provide qualified people and sufficient time to support investigator training
   v. Appoint Training Coordinator to oversee implementation of the investigator training program

b) Budget:
   i. Ensure adequate funds required to fully support the requirements of this training program is included in the AIB budget as appropriate
   ii. Ensure adequate resources are provided in timely manner to fully implement this training program
   iii. Approve and release of funds on timely manner to execute the trainings identified in this manual

c) Training:
   i. Provide leadership and direction to support the implementation of the training program
   ii. Ensure the training program complies with all policy requirements
   iii. Ensure the development of a highly skilled and qualified work force
   iv. Ensure the training program is reviewed periodically to meet national, international and industry standards
   v. Ensure the training program is effectively and efficiently managed
   vi. Ensure heads of departments/units are accountable for ensuring that employee work schedule allow for sufficient time to allow staff to fully attend and complete the training requirements

2.3.2 Directors/Heads of Departments or Units

The Directors/ heads of departments or units are responsible for the following:

a) Determine in conjunction with the Training Coordinator, the training needs of each of the employees they supervise through annual performance evaluation process by assessing gaps between mission requirements and actual employee skills
b) Determine knowledge and skills development needs of the workforce they supervise
c) Advise Training Coordinator on the training gaps identified on each employee they supervise
d) Ensure employee work schedules allow sufficient time for employees under their supervision to fully participate in and complete training requirements
e) Foster work environment conducive to the success of the training program
f) Support effective and efficient implementation of employee training plans

2.3.3 Training Coordinator

The Training Coordinator is the overall responsible person for the day-to-day management, including standardization, implementation and revision of the training program. He plays a key role in assessing gaps between mission requirements and actual employee skills, identifying development needs, prioritizing training needs,

certifying the accomplishment of learning objectives and fostering on-the-job (OJT) development.

The Training Coordinator is also responsible for the following:

a) Coordinate and communicate with respective Directors/ heads of departments or units to be sure they are aware of the policies and changes to the training program
b) Recommend policy or procedural changes to the training program
c) Ensure allocation of resources from the AIB required to fulfill the investigators' training requirements
d) Notification to Human Resource department regarding changes in training requirements, specify new training needs not previously identified, and relinquish training resources that no longer apply
e) Full implementation of the training program
f) Develop in conjunction with the Directors/ Heads of Departments or units, annual investigators' training plans, including courses that are required for each investigator
g) Ensure annual training plans are derived from the training program
h) Ensure timely submission of annual training plans to the CEO for approval and inclusion in budget
i) Schedule and arrange for implementation of formal training courses that are approved, including logistics associated with training events
j) Arrange OJT events, including logistics associated with the OJT events
k) Negotiate and oversee contracts and agreements with training providers/ institutions
l) Advise the Commissioner/CEO and/or Human Resource department when training has been completed
m) Ensure all training records are securely kept
n) In conjunction with the Head of departments conduct annual review of the training records for each investigator to determine on-going training needs
o) Conduct of periodic review of training courses to ensure that the content remains current and relevant to job tasks, knowledge, skills and employee performance requirements
p) Evaluate the effectiveness of the training program on a continuous basis and providing feedback to the Commissioner/ CEO
q) Manage and administer OJT program, including identification of specific job tasks for which investigators must complete, designating qualified investigators

to serve as OJT instructors, ensuring performance of OJT instructors meets acceptable standards

2.3.4 OJT Instructors

OJT Instructors are designated by the Commissioner/CEO based on the recommendations by the Training Coordinator and/or Heads of departments. OJT Instructors are specified from amongst the pool of highly experienced and qualified investigators in each of the investigation areas in Operations and Engineering. They are responsible for implementation of the OJT events.

The Instructors/OJT instructors are responsible for the following:

a) Schedule OJT events
b) Logistics associated with the OJT events
c) Conduct the OJT events
d) Certify and sign out OJT events
e) Keep OJT records for each investigator
f) Advise the training Coordinator when OJT program has been completed
g) Review personal training records and documentation as directed
h) Provide feedback and evaluation regarding the effectiveness of the OJT events

2.3.5 Trainees/Aircraft Accident Investigators

AIB depends on the competence, talent and dedication of its investigators to accomplish its stated goals, mission and objectives of aircraft accident investigation. To meet this challenge, investigators must recognise and take advantage of opportunities, whether on the job, observation or attachment with foreign Accident Investigation Authorities (AIAs), or in formal training, to develop expertise required by changing job requirements. It is understood that as the investigator gains experience, he will realize that the need to increase knowledge and upgrade personal skills to optimize his capabilities is a continuing process which requires full personal commitment to excellence.

Therefore, each investigator is responsible for the following:

a) Collaborate with Training Coordinator to identify his training needs
b) Communicate with OJT Instructors to plan training activities
c) Actively participate in training activities
d) Review personal training records and documentation as directed
e) Provide feedback and evaluation regarding the effectiveness of the training program

2.4 INVESTIGATOR QUALIFICATION REQUIREMENTS

2.4.1 Background Experience for Investigators

In accordance with guidelines provided by ICAO Circular 298, aircraft accident investigation is a specialised task which should only be undertaken by qualified investigators. As such the Accident Investigation Authority should train appropriately qualified personnel in the accident investigation techniques required to participate in or to conduct an aircraft accident investigation. When assigned to an accident investigation, such personnel should be relieved of their regular duties for the duration of the investigation.

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. Personnel qualified in flight operations, airworthiness, air traffic management, or aviation related management might also be suitable for accident investigator training. Since accident investigations will often involve specialised 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.

Normally, a small team or even a single investigator conducts the investigation of an accident involving a general aviation or small commuter aircraft. In these investigations, it is desirable for an operations investigator to have some technical experience and for an engineering investigator to have some experience as a pilot. In addition, the investigators should have a comprehensive understanding of the interrelationship of each of the supporting services that are necessary to operate an aircraft in the aviation environment.

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.

In addition to technical skills and experience, an accident investigator requires certain personal attributes. These attributes include integrity and impartiality in the recording of facts; ability to analyse facts in a logical manner; perseverance in pursuing inquiries, often under difficult or trying conditions; and tact in dealing with a wide range of people who have been involved in the traumatic experience of an aircraft accident.

An accident investigator is desirous to have investigation management qualification and skills in team management, relations with numerous State authorities and private organisations, international relations, communication and report writing.

2.4.2 Investigator Qualifications – New Hire

Aircraft Accident Investigators conduct highly technical work and occupy sensitive and authoritative positions as representatives of the AIB and the Federal Government of Nigeria. It is essential that new investigator candidates meet the highest standards of competence and integrity.

The minimum requirements for new-hire investigators who are selected as new hires are provided below. While not absolute, these qualifications and experience requirements provide important guidelines for initial employment of new investigators. The minimum requirements for new-hire Investigators who are selected as new hires are provided below. While not absolute, these qualifications and experience requirements provide important guidelines for initial employment of new investigators.

NOTE: The AIB's Investigation Policy and Procedures Manual (iPPM) provides detailed requirements for staffing.

2.4.2.1 General Requirements for New Hires (All Investigators)

- Broad air transport background of three years or more/relevant academic and technical education in related specialties.
- Experience with the problems of operating or maintaining transport aircraft.
- Meteorological and climatology knowledge and experience.
- Experience in technical training including visual aids, training devices and aircraft flight simulators.
- Reputation for possessing qualities of integrity, impartiality, perseverance, analytical prowess, initiative, tact, tolerance, good understanding of human nature, ability to get along well with people and patience.

In addition to these general requirements, AIB has also provided specific technical requirements for both Operations and Engineering Investigators.

2.4.2.2 Specific Technical Requirements for New Hires

1. **Engineering Investigators**
   - Extensive academic and technical education (a minimum of university degree or equivalent in related engineering specialties e.g. aeronautical, mechanical, electrical, electronic, or telecommunication; or equivalent professional qualifications.
   - For equivalent professional qualifications he should possess aircraft maintenance engineer's licenses with ratings or appropriate approvals, commensurate with his job responsibilities, i.e., License with airframe and power plant or Avionics ratings, flight engineer license, etc.).
   - For graduates, except for aeronautical engineers, they should have attended or been provided with a basic training in aircraft maintenance engineering.
   - Progressed through positions of increased technical and supervisory responsibility in the aviation industry.
   - At least 10 years of technical employment is normally required to obtain the minimum qualifications and experience needed to perform the duties of a basic starting position as an Engineering Investigator.

2. Operations Investigators

- A minimum of secondary education certificate. Applicants with higher education such as a University degree or equivalent will be preferred.
- Holds or have held a current professional license – ATPL. F/Engineer Licence.
- Must possess a broad air transport background of a minimum of 10 years with not less than 5000 hrs as Pilot-In-Command (PIC) in military or civil aircraft.
- Previous appointments either in operational management, as an airline pilot or training instructor, or as a military pilot where experience in air transport operations would have been acquired will be an advantage.
- Must possess experience in technical training including visual aids, training devices and aircraft simulators;

OR

- A minimum of secondary education certificate. Applicants with higher education such as a University degree or equivalent will be preferred.
- Holds or have held a current professional license –Flight Engineer Licence.
- Must possess a broad air transport background of a minimum of 10 years with not less than 3500 hrs in military or civil aircraft experience.
- Previous appointments either in operational management or training instructor where experience in air transport operations would have been acquired will be an advantage.
- Must possess experience in technical training including visual aids, training devices and aircraft simulators;

OR

- A minimum of a university degree or equivalent in any of the physical sciences or Geography
- Possess a Flight Dispatcher License and a broad air transport background of a minimum of 10 years experience in operations of air transport, military or civil.
- Must possess experience in technical training program development including visual aids, design of procedures, instructional techniques, training devices, aircraft mock-ups and supervision.
- Previous appointments either in operational management as an Operations manager or Training Instructor in air transport operations would have been acquired will be an advantage.

