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SURINAME

SUPPORT TO THE AIR TRANSPORT SECTOR IN SURINAME

(SU-L1071)

OEL#3 – PROPOSED STRATEGY FOR ESTABLISHING AN INDEPENDENT AIR ACCIDENT INVESTIGATION AUTHORITY (AIA) IN SURINAME

Implementation of an Independent Accident Investigation Organization in The Republic of Suriname

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Executive Summary

This document delineates the establishment of the Republic of Suriname Air Accident Investigation authority as an autonomous entity that is committed to conducting a comprehensive and impartial investigation of air accidents and incidents. The objective is to improve aviation safety by means of the development of comprehensive safety recommendations, international standards compliance, and rigorous investigation practices. The objective of this initiative is to cultivate a culture of safety within the aviation sector of The Republic of Suriname, guaranteeing that all investigations are conducted with the utmost professionalism and integrity. The Inter-American Development Bank (IDB) provides technical assistance to this initiative in accordance with the International Civil Aviation Organization (ICAO)'s recommendations.

Content

Definitions

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

- Any person suffers fatal or serious injuries as a result of:
  - Being in the aircraft, or
  - Direct contact with any part of the aircraft, including parts that have become detached from the aircraft, or
  - Direct exposure to jet blast. Except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are suffered by stowaways hiding outside the areas normally available to passengers and crew; or
- The aircraft sustains damage or structural failure that:
  - Adversely affects the structural strength, performance, or flight characteristics of the aircraft; and
  - Would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to a single engine (including its cowlings or accessories); propellers, wingtips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windshields, the aircraft skin (such as small dents or puncture holes), or for minor damage to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strikes (including holes in the radome); or
  - The aircraft is missing or is completely inaccessible.

Note 1: For statistical uniformity only, fatal injuries that occur within 30 days of the date of the accident are classified by ICAO as fatal injuries. Note 2: An aircraft is considered missing when the official search is terminated, and the wreckage has not been located. Note 3: Guidance for determining aircraft damage is given in Attachment E.

Accident Investigation Authority (AIG): The authority designated by the State responsible for investigating accidents and incidents in accordance with Annex 13 to the Convention on International Civil Aviation.

Accident Investigator: Personnel assigned or contracted with activities specific to the investigation of air accidents at the Accident Investigation Authority.

Advisor: A person designated by a State, on account of their qualifications, to assist its accredited representative in the investigation tasks.

Air Traffic Incident: Any serious occurrence involving air traffic, such as the interference of two or more aircraft in flight or on the surface, or any serious difficulty attributable to defective procedures, failure to adhere to applicable procedures, or failure of any ground facility that could constitute a risk to aircraft.

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

ARCM Investigator: An aviation accident and incident investigator available for assignment to an investigation of an accident or incident when requested by a member State.

ARCM Investigator-in-Charge: A person responsible, by virtue of their qualifications, for the organization, conduct, and control of an investigation when requested by a member State.

Causes: Actions, omissions, events, conditions, or a combination thereof that result in the accident or incident. Identifying the causes does not imply assigning blame or determining administrative, civil, or criminal liability.

Contributing Factors: Actions, omissions, events, conditions, or a combination thereof that, if eliminated, avoided, or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the accident or incident consequences. Identifying contributing factors does not imply assigning blame or determining administrative, civil, or criminal liability.

Controlled Aerodrome: An aerodrome at which air traffic control service is provided to aerodrome traffic but does not necessarily imply the existence of a control zone.

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

Investigation: The process conducted to prevent accidents, which includes gathering and analyzing information, drawing conclusions, including determining causes and/or contributing factors, and, when appropriate, making safety recommendations.

Investigator-in-Charge: A person responsible, by virtue of their qualifications, for the organization, conduct, and control of an investigation.

Note: Nothing in the foregoing definition is intended to preclude the functions of an Investigator-in-Charge from being assigned to a commission or other body.

Member State: A State that is part of the South American AIG Regional Cooperation Mechanism (ARCM).

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

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

Scene: The location of the accident, serious incident, or incident.

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

> Note 1: The difference between an accident and a serious incident lies only in the result, severity, and damage to the aircraft.
>
> Note 2: In accordance with paragraph 5.1 of Annex 13 to the Convention on International Civil Aviation.

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

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

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

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

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

Uncontrolled Aerodrome: Aerodromes that do not have personnel in the control tower coordinating arrivals and departures of aircraft in their control area.

Abbreviations

ADREP	Accident/Incident Data Reporting
AIA	Air Accident Investigation Authority
AIG	Accident Investigation Authority
ARCM	Accident Investigation Cooperation Mechanism
ATS	Air Traffic Services
CASAS	Civil Aviation Safety Authority of Surinam
CVR	Cockpit Voice Recorder
ECCAIRS	European Co-ordination center for Accident and Incident Reporting Systems
FAA	Federal Aviation Administration
FDR	Flight Data Recorder
FMS	Flight Management Systems
ICAO	International Civil Aviation Organization
ICVM	ICAO Coordinated Validation Mission
TCT	Ministry of Transport, Communication, and Tourism
NTSB	National Transportation Safety Board
SAAIB	Suriname Air Accident Investigation Board

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1.1 General Objective

Establishing an independent Authority in accordance with international best practices and ICAO guidelines, in order to guarantee impartiality and transparency in the investigation of aviation accidents and incidents in the Republic of Suriname.

Specific Objectives

Ensure Operational Independence: Legal and Financial Autonomy:

- Create a robust legal and financial structure to secure the new authority's autonomy from other government entities and aviation operators.
- Establishing a clear and efficient organizational structure with well-defined roles and responsibilities will help promote independent decision-making and effective execution of investigations.

Developing Technical and Human Capacity:

- Recruitment: Hire personnel with extensive expertise in various aviation-related fields.
- Implementing Continuous Training: Set up ongoing training programs to keep investigators up to date on the latest international regulations, technologies, and investigation techniques.

Implementing systems and tools:

- Implementing Effective Information Management Systems: Develop and implement robust systems to efficiently collect, analyze, and report accident and incident data.
- Tools for Investigation: Acquire and set up the necessary tools and equipment to carry out thorough investigations.

Streamlining Operations:

Transition Plan:

- Ensure that all essential procedures and documentation are transferred and updated in accordance with ICAO standards.
- Establishing clear communication and publication protocols is essential. It is important to have a structured approach to ensure that investigation results are shared with the public, stakeholders, and media in a timely and accurate manner.
- Ensure the implementation of protocols to effectively manage and protect confidential and sensitive information, in compliance with both national and international regulations.

International Collaboration:

- Promote collaboration with ICAO and international organizations to encourage joint investigations, exchange of information, and technical assistance.
- Collaboration with Foreign Authorities: Establishing protocols for effective collaboration with foreign investigation authorities in cases involving international airspace incidents or foreign-registered aircraft.

Assessment and Ongoing Enhancement:

Implementing a continuous monitoring and evaluation system is crucial for reviewing the authority's operations and procedures. This helps in quickly identifying and correcting any inefficiencies that may arise.

- Regularly review and adjust protocols and procedures to stay up to date with regulatory changes, technological advancements, and the insights gained from past investigations.

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1.2 Introduction

This initiative aims to establish an autonomous authority responsible for investigating aviation accidents and incidents in the Republic of Suriname. This authority will operate independently ensuring impartiality and transparency in all air accident investigations. We are committed to adhering to the recommendations of the International Civil Aviation Organization (ICAO) and following international best practices.

The procedures for investigating aviation accidents and incidents are outlined in ICAO Annex 13, which provides a comprehensive framework for conducting thorough and unbiased investigations.

Purpose and Autonomy of the Investigation

An accident investigation authority must adhere to absolute objectivity and complete impartiality, and it is essential that it is viewed as such. Furthermore, it is important that it have the capability to conduct inquiries autonomously, while evading any influence from external forces. The following citations are pertinent:

ICAO regulations

The investigation of an accident or incident should have the exclusive purpose of preventing future accidents and incidents. The objective of this activity is not to assign blame or responsibility.[1]

A country must create an accident investigation organization that is separate from its aviation authorities and any other institutions that might influence or compromise the fairness and impartiality of an inquiry.[2]

The accident investigation authority must be independent and have complete jurisdiction over the inquiry without any restrictions.[3]

Any inquiry conducted in compliance with the rules outlined in this Annex must be distinct from any legal or administrative actions aimed at assigning fault or responsibility.[4]

It is required that a state guarantees that any inquiry carried out under the regulations of this Annex is granted immediate and unfettered access to all evidence.[5]

1 ICAO Annex 13 Chapter 3, paragraph 3.1,

2 ICAO annex 13 chapter 3, paragraph 3.2,

3 ICAO annex 13 chapter 5, paragraph 5.4,

4 ICAO Annex 13 Chapter 5, paragraph 5.4.1,

5 ICAO Annex 13, Chapter 5 paragraph 5.4.3

1.3 Examples of Aviation Accident Investigation Agencies in South and the Caribbean

Agencies Independent of the Civil Aviation Authority

Bahamas: Aircraft Accident Investigation Authority (AAIA)

The Aircraft Accident Investigation Authority (AAIA) of the Bahamas is an independent agency responsible for investigating aviation accidents and issuing safety recommendations. It was established in 2016 to comply with ICAO standards and recommended practices, ensuring independence and objectivity in its investigations. The AAIA works with the government, aviation entities, and airline operators to ensure safe transport for the traveling public and the industry. Its mandate includes the objective investigation of accidents and the promotion of safety recommendations while maintaining its independence and objectivity.

