

**AIR TRAFFIC AND NAVIGATION SERVICES SOC. LTD
REPUBLIC OF SOUTH AFRICA**



REQUEST FOR PROPOSALS:

**ATNS/TPQ/RFP005/24.25/ ATC RECORDER AND PLAYBACK
SYSTEM.**

**APPOINTMENT OF A SERVICE PROVIDER FOR THE
DECOMMISSIONING AND DISPOSAL OF THE EXISTING; AND THE
SUPPLY, DELIVERY, INSTALLATION, COMMISSIONING AND
SUPPORT OF NEW ATC VOICE RECORDER AND PLAYBACK
SYSTEMS AT ATNS SMALLER AND REGIONAL AIRPORTS.**

VOLUME 2

TECHNICAL SPECIFICATIONS

MAY 2024

The information contained within this document is confidential to ATNS in all respects and it is hereby acknowledged that the information as provided shall only be used for the preparation of a response to this document. The information furnished will not be used for any other purpose than stated and that the information will not directly or indirectly, by agent, employee or representative, be disclosed either in whole or in part, to any other third party without the express written consent by the Company or its representative

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ABBREVIATIONS AND ACRONYMS

ANSP	Air Navigation Service Provider
ATA	Aviation Training Academy
ATC	Air Traffic Controller
ATM	Air Traffic Management
ATNS	Air Traffic and Navigation Services SOC. Ltd.
CD	Compact Disk
COT	Commercially Off-The-Shelf
DVD	Digital Versatile Disk
FAT	Factory Acceptance Test
FIFO	First in First Out
HMI	Human Machine Interface
ICAO	International Civil Aviation Organisation
IP	Internet Protocol
LAN	Local Area Network
LRU	Line Replacement Unit
MPEG	Moving Picture Experts Group
MPG	Moving Picture Group
NEMA	National Environmental Management Act
NTP	Network Time Protocol
OEM	Original Equipment Manufacturer
PABX	Private Automatic Branch Exchange
PBU	Period of Beneficial Use
PCUG	Private Close User Group
PMP	Project Management Plan
PSTN	Public Switched Telephone Network
RAM	Reliability, Availability and Maintainability
Rx	Receiver
S&R	Standards and Regulations
SACAA	South African Civil Aviation Authority
SAT	Site Acceptance Test
SLA	Service Level Agreement
SNMP	Simple Network Management Protocol
SPI	Serial Peripheral Interface
TCP/IP	Transmission Control Protocol/ Internet Protocol
Tx	Transmitter

UPS	Uninterrupted Power Supply
USB	Universal Serial Bus
VCS	Voice Communication System
VHF	Very High Frequency
VSAT	Very Small Aperture Terminal
WAV	Waveform Audio
WBS	Work Breakdown Structure

1 GENERAL INSTRUCTIONS TO TENDERERS

The Tenderer shall submit all responses, diagrams, project management documentation and drawings according to the GENERAL INFORMATION AND INSTRUCTIONS TO TENDERERS document and in the English language.

To assist Tenderers only, each paragraph or article has been appended throughout with the letters “(M)”, “(D)”, “(O)” or “(I)”, to indicate whether the requirement is **Mandatory**, **Desirable**, **Optional** or for **Information** only.

ALL RESPONSES TO THE REQUIREMENTS IN THIS DOCUMENT SHALL BE PROVIDED AS FOLLOWS:

TENDERERS SHALL RESPOND IN FULL TO EACH ITEM IN THE FORMAT PROVIDED AND REFERENCES (CHAPTER, SECTION, PAGE NUMBER, PARAGRAPH NUMBER) TO DOCUMENTS AND RELEVANT INFORMATION SUPPORTING THE RESPONSES SHALL BE INDICATED IN THE SPACE PROVIDED. THIS INFORMATION WILL BE THE **ONLY RESPONSE USED FOR THE EVALUATION AND ASSESSMENT**.

Responses, provided in the space allowed, that are not clear or inadequate or the lack thereof shall be interpreted as **“Not Compliant”** even though the compliance column is declared as “Comply” and/or the Tenderer’s offer meets the requirement. Tenderers shall ensure that each response correctly addresses the requirement stated. Responses not addressing the requirement of the specific paragraph shall be interpreted as **“Not Compliant”**.