OR

- A minimum of a university degree or equivalent in any discipline.
- Holds or have held an professional Cabin Crew license with appropriate type ratings with at least 10 years of post license/rating experience.
- Experience in technical training program development including visual aids, design of procedures, instructional techniques, training devices, aircraft mock-ups and supervision will be of advantage.

OR

- A minimum of a university degree or equivalent in any of the physical sciences or geography.
- Holds or have held a professional license with appropriate Air Traffic Controller (ATC) ratings and minimum of 10 years of post license/rating experience.
- Must possess experience in technical training program development including visual aids, design of procedures, instructional techniques, training devices, aircraft mock-ups and supervision.
- Previous appointments either in operational management as an ATC or training instructor, or as a Military ATC where experience in air transport operations would have been acquired will be an advantage.

CHAPTER 3 TRAINING PROGRAM

3.1 GENERAL

Once new investigators are selected and hired, they must receive training. Moreover, investigators, who are already in place, also require training.

Each newly hired investigator possesses some knowledge and experience applicable to the assigned tasks; however, the level of such knowledge and experience from one investigator to another varies. For example, two highly qualified flight operations investigators could be hired and both possess extensive flight operations background; however, one may only have limited incident investigation experience, while the other may have considerable major accident investigation experience.

Training a person for aircraft accident investigation involves several phases. These phases include initial training, on-the-job training, a basic accident investigation course and an advanced accident investigation course supplemented by specialized courses. It also includes attendance of workshops, seminars, conferences, aviation industry meetings and attachment with foreign AIAs.

3.2 PHASES OF TRAINING

Aircraft accident investigators require different levels of experience, knowledge and training according to the particular role to which they are assigned. Aircraft accident investigators should receive training commensurate with their responsibilities as an accident investigator, group leader, Investigator-In-Charge (IIC), Accredited Representative, Adviser or Expert/Specialist. The training guidelines and course syllabi should be planned in such a way that the investigators receive appropriate levels of training that will enable them to perform efficiently in any of the roles assigned to them.

Training a person for aircraft accident investigation involves several phases. These phases include:

1) Indoctrination Training
2) Initial Training
3) On-the-Job Training (OJT)
4) Basic Accident Investigation Course

5) Advanced Accident Investigation Course
6) Specialty Courses
7) Accident Site Training
8) Attachment with Foreign AIAs
9) Recurrent Training
10) Management Courses

Formal classroom courses are designed to complement on-the-job training by exposing trainee-investigators to a cadre of experts who can pass on the details of their specialties to their students. The experts are usually recruited from those with experiences in a particular area of accident investigation. They include experienced investigators, aviation medicine physicians, psychologists, aeronautical engineers and manufacturers' representatives.

These structured courses in aircraft accident investigation are conducted by universities, manufacturers, military establishments, accident investigation authorities and other educational.

Refer to the ICAO *Aviation Training Directory* for the list of institutions that offer aircraft accident investigation courses.

The Training Coordinator may need to enter into contract or agreement to facilitate training of AIB investigators.

3.2.1 Indoctrination Training

Indoctrination Training course is designed to provide a new employee with the orientation information and administrative procedures related to such things as time and attendance, leave, pay, retirement, conduct and discipline, etc. it serves as induction course and provides initial guidance to new employees in to the AIB.

Indoctrination training is provided to the new hire employee just as he completes initial documentations before he assumes work. It is recommended that this training is provided within the first month of assumption to duty.

It is better conducted for a batch comprising of new employees from various departments or units of Bureau to create synergy amongst them and better

understanding of the inter-relationships between various departments or functional units of AIB.

This is an In-House training that is organized by the Human Resource department. All Directors, Heads of departments or units serve as resource persons for this training.

The training has a duration of 40 hours (5 days). It applies to new hire employees only. After completion of the indoctrination course, a certificate may not be issued. In this case, it suffices to keep in each individual employee's training record and/or file, a copy of the signed course attendance register (list) as evidence of completion of the induction.

Refer to Section 4.1 for detailed course contents.

3.2.2 Initial Training

In general, the aim of the *initial training* is to familiarize new investigators with the relevant aviation legislation in Nigeria and with the procedures and requirements of the Accident Investigation Bureau. Some investigators will bring some or all of this knowledge with them when hired, others will not. The specifics of prior knowledge, skills, and experience possessed by newly hired investigators are illustrated on the IDP. Similarly, required additional knowledge, skills, and experience are illustrated on the IDP in order to assess the necessary elements of initial training.

It is a 80 hours (10 days) course which can be conducted in-house or to be locally outsourced.

Refer to Section 4.2 for detailed course contents.

3.2.3 On-the-Job-Training (OJT)

OJT is provided to a new investigator following completion of the formal classroom training. During this phase, the new investigator will practice the procedures and tasks covered in the formal classroom trainings, and gain familiarity with investigation techniques. This training will also familiarize him with the investigation tasks at the accident site, the collection of factual information, the analysis of the factual information and the development of the final report, planning investigation, witness

interview techniques, liaison with international organisations, media briefings, managing investigation and leading investigation teams and coordinating family assistance program following completion of Basic and Advanced trainings.

This training phase must be accomplished under the direct supervision of an authorized OJT Instructor/experienced investigator. The OJT together with the formal classroom training form integral part of the training program and should be scheduled to complement each other.

The conduct of OJT often involves more than one experienced investigator and is not limited to aircraft accident investigations within Nigeria. It may take the form of observation during attachment with foreign Accident Investigation Authorities (AIAs) whenever the opportunity to do so avail itself.

While OJT is an ongoing process that continues for many years, there should be sufficient time intervals between each formal course to allow the investigator to consolidate the information and the techniques learned.

Records of completing OJT are captured in Investigator OJT Progress Chart (Form AIB.04.03) – Refer to Appendix III.

OJT is an In-House training.

Instructors are expected to deliver OJT in accordance with the processes and policies specified in this manual. Delivery of OJT includes teaching the task and validating the success of the training.

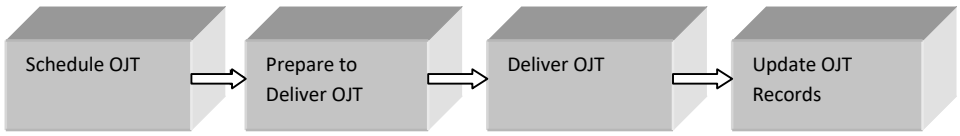

Figure: 3.1

The OJT process follows a logical progression of three levels as shown in the table below.

Level	Trainee	Instructor
Level I – Knowledge	Study	Discuss
Level II – Understanding	Observe	Demonstrate
Level III – Performance	Perform	Evaluate

Table 3.1

Level I is typically a self-study effort on the part of the trainee with guided discussion and validation conducted by the OJT instructor afterwards.

Level II and III involve the actual performance of the task.

Each task assigned to a trainee requires certification at all three levels. Normally, this certification is achieved by conducting training for each of three levels. Levels I and II may be waived if the trainee had earlier attended formal classroom or computer-based training.

A typical OJT event will include some or all of the following activities:

1. Establish a training environment
2. Develop a rapport with the trainee
3. State learning objectives and expected performance outcomes
4. Review technical requirements
5. Assess the trainee's existing knowledge and skill in performing the task
6. Demonstrate tasks
7. Motivate the trainee
8. Observe the trainee perform the task
9. Allow sufficient time for the trainee to practice task
10. Ask questions to check for understanding
11. Provide explanations
12. Review and summarize information
13. Provide feedback and evaluate the trainee's performance
14. Provide additional training when necessary

Validating Level III

To Validate Level III OJT, you (the instructor), must be able to answer "Yes" to all of the questions shown below.

	Yes	No
Did the trainee demonstrate sufficient knowledge to accurately complete the task?		
Did the trainee demonstrate all steps necessary to proficiently complete the task?		
Were the steps completed in the proper order?		
Did the trainee perform the task in a timely manner and without assistance?		

Table 3.2

At the end of each training session the instructor will validate that the trainee has successfully completed that session and the training objectives were met before notifying the Training Coordinator that training is complete.

3.2.4 Basic Training

After completing the initial Initial/familiarization training and its associated OJT, the aircraft accident investigator who is under training should attend a Basic accident investigation course as soon as is practicable, if they have not already attended such courses prior to joining the AIB. Preferably, the basic course should be provided within the first year of attending initial training.

Basic aircraft accident investigation courses should cover the following topics:

- the responsibilities of the States involved, as defined in Annex 13;
- the accident site considerations, such as security, hazards, safety precautions, wreckage diagramming, collection of evidence and control of access;
- the investigators' personal equipment and protective clothing;
- the examination and recording of the wreckage and witness marks;

- the range of apparatus available for recording evidence;
- witness interview techniques;
- the full range of in-flight recorders and ground-based recorders;
- the determination of the time and origin of any aircraft fires;
- crashworthiness and survival aspects;
- the properties and the modes of failure of materials used in the aircraft structure;
- the design of aircraft systems and likely modes of failure;
- aerodynamics and aircraft performance;
- the examination of power plants;
- human performance;
- aviation medicine and pathology; and
- the methodology of report writing.

The Basic Training is a foreign outsourced course provided by recognised institutions such as Cranfield University, University of Southern California (USC), Southern California Safety Institute (SCSI), Singapore Aviation Academy, NTSB Academy, and so on.

The duration of Basic Training takes between 80 -120 hours/10 – 15 days depending on the institution providing the training.

Refer to Section 4.3 for detailed course contents.

3.2.5 Advanced Training

As a trained investigator gains experience, he should be enrolled for an advanced accident investigation course where he can update his knowledge of the basic techniques and increase his knowledge in special areas relevant to accident investigations. This should be provided as soon as is practicable, preferably within the first year of completing the basic training.