Argentina: Transportation Safety Board (JST)

The Transportation Safety Board (JST) of Argentina is an independent agency that operates with administrative and financial autonomy under the Ministry of Transportation. This agency is responsible for investigating accidents in all modes of transportation, including aviation, to improve safety and prevent future incidents. The JST follows ICAO Annex 13 standards. Its creation reinforces Argentina's commitment to transportation safety by providing a structure that allows for impartial and thorough investigations.

Brazil: Center for Investigation and Prevention of Aeronautical Accidents (CENIPA)

The Center for Investigation and Prevention of Aeronautical Accidents (CENIPA) in Brazil, although subordinate to the Air Force Command, acts independently of the Civil Aviation Authority. CENIPA's mission is to investigate air accidents and propose measures to improve air safety, ensuring impartiality and objectivity in its investigations. CENIPA's independence in its operations ensures that investigations are conducted without external influences, allowing for a fair and accurate assessment of each incident.

Agencies Dependent on the Civil Aviation Authority

Colombia: Technical Directorate of Accident Investigation (DIAAC)

The Technical Directorate of Accident Investigation (DIACC) is part of the Special Administrative Unit of Civil Aeronautics (Aerocivil) in Colombia but has a certain degree of autonomy in investigating accidents. This functional independence allows the DIACC to operate more impartially within the regulatory structure, following the guidelines of ICAO Annex 13. The DIACC is responsible for investigating accidents and issuing safety recommendations, operating with a significant level of autonomy that strengthens its ability to conduct thorough and objective investigations.

Examples of Approaches to Air Accident Investigation in South America

These examples illustrate the variety of approaches adopted by different countries in South America for investigating air accidents. While some agencies operate entirely independently to ensure impartiality, others are integrated within the civil aviation authority structure with varying levels of autonomy. Regardless of the model, the aim is to improve air safety and prevent future accidents.

Independent Agencies

Independent agencies are established to conduct investigations without any potential conflict of interest. They report directly to the government, ensuring that their findings and recommendations are unbiased and focused solely on improving aviation safety. These agencies comply with the International Civil Aviation Organization (ICAO) standards, providing a solid foundation for objective investigations and continuous improvement in aviation safety.

Integrated Agencies

Other countries have integrated their accident investigation bodies within the civil aviation authority. While these agencies might not be completely independent, they still strive to maintain a high level of autonomy to ensure that investigations are impartial. These agencies benefit from being part of a larger organizational structure, which can provide additional resources and support for conducting thorough investigations.

Comparative Overview

- Independent Model: Ensures impartiality and objective investigation by reporting directly to the government.
- Integrated Model: Benefits from additional resources and support within the civil aviation authority but must strive to maintain investigative autonomy.

The implementation of independent agencies is often seen to adhere to international standards set by ICAO. These standards emphasize the importance of impartiality in investigations to improve aviation safety effectively. By following these guidelines, countries can create a robust framework for investigating air accidents, which ultimately contributes to a safer aviation environment globally.

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1.4 Current Situation of Air Accident Investigation (AIG) in the Republic of Suriname

Despite the ICAO Coordinated Validation Mission (ICVM) in 2012 not addressing Air Accident Investigation, a technical assistance mission by ICAO in April 2022 highlighted numerous critical deficiencies within Suriname's AIG framework. These deficiencies significantly impair the efficacy and independence of the accident investigation structure and stem from outdated regulations, inadequate training, financial constraints, and the absence of well-defined procedures.

Conflicts of Interest: A principal issue is the lack of independence within the investigating entity. The Civil Aviation Safety Authority of Suriname (CASAS) handles both the regulation of civil aviation and the investigation of accidents. This dual responsibility can lead to conflicts of interest, undermining the objectivity and impartiality essential for credible investigations. In line with ICAO Annex 13.

Staff Training: CASAS's investigative personnel primarily receive training from external sources, such as the FAA and the NTSB. However, this training is currently insufficient to ensure that investigators possess the requisite expertise and skills to conduct detailed and precise investigations. The need for continuous and specialized training is paramount, as emphasized in ICAO Doc 9756, which underscores the importance of maintaining stringent standards in accident investigation processes.

Funding and Resources: The financial model, dependent on the passenger safety charge, restricts CASAS's capacity to perform comprehensive investigations. This funding approach often falls short, particularly in large-scale disasters that demand extensive resources for advanced technical analyses, wreckage recovery, and other critical operations.

Investigation Process: When an accident or serious incident occurs in Suriname, the investigation process reveals serious deficiencies. Currently, the Attorney General appoints an investigation commission composed of a delegate from the Attorney General's office, who acts as the Investigator in Charge (IIC). It is crucial to note that this person lacks expertise in air accident investigation and the associated technical processes. The two CASAS personnel who have received some accident investigation training only serve as technical advisors, resulting in investigations that do not comply with international standards, specifically ICAO Annex 13.

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1.5 Deficiencies in the Current Accident Investigation Structure in the Republic of Suriname

Legal Framework Issue

- Problem: The current legislation designates the Attorney General as the primary authority to oversee investigations into aircraft accidents in Suriname, as stipulated by Article 18 Chapter 5 of the Civil Aviation Safety and Security Act of March 12, 2002. This approach conflicts with the International Civil Aviation Organization (ICAO) guidelines, which advocate for the independence of accident investigation authorities.
- Solution: Amend the Civil Aviation Safety and Security Act to establish an independent Accident Investigation Authority, distinct from the Attorney General's office. This new authority should be empowered to manage accident scenes and initiate investigations autonomously, ensuring compliance with ICAO Document 9756 and Annex 13. These ICAO documents emphasize the necessity for independent and impartial aviation accident investigations. By implementing this amendment, Suriname can ensure that its investigation processes meet international standards, thereby enhancing the credibility and effectiveness of its aviation safety oversight.

Guidelines and Procedures Issue

- Problem: Suriname’s current accident investigation procedures do not align with best practices as outlined in ICAO Document 9756 and Annex 13. This misalignment results in potential inefficiencies and substandard investigations.
- Solution: Develop a comprehensive set of procedures and guidelines in accordance with ICAO Document 9756 and Annex 13. These guidelines should include systematic steps covering all aspects of the investigation process, from the initial notification to the issuance of the final report. By implementing these detailed procedures, Suriname can ensure that its accident investigations are thorough, efficient, and meet international standards.

Responsibilities and Positions Issue

- Problem: The current roles of the Attorney General and the Civil Aviation Safety Authority of Suriname (CASAS) in accident investigations are ambiguously defined, leading to potential conflicts and inefficiencies.
- Solution: Implement a clear statutory framework that distinctly outlines the roles and responsibilities of each entity, as recommended by ICAO Annex 13. This framework should establish specific positions, such as Director of Investigations and field investigators, to ensure a structured and efficient investigation process. Clear delineation of responsibilities will help prevent conflicts, enhance coordination, and improve the overall effectiveness of accident investigations in Suriname.

Training Program Issue

- Problem: There is an evident lack of structured and current training among the AIG personnel in Suriname, which compromises adherence to international standards.
- Solution: Introduce a robust training program based on ICAO Document 298, which outlines standard practices for training accident investigation personnel. This program should include initial, basic, advanced, and recurrent training modules to ensure that investigators are well-equipped to conduct thorough and effective investigations.

AIG Database Issue

- Problem: The AIG database managed by CASAS does not comply with international standards, particularly lacking adherence to ICAO's ADREP/ECCAIRS taxonomy and format.
- Solution: Revise the database to align with the ADREP/ECCAIRS standards as specified in ICAO's guidelines. This overhaul should include training for CASAS personnel to manage and utilize the database effectively, facilitating accurate data analysis and hazard mitigation.

Incident Investigation Procedure Issue

- Problem: Suriname lacks a standardized incident selection and investigation procedure, which is crucial for consistent and effective investigation practices.
- Solution: Establish a formal incident selection and investigation protocol based on criteria from ICAO Annex 13 and Document 9756. This protocol should detail the process for categorizing incidents and outline the investigative procedures for each category, ensuring a consistent and systematic approach to all investigations.