Tenderers shall declare compliance to each and every paragraph of this document in the column labelled “Compliance” as follows:

C:	fully compliant	=	2 points:
PC:	partly compliant	=	1 point;
NC:	not compliant	=	0 points.

Noted: Noted and accepted (applicable to paragraphs marked as “I”, not containing requirements)

Tenderer’s shall, for paragraphs declared “PC” or “NC”, include a statement as to the nature of the variation and may additionally supply supporting information in the space provided to demonstrate how the proposal meets the needs of ATNS.

Paragraphs marked “(M)”, indicates that the requirement is mandatory and proposals not compliant with the requirement shall be disqualified for further evaluation.

Paragraphs marked “(D)”, indicates that the requirement is desirable, and the tenderer is expected to declare their level of compliance, formal response and reference supporting documents.

Paragraphs marked “(I)”, indicates that the requirement is for information, however the tenderer is still expected to respond and provide information if requested. Any information gathered herein may form part of the contractual terms.

Paragraphs marked “(O)”, indicates that the requirement is optional, and the tenderer may decide how to respond.

CHAPTER 1 – GENERAL INFORMATION

2 PRELIMINARY

2.1 Background

Between the years 2011 and 2013, Air Traffic and Navigation Services SOC. Ltd installed voice recorders at the following 14 non-automated airports and the Aviation Training Academy (ATA):

- [A] Kimberly Airport (FAKM);
- [B] Kruger Mpumalanga Airport (FAKN);
- [C] Grand Central Airport (FAGC);
- [D] Lanseria Airport (FALA);
- [E] Mmabatho/ Mafikeng Airport (FAMM);
- [F] Pilanesburg International Airport (FAPN);
- [G] Upington Airport (FAUP);
- [H] Wonderboom Airport (FAWB);
- [I] Bisho Airport (FABE);
- [J] Umtata Airport (FAUT);
- [K] Pietermaritzburg Airport (FAPM);
- [L] Rand Airport (FAGM);
- [M] Virginia Airport (FAVG);
- [N] Polokwane International Airport (FAPP); and
- [O] Aviation Training Academy.

The recorders are installed to adhere to the ICAO Annexure 11, Chapter 6 and SA-CATS-172.03.4 requirements. The ICAO requirement states that *“when direct pilot-controller two-way radiotelephony or data link communications are used for the provision of air traffic control service, recording facilities shall be provided on all such air-ground communication channels”*.

In 2016 Lanseria received an upgrade to be an automated airport (Topsky and Ricochet recorders were installed), and in 2018 and 2022, ATNS stopped providing services at Grand Central airport and Bisho airport, respectively. Subsequently, in January 2023, ATNS were appointed to provide services at Grand Central airport once again. Thus, Lanseria and Bisho airports are no longer part of the project while Grand Central Airport remains. The removed airports have been replaced by Richards Bay Airport (FARB) where ATNS has provided services since December 2022.

The project aims to replace the recording and playback system at the thirteen (13) remaining airports and the ATA. The thirteen airports and ATA received a mid-life upgrade between the years 2017 and 2019 to rectify the challenges that were faced by the technical and operational team in maintaining and operating the system, respectively (e.g., software hanging).

The voice recording systems are based on a 10-year design lifespan with a mid-life upgrade, the basis for this is computer technology changes rapidly in a short period, after 10 years the components and technology of the system will be obsolete. The systems will be reaching the end of design life between 2021/2022 to 2022/2023 financial years.

2.2 Scope of Work

The project caters for the full replacement of the ATC Recorder and Playback systems at the thirteen (13) non-automated airports and the ATA making fourteen (14) sites in total listed in the table below.