In addition to the review of the topics in the basic course, an advanced course is desirable for preparing an investigator for the responsibilities of group leader or investigator-in-charge of a major investigation. Such a course should aim to give the investigator an understanding of and some competence in the organization of a major accident investigation.

The Advanced Training is an outsourced foreign course provided by recognised institutions such as Cranfield University, University of Southern California (USC), Southern California Safety Institute (SCSI), Singapore Aviation Academy, NTSB Academy, and so on.

The duration of Advanced Training may take between (80 – 120) hours (10 – 15). It depends on the institution that provides the training.

Refer to Section 4.4 for detailed course contents.

3.2.6 Specialty Training

3.2.6.1 Aircraft Type Training

Investigators may be called upon to investigate accidents involving a variety of aircraft types. It is impracticable to train an investigator on each of the aircraft types that he may encounter. Nevertheless, investigators should have a basic knowledge of most of the major air transport aircraft types that are operated in the country. It is therefore recommended that investigators attend aircraft type courses on the most common aircraft types used by airlines in Nigeria. Preferably, such aircraft type courses should include specialized technology transport category aircraft (i.e. aircraft equipped with a glass cockpit, fly-by-wire systems and aircraft which contain composite materials in their structure). There is no need for each investigator to attend type courses on all the large aircraft types used in the country.

Training on the various aircraft types can be shared equitably among the investigators. For example, one Investigator could be trained on one or two large aircraft types and another investigator on other aircraft types. Investigators with a technical or engineering background could attend the aircraft type courses for technical/maintenance personnel. Similarly, investigators with a pilot background could attend the aircraft type courses for pilots, which could include introductory flight training in a flight simulator.

3.2.6.2 Specialised Trainings

Specialised courses may be introduced to an investigator at any stage after a basic course. The courses would augment the skills and knowledge acquired by the investigator in order to meet the needs of a particular area of accident investigation that is relevant to his assigned duties.

For topics such as flight data analysis, helicopter accident investigation, gas turbine engine accident investigation, accident survival aspects, fires and explosions, Human Factor investigation, safety management systems, family assistance and media relations, they are generally extensive enough to warrant a short course of their own with a specialized syllabus.

The short courses are organized by universities and other recognised training institutions earlier mentioned. It is the responsibility of the training coordinator to find such courses and schedule investigators to attend.

Description of the systems involving specialized technologies (such as glass cockpit, fly-by-wire systems, GPS, electronic flight instrument system (EFIS) and EGPWS) is usually provided during aircraft type courses. However, aircraft type courses do not include the investigation aspects or the investigation techniques of such complex systems. Extensive information can be obtained from memory chips and other solid state electronic circuits used in new technology systems. Increasingly, the investigation techniques for solid state electronic circuits are covered in accident investigation courses.

The Training Coordinator should contact the manufacturers of such systems for specialty courses, since most manufacturers have accident investigators and support personnel that are familiar with the systems and the investigation techniques required to extract the information stored in the systems.

3.2.6.3 Additional Trainings

Other additional training can be obtained by attending workshops, seminars, conferences and seminars conducted by aircraft accident investigation organizations, such as the International Society of Air Safety Investigators (ISASI); by reading related material such as the *Aircraft Accident Digest* circulars and aircraft accident reports

issued by other States; and by exposure to major investigations as observers at major investigations on site in other States.

3.2.7 Simulation Exercises

Simulations involve Top Table Exercises and Accident Site Exercises. Simulations are organized by the Bureau using different scenarios one at a time. It is advisable to start with simple scenarios such as Photo Exercise, Use of PPE, Use of Equipment, Wreckage Mapping, etc. The goal of each exercise shall be stated and there shall be debrief after each exercise followed by critique. Management and all investigators are involved in the simulation exercises.

The Commissioner/CEO shall form the group that plans the simulations.

Refer to section 4.5 for detailed course contents for the Simulation Exercises.

3.2.7.1 Table Top Exercises

The goals of Table Top exercises are essentially to enable practice different scenarios, form investigation groups, develop team skills and to produce investigation plan for accident site, technical phase and for the duration of the investigation (12 months).

Table Top exercises are organized once in every twelve (12) months. It may be conducted for a period of one or two days.

3.2.7.2 Accident (Crash) Site Exercises

Accident or Crash Site exercises may take place in the airport. It involves practice of cooperation with other agencies that are the parties normally present at accident sites such as the police, search and rescue organisations, emergency and medical services, coroners, etc.

The goals of accident site exercises are:

- Team building within AIB
- Practice investigation process (iPPM, Guidance materials, etc)
- Practice use of equipment
- Practice taking high quality video/photo and systematically documenting them
- Help other agencies/parties involved at accident site to understand the role of Bureau

Accident site exercises may be conducted once every year.

3.2.8 Recurrent Training

Recurrent trainings may be organized for specific subjects as may be determined during assessment of training needs of each individual by his immediate supervisor or as may be required by the subject matter.

Generally, a formal recurrent training course contains a review of the elements found in the associated initial course, along with a discussion of any new requirements or procedures that have been established in the previous few years. The length of recurrent classroom training courses is typically 30% - 50% of the length for the initial course. Continuous performance of a specific task like instruction may exempt from a dedicated recurrent training course. Participation to seminars, workshop related to a subject matter may also be considered as maintenance of competency.

S/N	COURSE	RECURRENCY INTERVAL	DURATION	REMARKS
1	Laws and regulations	After amendment	1 day	If no change, Conduct bi-annual refresher
2	Policy and Procedures Manual	After amendment	3 days	If no change, Conduct bi-annual refresher
3	Safety Management System	24 months	2 days	
4	Human Factors	24 months	5 days	
5	Flight Data Analysis	24 months	5 days	
6	Dangerous Goods Awareness	24 months	5 days	
7	Site hazard and risk management	24 months	2 days	
8	Accident site exercises	12 months	2 days	
9	Table top exercises	12 months	0.5 day	

Table 3.3

3.2.9 Management/Leadership Courses

Training courses in this category provide an Investigator with the knowledge and skill that is required to function effectively as a supervisor, manager, training manager, or instructor. Courses in this category include Basic Supervisory Skills, Advanced Management Techniques, Instructor Training, Labor Relations, Conduct and Discipline, Systems Thinking, Strategic Planning, etc.

3.3 TRAINING MANAGEMENT

3.3.1 Training Process

When a new candidate is selected from the aviation industry or advanced program to become an aircraft accident Investigator he is issued a Job Description for a New Hire/Developmental Investigator. He must then complete the training requirements specified in this document before being given the authority to accomplish any Investigator Job Task without direct supervision.

All new hire employees normally begin training with Indoctrination training within few days of completing new-hire documentation. The new investigator is provided with Initial Investigation Training. After successful completion of this training requirement, a new investigator is then issued AIB Investigator Credential, but at this point any Job Task accomplished by this employee must still be under the direct supervision of another qualified investigator or OJT Instructor.

An investigator must complete both the formal training courses and On-the-Job training on the associated procedures and tasks covered in the formal training courses and also gain familiarity with investigation techniques.

The process is illustrated as follows:

Figure 3.2

The new investigator normally continues training until he has completed training in all subject areas that comprise the *core* of investigator job functions.

Core training refers to the essential training that must be provided to each employee in order to qualify as an accident investigator. Core training requirement comprises of Indoctrination, Initial, basic and advanced.

The following flowchart depicts the typical training process for a new-hire employee all the way through final qualification as Investigator-In-Charge status. This process can be modified as necessary to accommodate special requirements.

NOTE: Specialized Trainings may be conducted in-between other trainings as at when each of the specialized courses becomes available.

Aircraft Accident Investigator Training Flow Chart

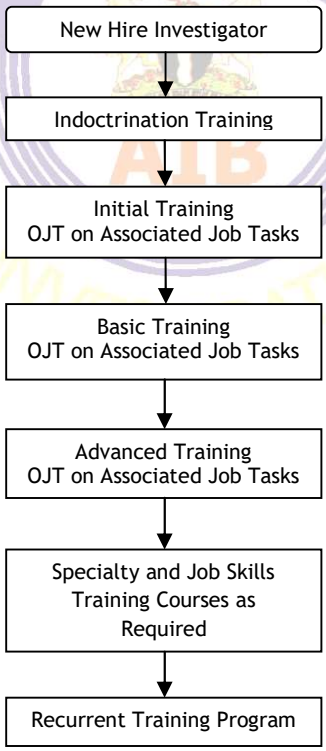

Figure 3.3

3.3.2 Sequence of Training

Training a person for aircraft accident investigation involves the following sequence:

S/N	SEQUENCE	PHASE OF TRAINING	DURATION	PROVIDER
1	1ST	Indoctrination (New Employee)	40 Hours	In-House
2	2ND	Initial Training	80 Hours	In-House/Outsourced (Local)
3	3RD	OJT on Initial Training	OJT Sign Off	In-House
4	4TH	Basic Training	80-120 Hours	Outsourced (Foreign)
5	5TH	OJT on Basic Training	OJT Sign Off	In-House
6	6TH	Advance Training	80-120 Hours	Outsourced (Foreign)
7	7TH	OJT on Advance	OJT Sign Off	In-House/ Attachment to foreign AIA

Table 3.4

1) In general, the aim of the indoctrination training is to provide a new employee with the orientation information and administrative procedures of the AIB.
2) *Initial training* is to familiarize new investigators with the aviation legislation in Nigeria and with the procedures and requirements of the Accident Investigation Bureau. Some investigators will bring some or all of this knowledge with them when hired, others will not. The specifics of prior knowledge, skills, and experience possessed by newly hired investigators are illustrated on the Individual Development Plan (IDP). Similarly, required additional knowledge, skills, and experience are illustrated on the IDP in order to assess the necessary elements of initial training.
3) Following the initial training, AIB will provide on-the-job training for new investigators. During this phase, the new investigators will practice the procedures and tasks covered in the initial training, and gain familiarity with investigation techniques. This training will also familiarize him with the investigation tasks at the accident site, the collection of factual information, the analysis of the factual information and the development of the final report. The conduct of on-the-job training should involve more than one experienced investigator and should not be

limited to investigations within Nigeria, since international experience is necessary for all investigators.