1.6 Memorandum of Understanding (MoU) Between the Attorney General of The Republic of Suriname and the Civil Aviation Safety Authority Suriname (CASAS) Concerning Aircraft Accident Investigation

The Memorandum of Understanding (MoU) establishes an agreement between the Attorney General of Suriname and CASAS for the investigation of air accidents in Suriname to determine their circumstances and probable causes.

Under this MoU, CASAS will create an independent "AIG Bureau" responsible for investigating incidents and air accidents in Suriname. This bureau will operate independently to maintain investigative objectivity. It will comprise a Chief Investigator, a Deputy Director, and an administrative staff member, all employed by CASAS but reporting to the Attorney General for investigative matters. CASAS will provide the necessary resources and may engage external technical experts or assign internal staff exclusively to investigations.

During an air accident investigation, the committee will consist solely of the Chief of the AIG Bureau and nominated technical experts, excluding police or Public Ministry representatives. Police assistance will be sought only if needed for site security and wreckage protection. CASAS will publish contact information for reporting air accidents and manage international reporting obligations.

Investigations will adhere to ICAO Annex 13 Standards and Recommended Practices. Each investigation's findings will be presented in a final report to the Attorney General, forwarded to the Director of CASAS, and published on CASAS's website. If the investigation reveals facts suggesting potential criminal activity, the Attorney General will be promptly informed.

Note: As of today, due to financial constraints, the full implementation of this MoU by the Republic of Suriname is currently not feasible.

1.7 Examination of the Ministry of Transport, Communication, and Tourism's existing organizational framework

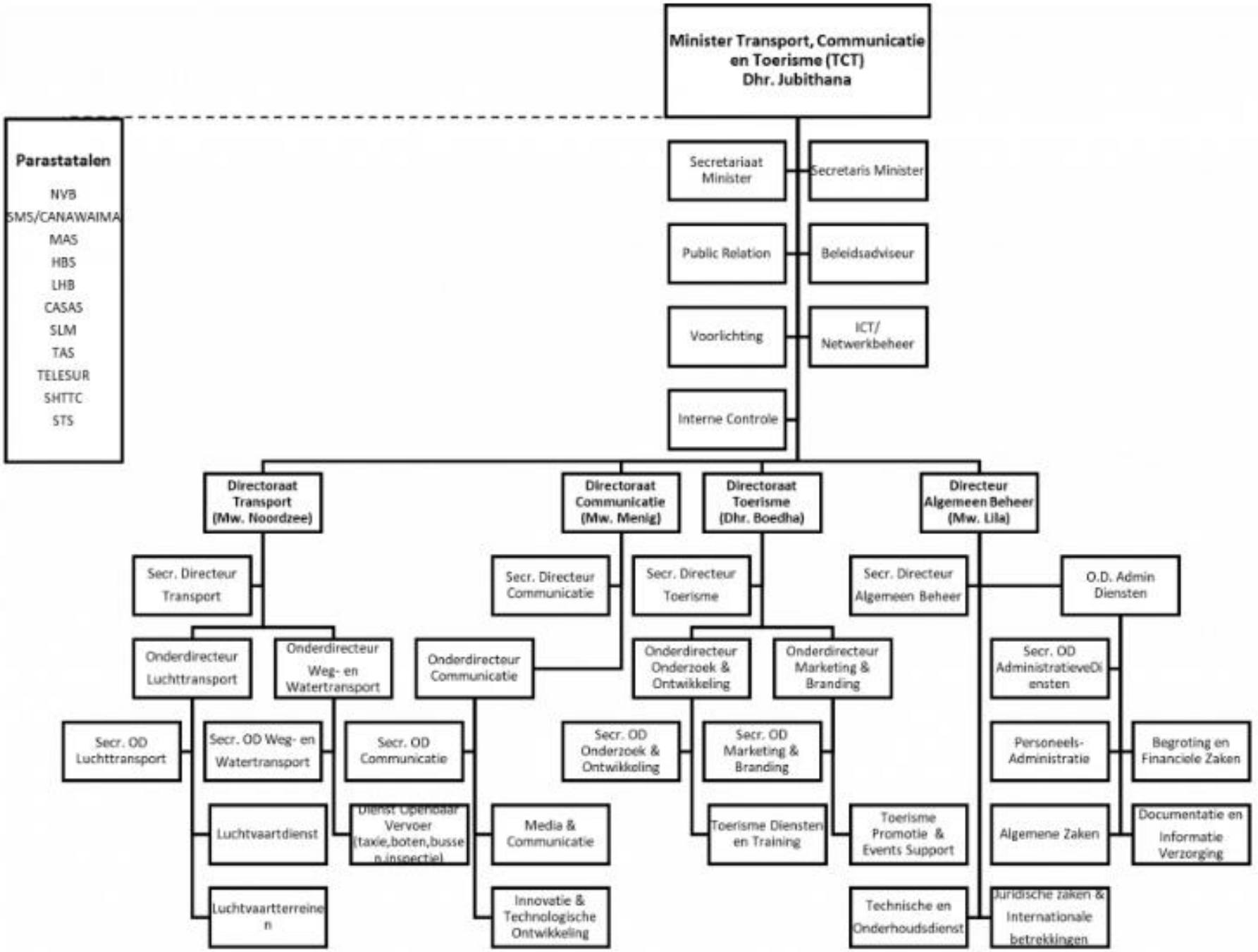
The Minister is the highest-ranking official in the Ministry of Transport, Communication, and Tourism (MTCT).[6]The Minister's Secretariat, which is directly under the Minister, is responsible for a variety of critical functions and responsibilities, including Public Relations, Policy Advisor, Education, ICT/Network Management, and Internal Control. These roles are indispensable in assisting the Minister in the daily administration of the ministry and the decision-making process.

The ministry is organized into several directorates:

- Directorate of Transport
- Directorate of Communication
- Directorate of Tourism
- Directorate of General Management

In addition to these directorates, the ministry has a number of parastatals, which are associated agencies and organizations. NVB, SMS/CANAWAIMA, MAS, HBS, LHB, CASAS, JMI, TAS, TELESUR, SHITTC, and STS are among the organizations that collaborate with the ministry in their respective areas of expertise.

6 https://gov.sr/ministeries/ministerie-van-transport-communicatie-toerisme/


Minister Transport, Communicatie en Toerisme (TCT)
Dhr. Jubithana
Parastatalen
NVB
SMS/CANAWAIMA
MAS
HBS
LHB
CASAS
SLM
TAS
TELESUR
SHTTC
STS
Secretariaat Minister
Secretaris Minister
Public Relation
Beleidsadviseur
Voorlichting
ICT/ Netwerkbeheer
Interne Controle
Directoraat Transport (Mw. Noordzee)
Directoraat Communicatie (Mw. Menig)
Directoraat Toerisme (Dhr. Boedha)
Directeur Algemeen Beheer (Mw. Lila)
Secr. Directeur Transport
Secr. Directeur Communicatie
Secr. Directeur Toerisme
Secr. Directeur Algemeen Beheer
O.D. Admin Diensten
Onderdirecteur Luchttransport
Onderdirecteur Weg- en Watertransport
Onderdirecteur Communicatie
Onderdirecteur Onderzoek & Ontwikkeling
Onderdirecteur Marketing & Branding
Secr. OD AdministratieveDiensten
Secr. OD Luchttransport
Secr. OD Weg- en Watertransport
Secr. OD Communicatie
Secr. OD Onderzoek & Ontwikkeling
Secr. OD Marketing & Branding
Personeels-Administratie
Begroting en Financiele Zaken
Luchtvaartdienst
Dienst Openbaar Vervoer (taxie,boten,busse n,inspectie)
Media & Communicatie
Toerisme Diensten en Training
Toerisme Promotie & Events Support
Algemene Zaken
Documentatie en Informatie Verzorging
Luchtvaartterreine n
Innovatie & Technologische Ontwikkeling
Technische en Onderhoudsdienst
Juridische zaken & Internationale betrekkingen

1.8 Proposed Organizational Structure for The Air Accident Investigation Authority (AIA)

Introduction

Establishing an independent air accident investigation authority with a clear and defined organizational structure is crucial for ensuring the credibility and effectiveness of aviation safety oversight. The International Civil Aviation Organization (ICAO) has established international best practices and standards to which this structure must adhere. The following proposal outlines the components, roles, and responsibilities of the new air accident investigation authority in The Republic of Suriname.

The agency will be named the **"Surinaamse Raad voor Onderzoek naar Luchtongevallen"** [7] or **"Suriname Air Accident Investigation Board" (SAAIB).**[8]

NOTE: Additionally, once the agency becomes fully independent, it is recommended that it be placed within a ministry that has no direct connection to aviation. This will further ensure that investigations are conducted with maximum autonomy and without external interference, strengthening the impartiality of their outcomes.