Table 1. List of Included Sites

	STATION NAME	ICAO AIRPORT CODE
1	Kimberley Airport	FAKM
2	Kruger Mpumalanga International Airport	FAKN
3	Mmabatho/ Mahikeng Airport	FAMM
4	Pilanesberg International Airport	FAPN
5	Upington Airport	FAUP
6	Wonderboom Airport	FAWB
7	Richards Bay Airport	FARB
8	Mthatha Airport	FAUT
9	Pietermaritzburg Airport	FAPM
10	Rand Airport	FAGM
11	Virginia Airport	FAVG
12	Polokwane International Airport	FAPP
13	Grand Central Airport	FAGC
14	Aviation Training Academy	ATA

The project will include:

- [A] Decommissioning of existing equipment;
- [B] Disposal of existing equipment in line with the approved ATNS waste management policy;
- [C] Supply, delivery, installation and commissioning of the new ATC Recorder and Playback system;

- [D] Provision of basic and advanced training to maintenance and operations personnel; and
- [E] Maintenance and support of the new ATC Recorder and Playback system;

2.3 System Specifications Tree

The specification tree is composed of specification elements and interface specifications. It defines the hierarchical representation of the set of specifications in the project. The ATC Recorder and Playback system specification tree is provided in **Error! Reference source not found.** below:

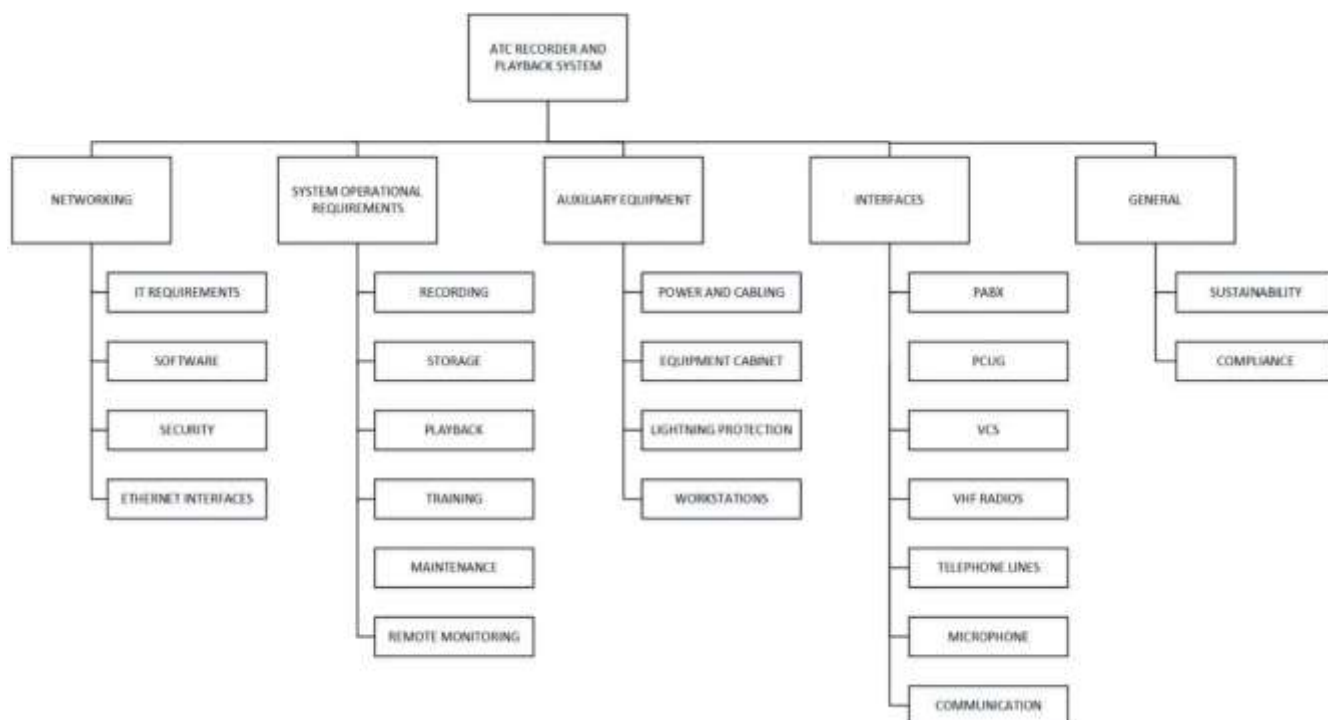


Figure 1. ATC Recorder and Playback System Specification Tree

CHAPTER 2 – TECHNICAL SPECIFICATIONS

1 GENERAL SPECIFICATIONS

The system is defined as the ATC Recording and Playback system, all its auxiliary components and supporting infrastructure.