4) After completing the OJT on initial training, the aircraft accident investigator will attend a Basic Accident Investigation Course as soon as is practicable, preferably within the first year of training. A basic course should include "hands on" wreckage examination in a crash laboratory and should have a syllabus. Basic training is provided by institutions and organisations outside Nigeria.
5) Following the Basic training, AIB will provide OJT for aircraft accident investigators. During this phase, the aircraft accident investigators will practice the procedures and tasks covered in the basic training, and gain familiarity with initial actions at the accident site, such as security, hazards, safety precautions Wreckage Examination, the investigators' personal equipment and protective clothing, accident site safety, protection of evidence, wreckage diagramming, collection of evidence and control of access, witness marks, and other evidence, information gathering techniques and tools; examination of maintenance documents witness interview techniques
6) As a trained investigator at the AIB gains experience, he should be enrolled in an advanced accident investigation course where he can update his knowledge of the basic techniques and increase his knowledge in special areas relevant to accident investigations.
7) After completing the Advanced training, AIB will provide OJT for aircraft accident investigators. During this phase, the aircraft accident investigators will practice the procedures and tasks covered in the Advanced training, such as preparing an investigator for the responsibilities of group leader or investigator-in-charge of a major investigation, cataloguing a large number of fragments of wreckage, recovery of wreckage under water, management of a large accident site, reconstruction of evidence recorded in damaged solid state recorders, preparation of briefings and answers to formal questions and Report Writing.

3.3.4 Individual Development Plan (IDP)

One means to determine and manage training needs, as well as monitor and evaluate the training needs and outcomes of training of the Bureau staff, is through the use of an Individual Development Plan (IDP) - Form AIB.04.02 (Refer to Appendix II), which contains the required elements of an investigator's or manager's training program. Based on an individual's job description and his/her background, experience, and training gained in the past, the need for additional training can be determined and

monitored with the IDP, which would be completed for each an investigator and investigator manager.

Each newly hired person possesses some knowledge, skills, and abilities applicable to the assigned tasks; however, the level from one person to another varies. For example, two highly qualified operations investigators could possess extensive flight operations background, but one may only have limited incident investigation experience, while the other may have considerable major accident investigation experience. Further, investigators require different levels of knowledge, skills, and abilities, depending on the investigation roles to which they may be assigned. The IDP is an excellent tool for identifying and managing these variables.

The IDP also provides a tool to manage and plan each person's training, including a means to project an annual training budget. Further, the IDP can be used to document the necessary steps to be taken for a person to be promoted to higher levels of responsibility, such as from Investigator to Investigator management, including appointment as Investigator-in-charge (IIC) of minor or major accidents. The completed IDP for each person becomes the training record, which is filed along with supporting materials, such as certificates and other records of training and experience.

An IDP is prepared by the investigator's immediate supervisor. It reflects training accomplished and future training needs. Once the supervisor determines the training needs for an investigator using the IDP, he submits a recommendation for training. From those submissions, the Training Coordinator will, based on needs identified in the individual IDPs prepare each Individual investigator's Training Plan and Annual AIB Training Plan. The Annual AIB Training Plan will form part of the forecast for annual budget needs to provide the necessary training of all AIB personnel.

The Bureau recognizes that the aviation industry has specific training requirements for pilots, engineers, ATC, Dispatchers, etc., and those requirements are evaluated by the investigators as part of their accident investigation work. Therefore, it is incumbent on the Bureau to set equally specific training requirements for its investigators and managers. The IDP is a tool used to accomplish that task.

3.3.5 Training and Competency Requirements

The table below provides the performance and competence expected of aircraft investigators at every grade level and the training required for filling the gaps as the investigator progresses in his carrier development.

Seniority of Investigator	Training and Experience to be provided as far as is practicable	Skills and performance capability expected of investigators
New Accident Investigator All Grade Levels	• Indoctrination • Initial Training • Basic Aircraft accident investigation techniques and regulations • Aircraft accident investigation management • Organisational factors • Human factors/Safety Management • Site safety and blood borne pathogen avoidance • Media handling • On-the-job training • Crash exercises • Mobilisation turn-ups • Reading and reviewing safety and investigation reports • Writing AIB Safety Information articles	
Grade Levels 08 – 10 and New Accident Investigator Grade Level 12 and above	• Member of investigation team for GA/nil fatality/non-complex occurrences, including understudying the IIC • Being IIC for GA/nil fatality/non-complex occurrences • Member of investigation team for a more serious occurrence, including understudying the IIC or investigation sub-group chairman • Drafting investigation sub-group reports or final reports • Opportunities to critique other AIB draft reports	• Able to apply investigation legislation, Annex 13 standards and recommended practices and ICAO guidelines • Demonstrate resourcefulness • Able to adapt or improvise • Able to attend to details • Able to write clearly and concisely • Able to ask related questions • Able to identify and muster resources needed for investigation • Able to perform as an effective member of an investigation team

Table 3.5

Seniority of Investigator	Training and Experience to be provided as far as is practicable	Skills and performance capability expected of investigators
Accident Investigator Grade Levels 12-13 and New Accident Investigator Grade Level 14 and above	• Relevant specialty courses • Relevant advanced training • Recurrent training on relevant topics • Relevant safety and investigation conferences and seminars • Crash exercises • Member of investigation team for relatively complex occurrence or occurrence with few fatalities, including understudying the IIC • Being IIC for relatively complex occurrence or occurrence with few fatalities • Member of investigation team for major accident or occurrence with many fatalities, including understudying the IIC or investigation sub-group chairmen • Being investigation sub-group chairman for investigation of major accident or occurrence with many fatalities • Drafting investigation sub-group reports or draft final reports • Opportunities to critique other AIB reports • Reading and reviewing safety and investigation reports • Writing AIB Safety Information articles • Attachments to foreign investigations • Investigation assistance to other States • Relevant safety and investigation conferences and seminars • ICAO and other international/regional meetings on Annex 13 related matters • Basic Supervisory Skills, • Instructional Techniques	• All of the above, plus: • Able to draw up investigation plan, with attention to details • Able to perform effectively as IIC for investigation of General Aviation or nil fatality or non-complex occurrence, including drafting of investigation report • Able to manage the Accident Investigation Command Centre • Attachments to foreign investigations • Relevant safety and investigation conferences and seminars

Seniority of Investigator	Training and Experience to be provided as far as is practicable	Skills and performance capability expected of investigators
Accident Investigator Grade Levels 14-15 and New Accident Investigator Grade Level 16 and above	• Relevant specialty courses • Relevant advanced training • Recurrent training on relevant topics • Attachment to foreign investigations • Investigation assistance to other States • Relevant safety and investigation conferences and seminars • ICAO and other International/regional meetings on Annex 13 related matters • Advanced Management Techniques	• All of the above, plus: • Able to perform effectively as IIC for investigation of relatively complex occurrence or occurrence with few fatalities, including completion of investigation report • Able to perform as deputy IIC for investigation of major accident or occurrences with many fatalities, including drafting of investigation report • Able to critique, draft and review reports for complex and major investigations • Able to face the media at interview • Able to be formal training instructor • Able to be OJT Instructor • Able to lead investigation group • Able to manage training
Accident Investigator Grade Level 16 and New Accident Investigator Grade Level 17 and above	• Relevant specialty courses • Relevant advanced training • Recurrent training on relevant topics • Attachment to foreign investigations • Investigation assistance to other States • Relevant safety and investigation conferences and seminars • ICAO and other International/regional meetings on Annex 13 related matters • Advanced Management Techniques	• All of the above, plus: • Capable of conducting complex and/or major investigations • Developed managerial skills and ability to define, set and review objectives and report on the work of a team(s) • Able to use leadership skills to develop and maintain harmony in teams • Able to critique draft reports • Able to guide and supervise the work of Grade 8-15 investigators • Able to perform effectively as a deputy IIC or an investigation sub-group chairman in relative complex occurrence or occurrence with few fatalities • Able to draft press release • Able supervise small group of investigators • Able to train other investigators (instructor of Initial training course)

Seniority of Investigator	Training and Experience to be provided as far as is practicable	Skills and performance capability expected of investigators
Accident investigator Grade Levels 17 and above	• Relevant specialty courses • Relevant advanced training • Recurrent training on relevant topics • Attachment to foreign investigations • Investigation assistance to other States • Relevant safety and investigation conferences and seminars • ICAO and other international/regional meetings on Annex 13 related matters • Labor and Industrial Relations • Conduct and Discipline • Systems Thinking • Strategic Planning	• All of the above, plus: • Able to guide investigators in their investigation of relatively complex occurrence or occurrence with few fatalities and critique the related draft reports • Able to guide investigators undertaking IIC or investigation sub-group chairman role in relatively complex occurrence or occurrence with few fatalities • Able to draft comprehensive public reports of major investigations • Capable of providing on-site media briefing • Capable of providing briefing to minister • Able to perform as IIC for investigation of major accident or occurrences with many fatalities, including completion of investigation report • Able to lead and manage all complex and/or major investigations as IIC • Able to mentor senior investigator undertaking IIC role in complex investigations • Able to draft comprehensive public reports of major investigations • Able to face the media as a member of a press conference panel for release of facts or report

3.3.6 Training Evaluation

The Training Coordinator will regularly evaluate each course for its contents, time, quality of the training materials, training facilities and instructor. This is accomplished through observation, examination results, evaluation and feedback from trainees through the use of course critique.