Options for Establishing AIA

Option 1: Independent Model Independent Air Accident Investigation Authority (AIA)

This option proposes the creation of a completely independent entity, separate from the Attorney General and any aeronautical entity such as CASAS. This authority would have its own budget, dedicated staff, and facilities, ensuring full operational autonomy. The primary responsibilities of this authority would include:

1. Conducting independent investigations of all aviation accidents and serious incidents within Suriname's jurisdiction.
2. Publishing detailed investigation reports and issuing safety recommendations to prevent future occurrences.
3. Cooperating with international aviation organizations and adhering to ICAO guidelines.
4. Conducting research and analysis on aviation safety data to identify trends and inform policy.

The proposed organizational structure for this authority would include a team of at least four core members:

Director: Responsible for overall leadership, strategic direction, and ensuring the integrity and quality of the investigation processes. The Director also serves as the main point of contact with international bodies and government authorities.

7 Dutch

8 English

Investigator: Conducts on-site investigations, collects and analyzes evidence, interviews witnesses, and compiles investigation reports. The investigator ensures that all findings are thoroughly documented and that safety recommendations are based on solid evidence.

Technical Specialist: Provides expertise in specific technical areas such as avionics, engineering, and human factors. The technical specialist supports the investigator by offering in-depth technical analysis and contributing to the accuracy of the investigation reports.

Administrative Staff: Manages the administrative functions of the authority, including documentation, communication, scheduling, and financial management. The administrative staff ensures that the operational needs of the authority are met efficiently.

SWOT Analysis for Independent Air Accident Investigation Authority (AIA)

Strengths	Weaknesses
Operational Autonomy: *Complete independence from the Attorney General and CASAS ensures unbiased and transparent investigations.*	**Initial Setup Costs:** *High initial costs for establishing facilities, hiring specialized staff, and setting up administrative systems.*
Dedicated Resources: *Own budget, staff, and facilities dedicated solely to air accident investigations, enhancing efficiency and focus.*	**Recruitment Challenges:** *Finding and retaining highly skilled personnel with the required expertise might be challenging.*
Expertise: *Specialized roles (Director, Investigator, Technical Specialist) ensure comprehensive coverage of all aspects of accident investigation.*	**Resource Allocation:** *Dependence on consistent funding and resource allocation to maintain operational effectiveness.*
International Cooperation: *Adherence to ICAO guidelines and collaboration with international aviation organizations bolster credibility and effectiveness.*	**Coordination:** *Potential challenges in ensuring seamless coordination with other national and international aviation bodies.*
Opportunities	**Threats**
Enhanced Safety Standards: *Potential to significantly improve aviation safety standards in Suriname through independent investigations and recommendations.*	**Funding Instability:** *Risk of budget cuts or inconsistent funding affecting the authority's operations and independence.*
International Partnerships: *Opportunity to form partnerships with international aviation safety bodies, enhancing knowledge exchange and best practices.*	**Political Interference:** *Potential for political pressures to influence investigations or recommendations.*
Technological Advancements: *Adoption of advanced technologies and methodologies in accident investigation could set new standards in the region.*	**External Factors:** *Global aviation trends, economic downturns, or major accidents could strain resources and impact operations.*

Policy Influence: *Ability to influence national aviation policies and regulations based on independent and credible data.*	**Legal Challenges:** *Navigating legal complexities and potential litigation related to investigation findings and recommendations*.
Public Confidence: *Building public trust in aviation safety through transparent and thorough investigation processes.*	**Operational Risks:** *Managing operational risks such as data security, evidence preservation, and staff safety during investigations.*

Option 2: Integrated Model Suriname Air Accident Investigation Board (SAAIB) Adjunct to CASAS

This option proposes the formation of an independent accident investigation body that, while administratively attached to CASAS, maintains full operational independence. This structure ensures the benefits of organizational support from CASAS while preserving the impartiality and objectivity of the investigations. This setup would be implemented as an interim solution while legislative changes are made, recognizing that amending the current law will take some time. The primary responsibilities of this body would include:

1. Conducting thorough investigations of specific aviation accidents and serious incidents as they occur.
2. Preparing and publishing final investigation reports, which include safety recommendations aimed at preventing future accidents.
3. Ensuring compliance with international investigation standards and cooperating with global aviation safety organizations.

In this model, the SAAIB would operate with a minimal core team, consisting of at least two investigators who are responsible for both investigative and some administrative tasks.

The key elements of this structure include:

Director/ Investigator: Provides leadership and oversight for the investigation process. The Director ensures that investigations are conducted independently and thoroughly, and that findings are communicated transparently.

Investigator: Perform all investigative duties, including site examinations, evidence collection, data analysis, and report writing. Investigators ensure that all aspects of the accident are explored and that safety recommendations are substantiated by evidence.

Viability Justification for this Option

This option is the most viable currently due to legislative and regulatory issues. The immediate implementation of a completely independent investigation authority would require significant legislative changes, a process that can take time. Meanwhile, establishing the SAAIB as an independent body administratively attached to CASAS allows investigations to begin immediately and effectively, ensuring the highest standards of impartiality and professionalism.

Some of the key benefits of this option include:

1. **Organizational Support from CASAS:** Being administratively attached to CASAS, the SAAIB can leverage the existing infrastructure, facilitating logistics and administration without compromising operational independence.

2. **Impartiality and Objectivity:** Operational independence ensures that investigations are conducted without external interference, maintaining objectivity in findings and recommendations.
3. **Fast Compliance:** This configuration allows the SAAIB to quickly comply with international standards, ensuring cooperation with global organizations and enhancing aviation safety in Suriname.

4. **Efficient Interim Solution:** This option serves as an efficient interim solution while the necessary legislative changes are made to establish a fully independent investigation authority in the future.

In conclusion, the option of an integrated model with the SAAIB attached to CASAS is the most practical and effective for the current context in Suriname. It allows high-quality investigations to begin immediately, complying with international standards and ensuring impartiality while working towards the necessary legislative changes for full independence in the long term.

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SWOT Analysis for Suriname Air Accident Investigation Board (SAAIB) Adjunct to CASAS

Strengths	Weaknesses
Organizational Support: *Administrative attachment to CASAS provides structural and logistical support.*	**Limited Team:** *Small core team of two investigators may be insufficient for thorough investigations.*
Operational Independence: *Maintains full operational independence, ensuring unbiased investigations.*	**Administrative Burden:** *Investigators also handle some administrative tasks, potentially affecting investigation quality.*
Cost-Effective: *Utilizes existing CASAS infrastructure, reducing initial setup costs.*	**Resource Dependence:** Dependence on CASAS for resources may impact operational efficiency.
Compliance: *Ensures adherence to international investigation standards through CASAS collaboration.*	**Temporary Nature:** *Interim solution may face challenges transitioning to a fully independent body.*
Opportunities	**Threats**
Streamlined Setup: *Faster implementation due to existing CASAS infrastructure.*	**Legislative Delays:** *Delays in legislative changes could prolong the interim period.*
Improved Safety: *Potential to enhance aviation safety through timely and independent investigations.*	**Funding Challenges:** *Potential for inconsistent funding affecting operations.*
Future Autonomy: *Opportunity to evolve into a fully independent authority after legislative changes.*	**Operational Risks:** *Managing dual roles (investigative and administrative) may impact effectiveness.*
Capacity Building: *Developing expertise and capacity within the team for future independent operations.*	**Perception Issues:** *Perceived lack of independence due to administrative attachment to CASAS.*
Stakeholder Trust: *Building trust with stakeholders through transparent and thorough investigations.*	**Resource Limitations:** *Limited resources may constrain the scope and depth of investigations.*

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Technical and Operational Considerations:

1. **Independence:** It is critical that the SAAIB operates without any influence or interference from CASAS or the Attorney General. This independence is necessary to maintain public trust and ensure unbiased investigation outcomes. to establishing this agency will necessitate amendments to the MoU between the Attorney General and CASAS to define the administrative connection and operational independence of SAAIB.
2. **Training and Development**: Continuous training and professional development for investigators and technical specialists are essential. This ensures that the team remains up to date with the latest investigation techniques, technological advancements, and international best practices.
3. **Resources and Infrastructure:** Adequate resources, including access to specialized investigation tools, technologies, and databases, are necessary for effective operations. This includes having a well-equipped office, secure evidence storage, and advanced analytical software.
4. **Collaboration and Information Sharing:** Establishing formal channels for collaboration and information sharing with international aviation safety bodies, such as ICAO and other national investigation authorities, enhances the quality and credibility of investigations.
5. **Legislative Support:** Strong legislative backing is essential to grant the authority the necessary powers to conduct investigations, access information, and enforce safety recommendations. Legislative amendments may be required to ensure the authority's functions are fully supported by law.

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1.9 Estimated Costs for Establishing the Air Accident Investigation Sector in Suriname

Introduction

Establishing an independent air accident investigation authority in Suriname is a complex endeavor requiring careful consideration of associated costs and resources. This document outlines the estimated expenses for creating such an agency based on two proposed options: an Independent Air Accident Investigation Authority (AIA) or an Adjunct to CASAS.The table below presents the estimated annual costs for both options.

Cost Estimates:

MENTION	Option 1 (AIA) - P/Year (Usd)	Option 2 Adjunct To CASAS: - P/Year (Usd)
Remuneration of Director / Chief	$54,000.00 (Staff1)	$54,000.00(Staff 1)
Remuneration of Investigators	$84,000.00 (Staff 2)	$42,000.00(Staff 1)
Administrative Assistant Salary	$13,000.00 (Staff 1)	-
Office Furniture	$2,500.00	$1,700.00
Office Equipment	$5,670.00	$3,460.00
Transportation: Pickups (2)	$100,000.00	$100,000.00
Personal Protective Equipment (PPE)	$448.70	$448.70
Investigation Kit	$7,900.00	$7,900.00
Training: Presential or	$36,000.00 (Staff 3)	$24,000.00 (Staff 2)
Virtual	$5,000,00 (Staff 3)	$5,000.00 (Staff 2)
Grand total	**$303,518.70**	**$238.508.7**

Detailed Breakdown of Costs

1. Remuneration of Staff:

Director: The Director's role is critical for overseeing the agency's operations, making strategic decisions, and ensuring compliance with international standards.

Investigators: Responsible for conducting investigations, analyzing data, and preparing reports. The number of investigators affects the agency's ability to handle multiple investigations concurrently.

Administrative Assistant[9]: Handles administrative tasks such as scheduling, correspondence, and record-keeping, which are essential for smooth operations.

2. Office Setup:

Furniture and Equipment: Includes desks, chairs, computers, printers, and other necessary office supplies. Initial setup costs can vary based on the quality and quantity of items purchased.

9 Only in the AIA

3. Transportation:

4-Wheel Drive Pickups: Essential for accessing accident sites, particularly in remote or rugged areas. Reliable transportation ensures that investigators can reach the site quickly and carry necessary equipment.

4. Personal Protective Equipment (PPE):

Includes items like safety helmets, gloves, boots, and other protective gear necessary for ensuring the safety of investigators at accident sites.

5. AIG Field Investigation Kit:

A specialized kit that includes tools and equipment required for on-site investigation. This may include GPS devices, cameras, measurement tools, and evidence collection kits.

6. Training:

In-person Training: Covers hands-on training sessions, workshops, and conferences. These are crucial for skill development and staying updated with the latest investigation techniques.

Virtual Training: Offers flexibility and cost-effectiveness, allowing staff to participate in online courses and webinars.

Observations: It is important to note that the table does not include the costs associated with amending legislation and developing operational manuals, which are also necessary for the creation of the investigative authority. These additional costs should be considered in the overall project budget.

Additional Considerations

- Legislative Changes: Implementing an independent investigation authority will require legislative amendments to ensure its legal standing and operational independence. The costs for these changes, including legal consultations and the legislative process, should be budgeted separately.
- Manual Development: Developing comprehensive operational manuals, guidelines, and training materials will incur additional costs. These documents are essential for standardizing investigation procedures and ensuring compliance with international best practices.
- Infrastructure and Resources: Adequate infrastructure, including secure office space, evidence storage facilities, and advanced analytical tools, are necessary for effective operations. The initial investment in infrastructure can be significant but is essential for the agency's long-term functionality.

1.10 Training and Professional Development

Training Programs

Initial Training

The Air Accident Investigation Agency must implement initial training programs for new investigators, covering the fundamentals of air accident investigation. These courses will provide new employees with the basic knowledge and skills needed to conduct effective and efficient investigations. The courses can be conducted both in-person and virtually, providing flexibility in training delivery. All training must be aligned with the Agency's Training Manual to ensure consistency and adherence to established standards.

Basic and Advanced Training

In addition to initial training, both basic and advanced training programs should be offered. These programs should include:

- Basic Courses: Focused on standard operating procedures, data collection techniques, and initial analysis methods. These courses can also be offered in-person or virtually to accommodate different learning preferences and must follow the guidelines outlined in the Agency's Training Manual.

- Advanced Courses: Including forensic accident analysis, advanced simulation and modeling techniques, and the use of emerging technologies in accident investigation. These advanced courses can be delivered through a combination of in-person sessions and virtual modules, ensuring they meet the criteria specified in the Agency's Training Manual.

Continuous Training

To keep staff up to date with the latest investigation techniques and technologies, the Agency should develop regular continuous training programs. These programs will ensure that investigators stay current with advancements in air safety and accident investigation. Continuous training may include:

- Workshops and seminars on new investigation methods, available both in-person and virtually, in accordance with the Agency's Training Manual.
- Training on the use of new technologies and tools, which can be accessed online or in a classroom setting, as specified in the Training Manual.
- Updates on changes in international regulations and best practices, delivered through webinars and face-to-face training sessions, ensuring alignment with the Training Manual.

Training Duration

The training process for personnel can take between 2 to 4 months, depending on their level of knowledge. For individuals who are already experienced investigators, this process can be completed in as little as two months, followed by the necessary on-the-job training (OJT). This flexible timeline ensures that all investigators, regardless of their prior experience, receive comprehensive and thorough training tailored to their needs and the demands of the Agency. Additionally, offering both in-person and virtual training options enhances accessibility and convenience for all staff members. All training programs and their durations must comply with the standards and procedures outlined in the Agency's Training Manual.

International Certifications

It is crucial for investigators to understand and apply the regulations established by ICAO and other relevant organizations. This includes familiarizing themselves with international standards such as ICAO Annex 13, which deals with the investigation of aviation accidents and incidents. Training in this area should ensure that investigators are aware of the latest updates and global best practices.

Technical Competencies

Certification programs should assess and certify the technical skills necessary to conduct high-quality investigations. This includes the ability to perform forensic accident analysis, use advanced technologies for simulation and modeling, and apply emerging methodologies in accident investigation. Technical training should be comprehensive and practical, ensuring that investigators can effectively operate specialized equipment and data analysis software.

Continuous Update

To maintain high standards, investigators need to periodically renew their certifications. This involves participating in continuous training programs that include workshops, seminars, and training on new technologies and tools. Additionally, investigators must stay updated with changes in international regulations and best practices through regular refresher courses. This continuous renewal will ensure that investigators keep their skills and knowledge current, thereby providing accurate and reliable accident investigations.

International Exchanges

Participation in exchange programs with other accident investigation authorities is fundamental for sharing knowledge and best practices. Engaging in such exchanges ensures that investigators are exposed to a variety of methodologies and perspectives, enhancing the overall quality of their work.

Exchange Programs with ARCM and Other Organizations

Collaborating with other agencies through the ARCM-SAM (Accident Investigation Cooperation Mechanism) is crucial. These programs provide investigators with the opportunity to learn from the experiences and methods of their counterparts in different regions. This collaboration enhances understanding of diverse investigative techniques and the adoption of successful practices. Additionally, these exchange programs foster professional development and promote the sharing of best practices, ultimately improving the overall quality and effectiveness of air accident investigations.

International Conferences and Workshops

Participation in international conferences and workshops is essential for staying updated with recent developments in the field of accident investigation. These events provide a platform for discussing new findings, methodologies, and technologies. Additionally, they offer opportunities for establishing collaborative networks with experts and agencies worldwide. Building these networks is crucial for ongoing professional development and for enhancing the capacity to conduct high-quality investigations.

1.11 Infrastructure and Resources for Air Accident Investigation

In order to conduct comprehensive and impartial air accident investigations, *Suriname Air Accident Investigation Board (SAAIB)* needs a robust infrastructure and a diverse array of resources. The following is a comprehensive account of the critical infrastructure, tools, and support systems that are required to guarantee the agency's operational efficiency and the highest standards of investigation.

Conference and Meeting Rooms

To effectively coordinate investigation activities and communicate findings to stakeholders, the *SAAIB* must have sufficient meeting and conference facilities. To facilitate collaboration at both national and international levels, these facilities should be equipped with contemporary communication technologies, such as audiovisual equipment and video conferencing systems. The International Civil Aviation Organization (ICAO) underscores the significance of effective coordination and communication during investigations, rendering these facilities essential for the *SAAIB's* mission.

Laboratories for Technical Analysis

The comprehensive investigation of air accidents is contingent upon the presence of technical analysis laboratories. Advanced instruments for the inspection and examination of aeronautical components should be included in these laboratories. ICAO and the European Union Aviation Safety Agency (EASA) have determined that the following items are essential equipment:

• Material analysis instruments for the purpose of evaluating the structural integrity of aircraft components.

- Electron microscopes are utilized to conduct a comprehensive examination of materials at the microscopic level.
- Systems for evaluating the integrity of components without causing injury through non-destructive testing.
- Software that is specifically designed to analyze flight data and cockpit recordings, thereby guaranteeing the precise and accurate interpretation of flight information.