The course evaluation process will help the instructor and the training Coordinator establish how did the course affect the trainees' reaction, learning, behaviour and results as follows:

- How well did the trainees like the course
- To what extent did the trainees learn the facts, principles and approaches that were included in the classroom training
- To what extent did the trainees' job behaviour change because of the course and
- What were the final results achieved

If deficiencies are discovered or an investigator demonstrates lack of knowledge or skill, then Training Coordinator will take appropriate action to correct any problems that may affect effectiveness of the course.

3.3.7 Training Records

It is imperative that an accurate and permanent record be created to record the training status of each Investigator. This record should be meticulously maintained from the time the Investigator is hired into the AIB until the time he retires from the employment of AIB.

The Investigator Training Record consists of a completed IDP, Form AIB.04.04, training development chart (Form AIB.04.06) and training certificates/attendance register. The training development chart contains list of all investigators/employees with the courses attended and courses not yet attended. The chart serves as a quick access training gap to determine the training needs of each investigator.

The training record is kept in both hard paper copy and electronic format. The electronic format may be in the form of an automated software program that uses Microsoft Access placed on the Bureau's Workstation (Microsoft SharePoint). The

software includes automated summary functions for managers and worksheets for Investigators. The software creates a comprehensive record of the formal classroom training and on-the-job training that have been completed by each investigator during his career.

Within 7 days of completion of a formal classroom training or OJT, the trainee shall submit evidence of completion to the Training Coordinator for update of the trainee's records. Upon receipt of the evidence of completion of training, the Training Coordinator shall update the individual training records as appropriate within 5 days and handover the paper copy to Human Resource Department for inclusion into the individual training file. The training Coordinator should also monitor the progress of each on-going training course(s) to ensure they are tracked for record purposes.

Training Coordinator and the Heads of departments/units will keep a duplicate copy (photocopy) of the investigator's training records.

The paper individual personnel training files are updated to capture all the courses attended by the investigator. The files are by the Human Resource Department.

CHAPTER 4 TRAINING SYLLABUS

This chapter provides a description of the minimum standards and content that should be included in formal classroom training courses provided to investigators in accordance with the phases of training already described in chapter 3 of this manual. It applies to the initial training courses ONLY.

The training materials (handouts and power point presentations) for the in-house courses are found on the Bureau's server based Work Station (Microsoft SharePoint).

4.1 INDOCTRINATION TRAINING

The following subjects recommended for the Indoctrination training:

Title	**Indoctrination Training- ONE-OFF TRAINING**
Duration	40 Hours (5 Days)
Objectives	On completion of the training participants will have: ❖ An appreciation of our Corporate Plan and an understanding of how the objectives affect you. ❖ An understanding of how internal processes and policies work. ❖ An understanding of the benefits available to him when working at AIB
Description	This course is designed for newly hired employees of the Bureau. It presents orientation information concerning the Bureau. Course subjects include history, mission and philosophy of the AIB.
Contents	
Day 1	❖ Introduction ❖ Aims and objectives of the induction Program ❖ The History of the AIB and its enabling Laws ➢ History of Accident investigation in Nigeria ➢ Creation of AIB ➢ Objectives of AIB ➢ Mission and Vision Statement of AIB ➢ Relationship with Ministry of Transportation (Aviation) and other aviation agencies ❖ Introduction to aviation legislation ➢ Civil Aviation Act of 2006 ➢ Civil Aviation (Air Accident & Incident Investigation) Regulations or AIB

	regulations ➢ Brief history of Chicago Convention ➢ ICAO Annexes and Documents ❖ Work Procedures and Rules and regulations ❖ AIB's Organizational Structure and services provided by it ❖ Introduction of Activities of Directorates
Day 2	❖ How AIB's Work Culture ❖ Ethical Standards ➢ The Dos and Don'ts at AIB ➢ Obligations and Office Norms and Conduct ❖ Administrative procedures ➢ Office hours ➢ Travel and Per Diem policies ➢ Dress codes ➢ Leave ➢ Staff matters (promotion, retirement and discipline) ❖ Staff welfare ❖ Interpersonal Relationship at work
Day 3	❖ Team Building and team work ❖ Overview of Customer Services ❖ Overview of ICT ➢ Use of ICT infrastructure, including internet access ➢ Restricted access to and use of Confidential information ➢ Use of company emails and telephones ➢ Use of software ❖ The AIB Corporate Plan
Day 4	❖ Introduction to Public service Rules ❖ The Role of a Public Servant ❖ AIB Condition of Service ❖ Business Etiquette and Protocol Skills ➢ Customer Service Principles ➢ Professionalism ➢ Effective Communications Skills ❖ Individual responsibilities and Ownership Culture ❖ Financial Regulations
Day 5	❖ Probity ❖ A tour of the Bureau Offices and Accident sites (where possible) ❖ Program Evaluation and Closing
Prerequisites	None
Associated Training Course	None
Revision Date	26 July 2018

4.2 INITIAL TRAINING

This section contains the course contents for Initial Formal classroom training and the OJT on the Initial training.

4.2.1 Initial Formal Classroom Training

In general, the aim of the *initial training* is to familiarize new investigators with the relevant aviation legislation in Nigeria and with the procedures and requirements of the Accident Investigation Bureau.

The following subjects are recommended to be included in the initial training:

Title	**Initial Training - ONE-OFF TRAINING**
Duration	80 hours (10 Days)
Objectives	On completion of the training participants will have: ❖ knowledge of aviation legislation in Nigeria ❖ Knowledge of ICAO Annexes and Documents relating to accident investigation. ❖ Knowledge of the initial responses. ❖ An understanding of the accident investigation process. ❖ Ability to begin OJT for the specific Job tasks associated with the subjects of Initial Training.
Description	This course is designed for newly hired aircraft accident investigators of the Bureau. It is aimed to familiarize new investigators with the relevant aviation legislation and with the procedures and requirements of the Bureau.
Contents	Administrative arrangements ❖ Applicable ICAO documentation (ICAO Annex 13, ICAO Doc.9756, ICAO Doc. 9962, Doc. 9946, Doc. 9998, Doc. 10062, Doc. 9859; etc ❖ Relevant Sections of Aviation Act 2006, Civil Aviation (Investigation of air Accidents and Incidents) Regulations, Nigeria Civil Aviation Regulations, Powers of investigators, Confidentiality of information; ❖ International agreements (including Annex 13 — *Aircraft Accident and Incident* ❖ *Investigation*); ❖ Memoranda of understanding with other organizations; ❖ Liaison arrangements with local and national authorities;

	❖ Management Structure of the Accident Investigation Bureau; ❖ Aircraft accident investigation Policy and Procedures Manuals i(PPM); ❖ Definitions and accident classification; ❖ Equipment and tools; ❖ Transport arrangements; ❖ Ethics and conduct; and ❖ Expenditure control.
Contents	Initial response procedures ❖ On-call procedures; ❖ Notification of other national authorities and organizations; ❖ Securing of records, recordings and samples; ❖ Accident site jurisdiction and security; ❖ Investigator safety including psychological stress; ❖ Recovery of human remains; ❖ Requests for autopsies; and ❖ Family assistance.
	Investigation procedures ❖ Authority and responsibility; ❖ Size and scope of the investigation; ❖ Investigation management; ❖ Use of specialists; ❖ Parties to the investigation, accredited representatives, advisers and observers; and ❖ Release of information to the news media.
Prerequisites	Indoctrination Training
Associated Training Course	None
Revision Date	26 July 2018

4.2.2 OJT 1 (Following Initial Training)

Following completion of the initial training, the new investigator will practice the procedures and tasks covered in the initial training, and gain familiarity with investigation techniques. The new investigators will be tasked to support the experienced investigators in new or on-going investigations.

This OJT will also familiarize him with the investigation tasks at the accident site, the collection of factual information, the analysis of the factual information and the development of the final report.

All these OJT activities will be recorded on OJT Progress Chart Form AIB.04.03.

Title	**On-the-Job-Training (OJT) 1**
Duration	OJT sign off
Objectives	On completion of this OJT participants will be able to: ❖ Demonstrate knowledge of ICAO Annex 13 and the associated Documents ❖ Fill out Notification Forms ❖ Demonstrate practical skills in research and collection of factual information, interviews, documenting evidence on site ❖ Organize logistics ❖ Draft reports
Description	This course is designed for newly hired aircraft accident investigators of the Bureau. It is aimed to expose new investigators to investigation tasks by attaching them to experienced investigators in new or on-going investigations.
Contents	❖ Review of Annex 13 and Doc. 9756 ❖ Notification of foreign Accident Investigation Authorities ❖ Collection factual information (documenting evidence, Witness interviews, Transcription of CVR recordings, supervision of tests) ❖ Analysis ❖ Writing Draft Final Report
Prerequisites	Initial Training
Associated Training Course	None
Revision Date	26 July 2018

4.3 BASIC TRAINING

This section contains the course contents for Basic Formal classroom training and the OJT on the Basic training.

4.3.1 Basic Formal Classroom Training

Basic aircraft accident investigation courses should cover the following topics:

Title	Basic Training - **ONE-OFF TRAINING**
Duration	80 - 120 hours (10 - 15 Days)
Objectives	On completion of the Basic Training participants will be able to: ❖ Describe the accident investigation process for a transport accident, including elements of preparation, emergency response, evidence collection and analysis, report writing and safety recommendations ❖ Work safety under supervision at an accident site ❖ Conduct witness interviews and collect material evidence from a variety of relevant sources ❖ Perform analysis of evidence to develop a final report ❖ Critically assess strategies for working alongside interested parties including emergency services, legal, pathologist, news media, families and foreign authorities
Description	This course is designed for trainee investigators of the Bureau, who may become involved in future aircraft accident investigations in any capacity and need to understand basic investigation technology. It focuses on the fundamental skills required by an accident investigator
Contents	***General introduction***. ❖ The history of aircraft accident investigation ❖ the development of the international agreements on the conduct of investigations, ❖ The Standards and Recommended Practices (SARPs) adopted by ICAO and its Contracting States in the field of aircraft accident investigation. ❖ The responsibilities of the States involved, as defined in Annex 13 — *Aircraft Accident and Incident Investigation* ❖ The applicable international agreements and SARPs are contained in Annex 13 — *Aircraft Accident and Incident Investigation* to the Convention on International Civil Aviation. Relevant guidance material is provided in the *Manual of Aircraft Accident Investigation* (Doc 6920) and *Manual of Aircraft Accident and Incident Investigation* (Doc 9756). A review of these documents and their salient points is required so that the investigator knows where to find the information on the relevant topics. General guidance should also be given on the investigation of accidents involving unlawful interference, both civil and military aircraft or facilities, and inaccessible or missing aircraft.

	Accident notification procedures. ❖ The accident notification systems and the appropriate responses to be expected from each State and organization that are notified. ❖ The ways on how the notification of the occurrence of an accident initiates the process of an investigation. ❖ The support to be provided to the accident investigation authority in the State of Occurrence by the State of Registry, the State of the Operator, the State of Design, the State of Manufacture, and any other States that are involved by virtue of the number of their nationals involved in the accident or are involved by providing a permanent base for the investigation due to their proximity to an accident site. ❖ The requirements of Annex 13 in relation to this phase of an investigation. ❖ Preparation for overseas travel in the form of passports and visas and airport airside passes should be reviewed, as should the benefits of access provided by the international agreements inherent in Annex 9 — *Facilitation*.
	Investigation management. ❖ The role of the investigator, the skills he will need to acquire, and the accident investigation process. ❖ The value of assessing the availability of resources (such as funding, personnel, equipment and buildings) ❖ The planning for the investigation of a major accident beforehand. ❖ Guidelines for determining the appropriate size and scope of an investigation, the differences between the management of large and small investigations, and the type of circumstances in which assistance from specialists will contribute to the success of the investigation. ❖ An appreciation of the realities of the limits imposed by the resources available and the optimum use of those resources. ❖ The value of memoranda of understanding with departments and organizations that might be involved in an investigation.
	Investigators' equipment. ❖ The factors determining the equipment to be used during investigations (availability, cost and the means available to transport it to the site. ❖ The use of contemporary aids such as global positioning systems (GPS), satellite telephones, and data links back to base, as well as on the use of basic items such as compasses and inclinometers. ❖ Means of recording in extreme wet or cold conditions. ❖ The proper method of taking samples of aircraft fluids and the appropriate containers should also be included.
	Accident site safety. ❖ The safety of personnel at an aircraft accident site. ❖ The appropriate measures to protect those on the site against exposure to the elements, to any hazardous cargo or dangerous materials released from the aircraft, and against injury or infection must be understood. There are medical risks and hazards from the aircraft wreckage itself and they must be explained to the investigators. ❖ The psychological stress of investigators and other personnel with exposure at an accident site. Disease is an ever-present risk and inoculations against such risks as hepatitis, malaria and tetanus are essential. ❖ Demonstrating the use of protective equipment against airborne and blood borne pathogens.

	❖ Special consideration on utilities such as gas mains, electricity transmission lines and main transport routes. ❖ A plan for aid and rescue in the event of an accident involving personnel at the site (requirements by many occupational health and safety organizations).
	Protection of evidence. ❖ To establish a suitable environment for a competent examination of the area and the accident debris, measures should be taken to protect the wreckage from fires, meteorological hazards and souveniring. ❖ The need to give priority to recording transient evidence, securing light objects that may be lost in the wind, and recording ground scars and other site markings that may become obliterated should be addressed. ❖ The conduct of interviews with the rescue personnel should also be discussed in order to facilitate the determination of the movement of items of wreckage, which they may have caused inadvertently.
	Initial action at the accident site. ❖ The investigator should be given a thorough understanding of the numerous considerations that should be taken into account at the accident site. With some exceptions such as accidents involving missing aircraft or resulting in wreckage that is inaccessible, the accident site is the primary area of investigation. ❖ The methods of apportioning time effectively, prioritizing the types of information to be gathered, plotting the position of surface marks, and identifying and plotting the position of items of wreckage, as well as the preparation for the removal of any exhibits to a secure site are important considerations that the investigator should become familiar with from the outset.
	Information gathering techniques. ❖ The investigator under training should be introduced to the methods of gathering and reviewing relevant documentation and procedures; ❖ The interview techniques used for different types of witnesses; the transcription of air traffic services and other recordings; and ❖ The review of aerodrome facilities, emergency services responses and meteorological data.
Contents	***Communication and recording media***. ❖ The various media available for communicating to and from an accident site and for recording the evidence at the accident site and throughout the investigation are essential elements of an investigation course. ❖ Digital video cameras and digital cameras, standard film photography, laptops and hand-held computers with connections via satellite telephones to sources of information of immediate use at the accident site, and tape recorders are all useful for recording the available information as accurately and rapidly as is practicable. ❖ As each type of equipment is evolving rapidly, it is an essential subject in the training of an investigator.
	Witness interviews. ❖ The range of witnesses varies with physical condition, nature of involvement, and differences in ethnic backgrounds. They will also vary in their value based on their understanding of the required information and their proximity to the scene. ❖ They may be a visual witness who saw an event or an aural witness who heard a sound or relevant conversation.

	❖ The preparation for interviews, information to be gleaned from body language, the relative positioning of the interviewer and interviewee, preparation of the questions to be asked, the use of open questions, the art of listening and general conduct of the interview, the use of recorders such as video cameras and tape recorders, the value of written statements and signed transcripts must be considered. ❖ The precautions to be taken when interviewing the injured or persons in ill health, the young, the aged, and hostile witnesses as well as the use of experts in the field of inquiry should be discussed.
	Recorders. ❖ In addition to the flight recorders, there are many other forms of recorders used in the aviation industry, from the security cameras on the aerodrome perimeter fence to the maintenance recorders in the aircraft, each with potential use to an investigator. ❖ The value of each form of recorder, the methods of interpreting and downloading the information, and the sources of readout must be in the course syllabus. ❖ Equally, the value of manufacturer's expertise in recovering information from damaged recorders (such as global positioning receivers, solid-state flight recorders and inertial navigation unit components) should be explored. ❖ Another aspect of importance is the means of locating the flight recorders and recovering them from locations that are difficult to reach. ❖ Recorders at air traffic services facilities, particularly those that record radar returns, should be the subject of a separate study and guidance regarding their potential use to an investigation.
	Examination of relevant maintenance documents. ❖ The maintenance history of the aircraft is established primarily from the records held by the operator. ❖ The investigator must learn to establish whether the maintenance, inspection procedures and servicing that are recorded as having been completed have in fact been carried out, and he must also learn to determine the adequacy of the specified maintenance procedures.
	Fires and explosions. ❖ The evidence available to distinguish an in-flight fire or explosion from post-accident fires forms a valuable lesson that must be passed on to the new investigator. ❖ The means of determining the ignition source and the fuel supply of a fire are important. ❖ It is necessary to teach about the effectiveness of fire fighting measures available on board the aircraft and the means for preventing post-accident fires during an investigation.
	Survival aspects. ❖ The chances of occupants surviving an accident can be assessed and the means to do so should be given to the accident investigator. ❖ The investigator should know the formulae for impact force calculations and the various forms of attenuating impact forces. ❖ A discussion on the limits of human tolerance to heat and impact forces is worthwhile, as are the effects of toxic by-products of the accident environment. ❖ The efficiency of the rescue and fire fighting services, standard pre-flight passenger briefing spiels, restraint systems, seat anchorages and aids to

	egress from the aircraft are items that should be studied under this heading. ❖ It is also very important to review the factors that affect the occupants' chances of surviving the accident. ❖ The means of determining the after effects of a fire on the occupants and the fire's impediment to passenger evacuation must be discussed, as must the availability of such items as smoke hoods and smoke goggles. ❖ An understanding of the methods used to protect the aircraft occupants from the impact forces and post-impact effects (such as thermal stress and water immersion) is very important for the accident investigator. ❖ He must be able to assess the effectiveness of the methods and make recommendations which will provide better protection for the occupants in the future.
	Structures. ❖ As the basis for the examination of the wreckage, the study of structures is an area of prime interest to the investigator. ❖ The study of structures should comprise metallurgy, fibre reinforced plastics and timber structures, stress analysis and the strength of these materials. It should also include the various modes of failure and the characteristics of such failures in the materials used in aircraft structures. ❖ The methods of failure analysis, reconstruction of areas of interest in the airframe, and the evidence of the various modes of failure are important considerations.
	❖ The various types of flight controls and landing gear structures should also be studied under this heading. ❖ The advanced equipment used in the study of failure mechanisms, the preparation of samples for examination by such equipment, and the methods for comparative testing of similar materials. ❖ The study of structures also provides a platform for introducing the means of wreckage trajectory analysis. ❖ Every effort should be made to provide examples of the various failure modes in materials used in aircraft construction.
	Systems. ❖ Aircraft systems vary from mechanical controls that are still found in general aviation aircraft to the fly-by-wire systems already extant in wide-bodied transport aircraft. ❖ The wide variety of systems that the investigator should become familiar with in general terms. ❖ the resources available to assist the investigator in the event of an accident involving a complex system and on common causes of system failure that might be experienced. ❖ A lead to system health can often be found in past maintenance records or on-board recorders. ❖ It is necessary to discuss, in general terms, fuel, hydraulic, pneumatic, electrical, pressurization, flight control, instruments, navigation, autopilot and instrument systems. ❖ Other topics that should be considered include software failures in airborne computers and the adequacy of the protection against catastrophic events ensuing from such failures.
	Aerodynamics. ❖ The common areas of aerodynamics that frequently assume importance in an investigation are those related to performance and in-flight structural