Areas of Storage:

It is imperative to have secure storage areas for detritus and accident evidence. To safeguard the integrity of evidence, these areas must be designed with strict access controls and controlled environmental conditions to prevent material degradation. The significance of proper evidence management is underscored by the International Civil Aviation Organization (ICAO) and other international organizations to guarantee the validity of investigations. Secure storage guarantees that all evidence is uncontaminated and accessible only to authorized personnel.

Infrastructure for Transportation:

The prompt deployment of investigators to accident sites is contingent upon the availability of an efficient transportation infrastructure. Agreements with airlines and other transportation providers should be established by the SAAIB to expedite the transportation of investigators and essential instruments. This encompasses:

- Vehicles that are specifically designed for ground transportation and are capable of operating in a variety of conditions and terrains.
- Make arrangements with local and international airlines to expedite the scheduling of flights for investigators.
- Collaborations with helicopter services to expedite the access to remote or difficult-to-reach accident sites.
- A logistical support team to ensure that investigators appear at the scene promptly and with all necessary equipment, coordinating transportation requirements.

IT Infrastructure and Communication:

It is imperative to have a strong IT and communication infrastructure to effectively manage investigations and guarantee the smooth flow of information. This encompasses:

- Secure, high-speed internet connections for data access and sharing.
- Communication channels that are encrypted to ensure the confidentiality and integrity of data.
- Comprehensive databases for simple access to ongoing case files and historical data, facilitating the storage and retrieval of investigation data.
- State-of-the-art software for data analysis, simulation, and reporting.

Professional Development and Training Facilities:

To sustain a high level of expertise, the SAAIB should have designated facilities for professional development and training. The following facilities should be included: • Classrooms that are equipped with contemporary technology and instructional aides.

- Simulation centers at which investigators can refine and practice their abilities using real-world scenarios.
- Continuous learning and development are guaranteed through the availability of online training modules and international certification programs.

Collaboration Agreements:

It is imperative to establish formal collaboration agreements with airlines, transportation providers, military, and other stakeholders to guarantee the availability of resources and logistical support. These agreements should encompass the following:

- Priority transportation of investigators and apparatus to accident locations.
- Access to airport and airline facilities for the purpose of conducting investigations.
- Regular joint training exercises to guarantee seamless coordination during actual investigations.
- Sharing of technical expertise and resources between the SAAIB and partner organizations.

- This infrastructure and the comprehensive resources are indispensable for the Republic of Suriname Air Accident Investigation Agency to operate efficiently and adhere to international standards, thereby enhancing air safety in the nation.

1.12 Documentation of the Air Accident Investigation Authority (AIA) in the Republic of Suriname

The structure of the new authority should align with the guidelines of the ICAO Manual on Accident and Incident Investigation Policies and Procedures (Doc 9962), which provides a detailed framework for developing investigation policies and procedures. This document emphasizes the importance of a well-structured and clearly defined organization with specific roles and responsibilities for each team member.

For more details on procedures and international standards, it is recommended to consult the ICAO Manual of Aircraft Accident and Incident Investigation - Part I: Organization and Planning (Doc 9756), which offers guidance on the organization and planning of investigations, ensuring that global best practices are followed.

1. Regulatory Manuals
2. Civil Investigation Regulations AIA
3. Accident and Incident Investigation Management Process
4. Manual for the Investigation of Aviation Accidents and Incidents
5. Organization and Planning Manual for the Accident Investigation Authority
6. Policies and Procedures Manual for the Accident Investigation Authority
7. Accident Investigation Procedures
8. Training Program for the Accident Investigation Authority
9. Internal Procedures for the AIA
10. Initial Response
11. Aviation Incident Notification
12. Investigator Designation
13. Flight Recorder Handling
14. Autopsy Coordination
15. Report Management
16. Medical Examinations
17. Safety Recommendations
18. Incident Investigation
19. Record Requests
20. Preliminary Reports
21. Training Records

Component Inspection

These are examples of the types of documents that need to be developed. In total, the documentation will encompass over 40 procedures. The time required to complete and create these manuals is estimated to be approximately 2 to 4 months.

By implementing this comprehensive regulatory framework and detailed procedural documentation, the Republic of Suriname can establish an effective and independent Air Accident Investigation Authority (AIA) that aligns with international standards and best practices. This will enhance the country's capability to conduct thorough and impartial investigations, ultimately improving aviation safety.

1.13 Accident And Incident Process

Notification Procedures

Notification Procedures: Detail the steps to be followed for the immediate notification of air accidents and incidents, including communication channels, and required forms.

Notification Responsibilities: Specify the responsibilities of the various parties involved, including aircraft operators, air traffic controllers, and airport authorities.

Alert System and Immediate Response: Describe the alert system and procedures for activating the immediate response by the AIG.

Initial Response and Scene Protection

Arrival at the Accident Site: Procedures for arrival at the accident site, including initial assessment, area security, and hazard identification.

Evidence Preservation: Protocols for preserving and protecting evidence at the accident site, ensuring that it is not altered, destroyed, or contaminated.

Initial Documentation and Recording: Procedures for initial documentation, including photographs, videos, and sketching of the accident site.

Air Accident Investigation Methodology

The air accident investigation methodology involves a systematic and detailed approach to collecting, analyzing, and evaluating evidence related to the accident. The following are the main phases and techniques used in this process:

Evidence Collection

- Physical Evidence: Includes the recovery of aircraft wreckage, structural components, and any other relevant physical material. Investigators use specialized tools to document and preserve this evidence. The integrity of physical evidence is crucial for subsequent analysis; thus, it is handled with extreme care during recovery and transportation.
- Electronic Evidence: Involves the recovery of flight recorders (FDR and CVR) and other data recording devices The recovery of flight recorders and other electronic devices is critical as they provide precise data on the aircraft's operational parameters and cockpit communications during the flight. These recorders are

typically recovered from accident sites using meticulous techniques to ensure data integrity.

- Testimonial Evidence: Collection of statements from witnesses, crew, maintenance personnel, and other relevant parties. This is done through structured interviews and detailed recordings. Testimonial statements provide important insights into events preceding and during the accident, offering valuable context for the investigation.

Interviews and Testimonies

- Preparation: Investigators must prepare a set of questions based on preliminary accident information. This preparation includes identifying key witnesses and formulating open-ended questions to obtain detailed information. The goal is to gain a clear and accurate understanding of events from multiple perspectives.
- Conducting Interviews: Interviews should be conducted in a calm and pressure-free environment so that interviewees feel comfortable and can provide truthful and complete information. Forensic interview techniques are used to ensure the accuracy and reliability of testimonies. Empathy and patience are essential during this process to encourage the interviewee's cooperation.
- Documentation: All interviews are recorded and transcribed for later analysis. Statements are reviewed to identify any inconsistencies or additional relevant information. Interviews with crew, maintenance personnel, and witnesses provide contextual information that is vital to understanding the circumstances of the accident. Detailed procedures ensure that all statements are systematically documented and thoroughly analyzed.

These procedures in evidence collection and analysis are essential for conducting a thorough and accurate investigation, enabling investigators to reconstruct the events of the accident and determine the underlying causes.

Technical and Scientific Analysis

- Material Analysis: This analysis includes the evaluation of aircraft structural components and systems to identify any failure or anomaly. Advanced inspection techniques such as electron microscopy and non-destructive testing are used.
- Simulations: Flight simulations and event recreations are used to better understand the conditions leading up to the accident. These simulations help visualize aircraft behavior and crew response in different scenarios.
- Event Recreations: Using flight data and other records, investigators recreate the events that occurred before and during the accident. This recreation is fundamental to identifying probable causes and developing safety recommendations.

Technical and scientific analysis is a critical part of the investigation process. It allows investigators to understand the technical and human factors that contributed to the accident. Advanced analysis methods ensure that conclusions are based on solid and verifiable evidence.

Data Analysis and Contributing Factors

- Flight Recorder Analysis: Detailed procedures for analyzing flight data recorders (FDR) and cockpit voice recorders (CVR).
- Human Factors Assessment: Methodologies for assessing human factors, including the review of the crew's training, experience, physical and mental state.
- Operational and Organizational Factors Examination: Analysis of operational procedures, safety management, and organizational policies that may have contributed to the accident or incident.

1.14 Preparation of Air Accident Investigation Reports

The preparation of air accident investigation reports according to Part 4 of the ICAO Manual of Aircraft Accident and Incident Investigation (Doc 9756) is a comprehensive process that ensures all aspects of an accident are properly documented and analyzed. The following are the detailed procedures and requirements for the preparation of preliminary and final reports, as well as the formulation of safety recommendations.[10]

Preliminary Reports

- Timeline: Preliminary reports should be prepared and published quickly, typically within 30 days of the accident. This initial report provides an overview of known facts at that time.
- Content: Includes basic details such as aircraft identification, accident description, location and date of the event, and any relevant preliminary findings.

Final Reports

- Structure: Final reports should follow a standard format that includes a summary, accident description, sequence of events, findings analysis, conclusions, and safety recommendations.
- Content: Provides a comprehensive analysis of the accident, including flight data, weather conditions, crew information, aircraft performance, human factors, and any other relevant aspects.
- Review and Approval Process: Before publication, the final report must be reviewed by an expert committee and interested parties to ensure its accuracy and completeness. Comments are considered, and the report is adjusted if necessary.
- Publication: Once approved, the final report is published and widely distributed to inform all interested parties and the public about the causes of the accident and the recommendations to prevent future incidents.

10 ICAO Doc 9756 - Manual of Aircraft Accident and Incident Investigation, Part IV: Reporting.

Safety Recommendations

- Formulation Procedures: Safety recommendations are based on the investigation findings and are aimed at improving the safety of air operations. They must be specific, feasible, and directly related to the identified causes of the accident.
- Follow-Up: Implementation of a follow-up system to ensure that recommendations are adopted and effectively applied. Includes cooperation with civil aviation authorities, operators, and aircraft manufacturers to monitor implementation and assess its impact on air safety.

Example of Recommendation:

Recommendation: "It is recommended that the operator implement an additional training program for the crew on emergency management, focusing on procedures for handling engine failures during takeoff."

Follow-Up: The investigation authority verifies that the operator has developed and implemented the training program by conducting periodic audits to ensure its effectiveness.

References

For complete and detailed reference on the preparation of reports and safety recommendations, consult the ICAO Manual of Aircraft Accident and Incident Investigation Part 4: Reporting (Doc 9756), which provides comprehensive guidelines on the format, content, and procedures for the preparation and distribution of reports.

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1.15 Proposed Strategy for the Establishment of an Independent Air Accident Investigation Authority (AIA)

Introduction:

The objective of this project is to establish an Independent Air Accident Investigation Authority (AIA) in Suriname, which will operate autonomously and comply with international standards set by the International Civil Aviation Organization (ICAO). This proposal details the initial actions necessary for the implementation of the project, highlighting the critical tasks that must be carried out to ensure the success and sustainability of the AIA.

Selection of the Best Option to Establish the AIA

Option 1: Independent Model

Create a completely autonomous entity, separate from the Attorney General, with its own budget, dedicated personnel, and facilities, ensuring full operational autonomy and the capacity to conduct independent and thorough investigations.

Option 2: Integrated Model (Quick Solution)

Establish an independent investigative body but administratively attached to CASAS. This structure allows the use of CASAS's existing infrastructure while maintaining operational independence, serving as an efficient interim solution until the necessary legislative changes are made to establish a fully independent authority.

1.16 Tasks and Commitments of the Government of Suriname for the Continuation of the AIG-IDB Consultancy

1. Review and Update of CAR 14 (2 months)

Necessary Action: Review and update CAR 14 to align with international best practices. Modify the organizational chart and job descriptions of CASAS to ensure they adequately reflect the responsibilities and functions of the AIA.

Justification: This update is essential to ensure that all regulations and functions are harmonized with international standards.

- Responsible Party: CASAS and Legal Advisers

2. Legislative Amendment (8 to 12 months): *

Necessary Action: Amend the Civil Aviation Safety and Security Act of March 12, 2002, to allow for the creation of an independent air accident investigation authority, ensuring its operational and financial autonomy.

Note: *An 8-month timeline would be considered optimistic, while a 12-month timeline would represent a more conservative or pessimistic estimate for enacting the new law.*

Justification: Amending the current legislation is essential to establish a legal framework that allows the independent operation of the AIA.

Modification of CAR 14: The CAR 14 regulations will also be updated to align with the new legislation, ensuring that operational procedures and responsibilities are fully consistent with international standards. This modification is expected to be completed by **June 2025**.

- Responsible Party: CASAS and Legal Advisers

Note: (*) This is the longest phase of the project and depends directly on the Government of Suriname for approval and enactment of the required legislative changes.

3. Long-Term Sustainable Financing: Fee on Air Tickets (3 months):

Necessary Action: The Government of Suriname will implement a funding system based on a fee added to air tickets. This charge will be applied to each passenger purchasing a ticket, providing a steady source of income.

Justification: This financing method ensures that the AIA receives resources directly from the sector that benefits from air safety, guaranteeing its financial independence in the long term. Additionally, this system links revenue to the growth of air traffic, ensuring that the AIA maintains the capacity to conduct independent and thorough investigations without relying on the general state budget.

- Responsible Party: CASAS and IDB

1.17 Tasks Subject to Compliance by the Government of Suriname for the IDB Loan

4. Creation of the Independent Authority (1 month):

Necessary Action: Formally establish the AIA as an autonomous entity, with its own budget, personnel, and resources, including the appointment of a director and a team of qualified investigators.

Justification: The formalization of the AIA is crucial to initiate its operations and have a competent and dedicated team in place.

Responsible Party: AIG-BID Consultant, Legal Advisers, and CASAS Director

5. Development of Procedures and Protocols (2 months):

Necessary Action: Create and approve a complete set of operational procedures aligned with ICAO standards, ensuring independence in accident investigations and accuracy in report preparation.

Justification: These procedures will ensure that the AIA operates in accordance with international standards, maintaining objectivity in investigations.

Responsible Party: AIG-BID Consultant

6. Staff Training (2 months):

Necessary Action: Implement training programs to ensure that investigators are up to date with the latest techniques and regulations.

Justification: Continuous training is vital to ensure high-quality investigations.

- Responsible Party: AIG-BID Consultant

7. Acquisition of Infrastructure and Resources (2 months):

Necessary Action: Provide the AIA with the necessary infrastructure, including offices, investigative equipment, specialized transport, and secure information management systems.

Justification: Adequate infrastructure is crucial for the AIA to carry out thorough and secure investigations.

- Responsible Party: AIG-BID Consultant and the CASAS Director

Note: *Condition for the Initiation of the Steps 4, 5, 6, and 7 will begin once the review and update of CAR 14 have been completed, ensuring that the legal framework is aligned with the operational needs of the AIA.*

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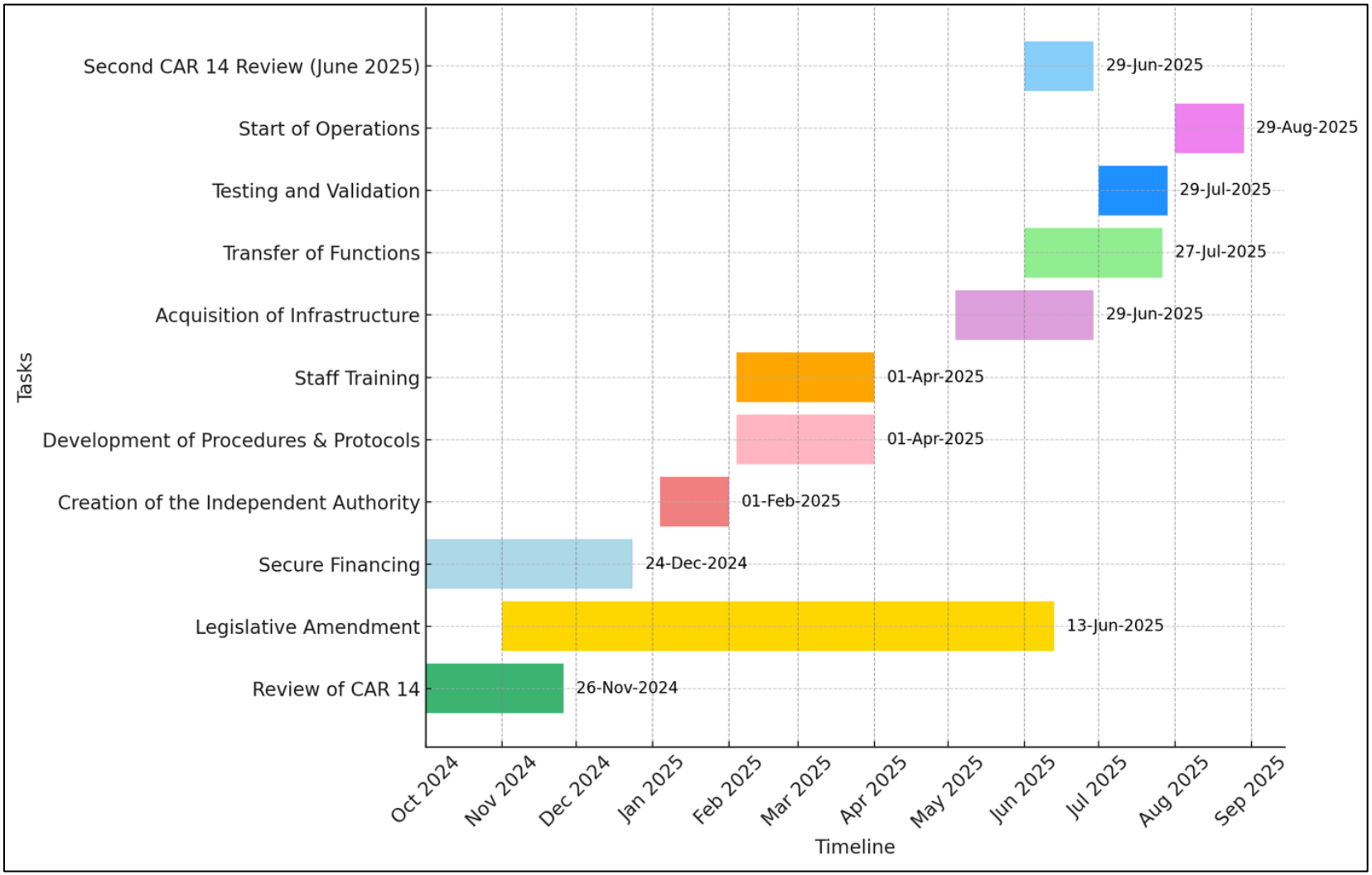
1.18 Phased Timeline for AIA Development (2024-2025)