	failure caused by overload or flutter. ❖ A review of basic aerodynamics and the means of detecting failure from aerodynamic factors should be included in the investigator's basic training. ❖ The topics of engine failure recognition speed, V_1 and V_2, climb gradient, over-speed, engine-out performance, icing and stability also deserve special attention.
	Power plants. ❖ The detailed analysis of power plants is normally the subject of a separate course and is usually carried out in conjunction with the engine manufacturer's representatives. ❖ Nevertheless, the explanation of the basic principles of reciprocating and turbine engines has a place in basic and advanced investigation courses. ❖ The same is true with regards to the analysis of damage to propellers and helicopter rotors, and a general overview of methods of evaluating damage to determine if further investigation of the particular propeller or engine is warranted. ❖ For example, propellers and turbines can give a worthwhile indication of an absence of engine power at the time of impact. ❖ This is another subject in which examples of failures and accident damage form an essential part of the course.
	Rotary wing aircraft. ❖ A general introduction to the principles of flight for helicopters and their control systems is relevant. ❖ However the subject of investigating helicopter and other rotary wing aircraft accidents is usually the subject of a separate specialty course.
	Organizational information. ❖ Organizational and management information is a section of the final report format and it concerns the organizations and the management involved in influencing the operation of the aircraft. ❖ The organizations include, for example, the operator; the air traffic services, airway, aerodrome and weather service agencies; and the regulatory authority. ❖ Conducting a review of the organizational structure and functions as well as the management policies and practices of the agencies, authorities and aircraft operator involved is a subject that should be covered. ❖ For example, an investigator should have the competence to review an aircraft operator's management functions, policies and practices in their entirety. ❖ There are many aspects of the supervisory process which may have a direct bearing on the accident, such as acceptance of inadequate flight crew qualifications; deficient guidance material; maintenance shortcuts; improper crew rostering; failure to provide proper training in aircraft type; shortcomings in crew resource management; and unreasonable pressure to complete schedules on time. ❖ The methods of investigating management and organizational aspects of an organization to determine the presence of any risk factors or other shortcomings is a requirement of a well-rounded accident investigation course. ❖ An examination of the means of supervision is very important and will include a review of orders, regulations, manuals and independent audits as well as the performance of supervisors, instructors and company management.

	Human performance. ❖ No accident investigation can be complete without a thorough consideration of Human Factors issues involved. ❖ The demands of the environment and the aircraft on the human often approach the physiological and psychological limits of the flight crew, maintenance and servicing crews, air traffic services personnel and other personnel required to support aircraft operations. ❖ The study of human limitations, communications, fatigue, decision-making processes, flight crew health and the information available from post-mortem examinations are vital components of this section of an investigation course. ❖ An examination of the handling of the aircraft will encompass the areas of operations and training. ❖ The area of operations includes the man-machine relationship and the actions or lack of actions in the events leading to the accident. The investigation in this area covers specifically how the flight crew members reacted, analysed and attempted to cope with the complexities of the flight.
	❖ The area of training will cover the extent and adequacy of the training relevant to the accident flight. The *Manual of Civil Aviation Medicine* (Doc 8984), the *Human Factors Training Manual* (Doc 9683), the *Human Factors Guidelines for Air Traffic Management (ATM) Systems* (Doc 9758) and the *Human Factors Guidelines for Safety Audits Manual* (Doc 9806) are references which can be used in this section of the training.
	Determination of the flight crew's suitability for the flight. ❖ The flight crew members are required to meet certain licensing, training and experience requirements before conducting any flight. ❖ In addition, they must be fit for their duty and the complement of the crew must be appropriate. ❖ Familiarity with the flight crew documentation and requirements is essential. Fitness of the flight crew for the flight can be considered as part of several Human Factor considerations and should be explained in detail.
	Methods of analysing the factual information gathered. ❖ There are several structured procedures for analysing the evidence and facts determined during the investigation. ❖ Knowledge of these procedures will enable the investigator to establish whether further investigation is required in order to complete the investigation or to test any hypotheses that the investigation team is considering.
	Report writing. ❖ Report writing is an integral responsibility of an accident investigator. ICAO has developed a format for writing reports that leads logically from the history of the flight to the safety recommendations. ❖ There is a minimum of duplication and a full consideration of aspects of the flight that are relevant to the improvement of safety. ❖ Knowledge of this format and process gives the investigator a sound basis for drafting the final report, including the formulation of appropriate safety recommendations.

	The news media and public relations. ❖ Almost any aircraft accident is of interest to the news media and will to some extent involve the investigator-in-charge in public relations activities. ❖ There are two aspects to this subject: the information made available to the public, and the more specialized approach to the survivors and the families of those involved in an accident. ❖ The importance of keeping others informed on the progress of an investigation, while not speculating as to causes and protecting the privacy of those who assist with sensitive information must be explained to investigators. ❖ The *Guidance on Assistance to Aircraft Accident Victims and their Families* (Cir 285) is a sound basis for addressing this subject.
Prerequisites	None
Associated Training Course	Fundamentals of Accident Investigation (Cranfield University); Aircraft Accident Investigation Course (USC/SCSI/SAA)
Revision Date	26 July 2018

4.3.2 OJT 2 (Following Basic Training)

During this phase, the aircraft accident investigators will practice the procedures and tasks covered in the basic training, and gain familiarity with initial actions at the accident site, such as security, hazards, safety precautions Wreckage Examination, the investigators' personal equipment and protective clothing, accident site safety, protection of evidence, wreckage diagramming, collection of evidence and control of access, witness marks, and other evidence, information gathering techniques and tools; examination of maintenance documents witness interview techniques

They will also be asked to contribute their opinions. All these OJT activities will be recorded on Form AIB.04.03.

Title	**On-the-Job-Training (OJT) 2**
Duration	OJT sign off
Objectives	On completion of this OJT participants will be able to: ❖ Demonstrate knowledge of initial actions at the accident site such as control of access to and risk assessment of accident site ❖ Demonstrate practical skills on using investigators personal equipment and PPE and collection of evidence ❖ Demonstrate practical skills on use of camera ❖ Demonstrate practical skills on examination of wreckage and plotting wreckage diagram ❖ Organize logistics ❖ Write Draft reports
Description	This course is designed for trainee aircraft accident investigators of the Bureau. It is aimed to expose new investigators to investigation tasks by attaching them to experienced investigators in new or on-going investigations.
Contents	Attachment to participate in an on-going or new accident or serious incident investigation
Prerequisites	Basic Training
Associated Training Course	None
Revision Date	26 July 2018

4.4 ADVANCED TRAINING

This section contains the course contents for Advanced Formal classroom training and the OJT on the Advanced Training.

4.4.1 Advanced Formal Classroom Training

Most topics covered in the basic course will also apply to advanced courses, but the instructors are expected to vary their treatment of these topics to suit the purpose of the course and the experience level of the students. In addition to the review of the topics in the basic course, an advanced course is desirable for preparing an investigator for the responsibilities of group leader or investigator-in-charge of a major investigation.

Title	Advanced Training - **ONE-OFF TRAINING**
Duration	80 - 120 hours (10 - 15 Days)
Objectives	On completion of the Advanced Training participants will have: ❖ Gained knowledge on concepts and practical techniques on aircraft investigation methodology, and prepare an individual to participate in an aircraft accident investigation ❖ Gained the skills needed to confidently conduct a major aircraft accident investigation.
Description	This course follows on directly the Basic Training and concentrates on applying practical training, including simulation of an aircraft accident investigation.
Contents	In addition to the review of the organization of a major investigation, topics that should be considered include: ❖ the provision of family assistance (briefings and distribution of investigation reports) to those involved in an accident; ❖ relations with the media; ❖ an introduction to methods for cataloguing a large number of fragments of wreckage; ❖ methods for recovery of wreckage under water ❖ management of a large accident site for security, safety and protection of the personnel; ❖ preparation of briefings and answers to formal questions for members of government; ❖ the methods of undertaking investigations that involve both civil and military aircraft; and ❖ liaison with the law enforcement authorities in accidents involving unlawful interference. techniques used to investigate accident damaged systems that involve specialized technologies such as glass cockpit, fly-by-wire systems, GPS, and enhanced ground proximity warning systems (EGPWS);

	❖ reconstruction of evidence recorded in damaged solid state recorders; ❖ the use of virtual video presentations in large structural reconstructions of wreckage; and ❖ the use of computer simulations and programs for flight simulators to recreate aspects of the aircraft's flight path which are of interest to the investigation.
Prerequisites	Basic training
Associated Training Course	Applied Accident Investigation Course (Cranfield University; Aircraft Accident Investigation Course (USC/SCSI/SAA)
Revision Date	26 July 2018

4.4.2 OJT (Following Advanced Training)

After completing the Advanced Training, AIB will provide OJT for aircraft accident investigators. During this phase, the aircraft accident investigators will practice the procedures and tasks covered in the Advanced training, such as preparing an investigator for the responsibilities of group leader or investigator-in-charge of a major investigation, cataloguing a large number of fragments of wreckage, recovery of wreckage under water, management of a large accident site, reconstruction of evidence recorded in damaged solid state recorders, preparation of briefings and answers to formal questions and Report Writing.

All the JOT activities will be recorded on Form AIB.04.03.