1.19 Implementation Timeline

Stage 1: Legal and Structural Preparation

- Review Civil Aviation Regulations (CAR) 14
- Legislative amendment for necessary legal changes
- Secure financing and budget allocation for the project

Stage 2: Establishment of the Independent Authority

- Formal creation and official launch of the Independent Authority
- Define governance structure and appoint key leadership roles

Stage 3: Capacity and Procedure Development

- Development of key procedures and operational protocols
- Comprehensive staff training, including specialized roles
- Establishment of internal policies for quality and compliance

Stage 4: Infrastructure and Systems Implementation

- Acquisition of necessary infrastructure, including IT systems and physical resources
- Set up technology platforms and tools required for operations

Stage 5: Transition and Validation Plan

- Transfer of relevant functions from previous entities to the Independent Authority
- Testing of systems and operational protocols for functionality
- Validation of processes to ensure readiness for launch

Stage 6: Start of Operations

- Full commencement of operational activities under the Independent Authority
- Final adjustments and monitoring of initial performance

1.20 Technical and Strategic Recommendations

To ensure the successful and sustainable implementation of the Air Accident Investigation Authority (AIA) in the Republic of Suriname, the following detailed and technically grounded recommendations are provided. These recommendations are aligned with international best practices, especially the guidelines of ICAO, and are designed to ensure that the AIA operates with maximum efficiency, independence, and technical rigor. The full support of the Government of Suriname is essential for the achievement of this project.

Strengthening Operational Independence

a. Legal and Financial Independence

To avoid any external influence that could compromise the impartiality of investigations, the following actions are recommended:

- Legislative reform: Amend the Civil Aviation Safety and Security Act of 2002 to ensure that the AIA is a fully independent entity, both operationally and financially. The legislation must grant the AIA exclusive authority to conduct investigations and manage accident scenes in accordance with ICAO Annex 13.
- Autonomous funding: A sustainable financial model must be established through an additional fee on airline tickets, ensuring stable and recurring revenue directly linked to the growth of air traffic. This will eliminate reliance on state funds and provide the AIA with the resources necessary for continuous and effective operations.

b. Efficient Organizational Structure

An organizational structure that reflects international best practices must be implemented:

- Director: Responsible for the integrity of the investigation process, coordination with international entities (such as ICAO and ARCM), and ensuring the independence of investigations.
- Specialized Investigators: A multidisciplinary team with expertise in aeronautics, air traffic control systems (ATS), human factors, and forensic accident analysis is recommended. Each investigator must have certified competencies, aligned with ICAO Doc 298 (Training Guidelines for Accident Investigators).
- Continuous training: A rigorous training program should be implemented, including initial, advanced, and regular update modules focused on new technologies and investigative approaches, as outlined in ICAO Doc 9756.

Enhancing Technical and Technological Capacity

a. Implementation of Advanced Investigation Tools

To ensure high-precision technical investigations, it is recommended that the AIA be equipped with advanced analysis tools:

- Technical analysis laboratories: Establish specialized laboratories for the analysis of structural components and electronic systems of aircraft, using equipment such as electron microscopes and non-destructive testing technologies, as required by ICAO Doc 9756, Part III.
- Simulation and data analysis software: Acquire and deploy specialized software for flight event simulations and detailed analysis of flight data recorders (FDR) and cockpit voice recorders (CVR). These tools are essential for the accurate reconstruction of events and identification of root causes.

b. Management of Databases and Incident Analysis

The AIA should develop and maintain a robust database in compliance with ICAO's ADREP/ECCAIRS taxonomy:

- Establishment of an ADREP/ECCAIRS database: This database will enable precise analysis of contributing factors and continuous risk assessment, facilitating the identification of long-term trends and the formulation of data-driven safety recommendations.
- Integration with international systems: Ensure that data is integrated with global databases, facilitating collaboration and information exchange with other investigation agencies through ARCM and ICAO.

Investigation Protocols and Report Publication

a. Standards for Notification and Investigation

Strict alignment with ICAO Annex 13 protocols for incident notification and management is essential:

- Immediate notification process: Develop an efficient accident notification system, ensuring that operators, air traffic controllers, and airport authorities promptly report significant incidents. This includes implementing an automated alert system that triggers the immediate response of the AIA team.
- Accident site preservation: Establish rigorous procedures for protecting accident sites, ensuring the integrity of physical and electronic evidence, and preventing tampering or contamination before the arrival of the investigation team.

b. Preparation and Publication of Final Reports

The report preparation process must comply with ICAO Doc 9756, Part IV guidelines:

- Report structure: Each final report must include a detailed analysis covering technical, operational, human, and organizational aspects based on the evidence collected during the investigation. It should also contain clear conclusions and specific safety recommendations.
- Transparent and timely publication: Reports should be made publicly accessible and transparent, ensuring that all stakeholders and the general public can access findings and recommendations within a reasonable timeframe. An online portal should be established for public access and consultation of previous reports.

Strengthening International Collaboration

a. Active Collaboration with ICAO and ARCM

Formal relationships and cooperation protocols must be established with ICAO and the South American Accident Investigation Cooperation Mechanism (ARCM) to:

- Joint investigations: Participate in multilateral investigations when they involve aircraft registered in other countries or accidents in international airspace, ensuring a coordinated and shared approach.
- Technical exchange and training: Ensure investigators participate in international exchange programs to strengthen AIA capabilities and promote learning of new investigative methodologies.

b. Technical Assistance and Continuous Improvement

Ongoing technical assistance from international organizations is recommended for:

- Internal procedure evaluation: Conduct regular technical audits of AIA investigation procedures and infrastructure to ensure compliance with the latest international standards.
- Technology updates: Receive technical support for implementing emerging technologies in accident investigation, such as drones for accident scene mapping and advanced structural anomaly detection systems.

Monitoring, Evaluation, and Continuous Improvement

a. Comprehensive Monitoring and Evaluation (M&E) System

A continuous monitoring and evaluation system must be implemented to:

- Regular review of procedures: Regularly evaluate the efficiency and effectiveness of investigation procedures, using specific performance indicators that measure the quality and accuracy of reports.
- Feedback and protocol adjustments: Adapt protocols based on the results of previous investigations and new ICAO regulations. It is recommended that review and adjustment cycles occur every 12 months to ensure procedures remain aligned with global best practices.

b. Capacity and Procedure Updates

The AIA must commit to continuously updating its operational and technological capabilities:

- Training on new technologies and data analysis: Ensure that investigative staff receive ongoing training on technological advances and analytical methods that can be applied to accident investigations.
- Regular internal audits: Conduct internal audits of AIA processes and systems to identify areas for improvement and ensure compliance with international safety standards.

Conclusion

These recommendations are designed to strengthen operational independence, improve technical capacity, and ensure effective international collaboration for the AIA in Suriname. With the full support of the Government of Suriname, the AIA can be established as a reliable and efficient entity capable of making significant contributions to aviation safety in the region

1.21 Reference Documents

The following ICAO documents provide additional information and guidance on related topics:

- Annex 13 — Investigation of Aircraft Accidents and Incidents, Tenth Edition, July 2010, incorporating Amendment 13.
- Manual of Aircraft Accident and Incident Investigation (Doc 9756):
    - Part I — Organization and Planning.
    - Part II — Procedures and Checklists
    - Part III — Investigation
    - Part IV — Reporting.
- Human Factors Training Manual (Doc 9683).
- Manual of Civil Aviation Medicine (Doc 8984).
- Safety Management Manual (SMM) (Doc 9859).
- Guidance on Assistance to Aircraft Accident Victims and their Families (Circ 285).
- Training Guidelines for Aircraft Accident Investigators (Circ 298).
- Hazards at Aircraft Accident Sites (Circ 315).