Title	**On-the-Job-Training (OJT) 3**
Duration	OJT Sign off
Objectives	On completion of this OJT participants will be able to: ❖ Demonstrate accident investigation leadership skills such as Group Leader or Investigator-In-Charge ❖ Demonstrate practical skills on management of large scale accident site ❖ Prepare media briefings ❖ Write final report
Description	This course is designed for trainee aircraft accident investigators of the Bureau. It is aimed to expose investigators to investigation tasks by attaching them to foreign accident investigation authorities in new or on-going investigations.
Contents	Attachment to participate in an on-going or new accident investigation
Prerequisites	Advanced Training
Associated Training Course	None
Revision Date	26 July 2018

4.5 SIMULATIONS

Title	**Accident Site Training**	
Objectives	On completion of this training participants will be able to: ❖ Know different health and safety issues which they may face on accident site. ❖ Know how to produce an investigation plan for on-site phase. ❖ Understand their role as part of the investigation team. ❖ Know the value of good documentation; different techniques and possibilities ❖ Know how to use investigation equipment (measuring tools, cameras etc.)	
Materials and methods	❖ Notes, pens ❖ Risk assessment checklist ❖ Personal investigation equipment ❖ Investigation kit ❖ Camera for each participant	
Classroom lectures and discussions		
Duration	**Topic**	**Learning Method**
30 Minutes	**Introduction** ❖ Objectives of training ❖ Introduction of participants ❖ Schedule for the course	Classroom Lectures
2 Hours	**Health and Safety** ❖ Hazards on accident site, risk assessment checklist ❖ Protective Equipment	❖ Lecture ❖ Discussions
2 Hours	**Producing an investigation plan for accident site** ❖ Checklist ❖ Available resources ❖ Assignment of responsibilities ❖ Role of the Team leader ❖ Timeline ❖ Interviewing witnesses ❖ Communication: situational awareness inside AIB ❖ Recovery of the wreckage	❖ Lecture ❖ Discussions
2 hours	**Documentation of accident site** ❖ Personal Investigator's Equipment ❖ Photography; basic principles for good photos, lighting options ❖ Systematic way of documenting ❖ Other documentation tools	❖ Lecture ❖ Practice setting up the camera and lights ❖ Other available tools
45 Minutes	**Briefing for the next day** ❖ Objectives ❖ Forming working groups	Briefing by instructor

Practical Exercise with the wreckage		
1 Hour	**Initial actions on accident site:** ❖ Communication with other authorities ❖ Production of investigation plan ❖ Risk assessment	Participants work in small groups
2 Hours	**Documenting the accident site** ❖ Systematic approach ❖ Sharing responsibilities	❖ Group work led by Team leader ❖ Participants use their cameras and lights
2 Hours	**Examination of the wreckage** ❖ Measuring marks on pieces on the ground ❖ Setting priorities	Group work led by Team leader
Revision Date	26 July 2018	

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CHAPTER 5 APPENDICES

Appendix I: MANUAL CHANGE REQUEST FORM

ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, MURTALA MUHAMMED INTERNATIONAL AIRPORT P.M.B. 016 IKEJA- LAGOS, NIGERIA

MANUAL CHANGE REQUEST FORM

CHANGE ORIGINATOR USE			
Manual Title:			
Section:	Page:	Paragraph:	Revision:
The Requested Change: ☐ *Additional information attached*			
Reason(s) for the Change: ☐ *Additional information attached*			
Originator Name & Sign.:			Date:

MANUAL APPROVAL AUTHORITY USE	
Departments Consulted Regarding the Change	Sign. & Date
Human Resource	
Legal	
Security and Safety	
ICT	
Director of Engineering	
Director of Operations	
Commissioner/CEO	
Department Comments upon Review	
☐ DECLINED - Reason Provided	
☐ APPROVED	
Approval Authority Signature:	Date:
Change Incorporated in Revision Number:	Date:

Form: AIB.01.20 Issue: 01 Revision: 0 Date: 26 Jul 2018 Page 1 of 1

Appendix II: Individual Development Plan

ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, MURTALA MUHAMMED INTERNATION AIRPORT P.M.B. 016 IKEJA- LAGOS, NIGERIA

Individual Development Plan—Aircraft Accident Investigator/Manager

Knowledge, Skills, and Experience	Source /Course	Date Obtained	Date Demonstrated	Date Scheduled for Training	Remarks (Years/Grade)
General Background					
University degree or equivalent					
Post graduate degree					
Other formal education					
Airline pilot (type ratings)					
Military pilot (type)					
Air Traffic Controller					
Engineer (specialty)					
Cabin Crew					
Maintenance					
Meteorology					
Human performance					
Other, etc.					
Formal basic and advanced aircraft accident investigation courses attended and certificates held—*before employment*					
Administrative Matters					
Legislation & Regulations					
International requirements (including Annex 13)					
Memoranda of Understanding					
Liaison arrangements with local and national authorities					
Structure of the AIB					
Aircraft accident investigation manuals (PPM)					
Definitions and accident classification					
Equipment and tools					
Transportation arrangements					
Ethics and conduct					
Financial management					

Form: AIB.04.02 Issue: 01 Revision: 0 Date: 26 Jul 2018 Page 1 of 3

ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, MURTALA MUHAMMED INTERNATION AIRPORT P.M.B. 016 IKEJA- LAGOS, NIGERIA

Individual Development Plan—Aircraft Accident Investigator/Manager

Knowledge, Skills, and Experience	Source /Course	Date Obtained	Date Demonstrated	Date Scheduled for Training	Remarks (Years/Grade)
Initial response procedures					
On-call procedures					
Notification of other national authorities and organizations					
Securing of records, recordings and samples					
Accident site jurisdiction and security					
Investigator safety, biological hazard training, and equipment					
Investigator safety, including psychological stress familiarization					
Recovery of human remains					
Requests for autopsies					
Family assistance					
Investigation procedures					
Authority and responsibilities					
Size and scope of the investigation					
Investigation management—on scene domestic and foreign					
Use of specialists					
Parties to the investigation, accredited representatives, advisers and observers					
Dealing with news media					
Report Writing					
Internal and external correspondence					
Specialist field notes and factual report					
Specialist analysis report					
Safety recommendations					
Final reports					
Technical papers					
Speeches					
Seminar and Meeting Attendance					
International Society of Air Safety Investigators (ISASI)					
Flight Safety Foundation					
Seminars related to technical specialty					
ICAO Working Groups					
Regional Working Groups					
Other					

ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, MURTALA MUHAMMED INTERNATION AIRPORT P.M.B. 016 IKEJA- LAGOS, NIGERIA

Individual Development Plan —Aircraft Accident Investigator/Manager

Knowledge, Skills, and Experience	Source /Course	Date gained, demonstrated, or scheduled to be gained—Remarks (number of years, grades, etc)
Basic, Advanced, or Specialty Courses Attended and Certificates Gained—After being hired		
Name of Course/Institution	Dates Taken	Remarks—Certificates, etc.
Recurrent Training		
Name of Course/Institution	Dates Taken	Remarks—Certificates, etc.
OJT on Accidents (Minimum of two Cases)		
Identification of Accidents		
OJT 1 - Domestic Accident		
OJT 2 - Domestic Accident		
Participation as an Observer at Investigations Conducted by other States		
Name of Foreign AIA	Date	Remarks (Minor/Major accident/ Serious incident)

Appendix III: OJT Progress Chart

ACCIDENT INVESTIGATION BUREAU

SAFETY HOUSE, MURTALA MUHAMMED INTERNATIONAL AIRPORT P.M.B. 016 IKEJA- LAGOS, NIGERIA

Aircraft Accident Investigator OJT Progress Chart

Name:
Department:
Grade Level or Position:
Supervisor:

OJT Job Task	Source/ Course	OJT Performance Assessment				
		Level I Discuss	Level II Observe/ Assist	Level III Perform	Confirmed By:	Sign. & Date
Review Annex 13 and Doc 9756	Initial/Basic					
Notification Procedures	Initial/Basic					
Collection of Factual Information (Documenting evidence, Witness interview, Transcription of CVR recordings)	Initial/Basic					
Analysis	Initial/Basic					
Writing draft Final Report	Initial/Basic					
Use of investigation equipment (GPS, Camera)	Initial/Basic					
Attachment to participate in an ongoing or new small aircraft accident investigation	Basic					
Attachment to participate in an ongoing or new serious incident or small accident investigation	Basic					
Attachment to participate in an ongoing or new major aircraft accident investigation	Advanced					
Attachment to participate in an ongoing or new major aircraft accident investigation	Advanced					

Level I Validation (see reverse page for guide):	Level II Validation (see reverse page for guide):	Level I Validation (see reverse page for guide):

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ACCIDENT INVESTIGATION BUREAU
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General guidelines for conducting the OJT:

Level	Trainee	Instructor
Level I - Knowledge	Study	Discuss
Level II - Understanding	Observe	Demonstrate
Level III - Performance	Perform	Evaluate

At the end of each training session the instructor will validate that the trainee has successfully completed that session and the training objectives were met before notifying the Training Coordinator that training is complete.

NOTE: Levels I may be waived if the trainee had earlier attended formal classroom or computer-based training.

Level I validation guide:

Level I is typically a self-study effort on the part of the trainee with guided discussion and validation conducted by the OJT instructor afterwards.

Level II validation guide:

Level II involves the actual performance of the task. The Instructor demonstrates how the task is performed while the trainee observes.

1. Review technical requirements
2. Assess the trainee's existing knowledge and skill in performing the task
3. Demonstrate tasks
4. Motivate the trainee

Level III validation guide:

1. Review technical requirements
2. Assess the trainee's existing knowledge and skill in performing the task
3. Observe the trainee perform the task
4. Allow sufficient time for the trainee to practice task
5. Ask questions to check for understanding
6. Provide explanations
7. Review and summarize information
8. Provide feedback and evaluate the trainee's performance
9. Provide additional training when necessary

To Validate Level III OJT, the instructor, must be able to answer "Yes" to all of the questions shown below.

	Yes	No
Did the trainee demonstrate sufficient knowledge to accurately complete the task?		
Did the trainee demonstrate all steps necessary to proficiently complete the task?		
Were the steps completed in the proper order?		
Did the trainee perform the task in a timely manner and without assistance?		

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