1.1 Environmental Conditions

- [A] The system shall withstand and operate within specifications under the environmental conditions as provided in Table 2. Tenderers shall include data sheets to indicate compliance to the values and tolerances in the table below. (D)

Table 2. Environmental Conditions

Ambient Temperature	5 °C to 40 °C
Relative Humidity	10% to 80% non-condensing
Temperature variations	0° to 20 °C in a 24-hour period

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.2 Power Supply

- [A] The system shall be compatible with the mains power supply as defined below. The Tenderer shall include data sheets for each system indicating the design values and tolerances. (D)

- Single phase 230 V AC, Tolerance: $\pm 10\%$
- Frequency: 50 Hz, Tolerance: ± 5 Hz

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

- [B] The system shall have an over current/ voltage and under current/ voltage protection mechanism that will prevent any damage to system components due to either insufficient input power feed or excessive input power feed. Tenderers shall explain how this requirement will be met. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The system shall have dual power feeds supplied by the existing building mains and the existing building backup power supply. Provision for a static switch shall be provided for equipment with only one (1) power input. Tenderers shall confirm and provide supporting documentation that all the components of the offered system can operate from a backup power source. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] The system shall have identical main and a standby Power Supply Units (PSUs) configured in hot standby. Both the power supply units shall be connected to both the main and standby power feeds. Tenderers shall provide a datasheet for the PSUs. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[E] The transition from the main PSU to the standby PSU shall be seamless and allow for both manual and automatic changeover without disturbing the operation of the system. Tenderers shall explain how this requirement will be met. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[F] The system shall have an automatic start-up after a total (mains and backup) power failure. Tenderers shall explain how this requirement will be met. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

1.3 Uninterrupted Power Supply (UPS)

[A] In the event of a mains power failure, the system per station shall be powered from an Uninterrupted Power Supply (UPS). The Contractor shall provide a UPS for each site. The Tenderer shall include the datasheet for the proposed UPS in their proposal and shall make provision for the UPSs in the pricing schedule. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[B] The UPS shall provide backup power for the system to safely shutdown without crashing in the case of complete power loss (main and building UPS). Communication between the equipment UPS and the Recorder equipment is required such that a soft shutdown is achieved without loss of information. The Tenderer shall explain how this requirement is met by the proposed UPS. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[C] The Uninterrupted Power Supply shall have the capacity to provide power to the ATC Recording and Playback system without any degradation in performance for a minimum period of 60 minutes from full capacity. The Tenderer shall provide the total power consumption of the proposed ATC Recording and Playback system, and the UPS specification to prove compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

- [D] The Uninterrupted Power Supply shall be restored to full capacity within 3 hours. The Tenderer shall provide the recharge time for the proposed UPS and refer to datasheets to prove compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

- [E] The transition from the main power feed to the UPS shall be seamless and allow for both manual and automatic changeover without disturbing the operation of the system. Tenderers shall explain how this requirement will be met. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

- [F] The UPS shall be rack mountable and shall be housed in the same cabinet as the ATC Recording and Playback system. The Tenderer shall provide a datasheet which shows that the proposed UPS is rack mountable. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

- [G] The system UPS shall be connected in series with the building's UPS. The Tenderer shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.4 Life Span

[A] The system shall operate within the environmental conditions stated in Chapter 2 Section 0, for a minimum period of 10 years. Tenderers shall indicate to what extent this requirement may be exceeded. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.5 Modularity

[A] Modular design and construction shall be used to the maximum extent. All hardware modules shall be removable from the system without the requirement for any disassembly other than a simple disconnection of connectors or release of simple locking devices. Tenderers shall provide a system design diagram and indicate the modules. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] All system components shall be readily accessible to the maintenance personnel, easily disassembled and replaced. Tenderers shall explain how this requirement will be met. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[C] All/ any cooling fans shall be external and shall require minimal effort to change or replace. Tenderers shall explain how this requirement will be met. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.6 Technology

[A] The design and construction of the system shall be modern and based on transistor technology and integrated circuits (ICs). (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] The proposed ATC Recording and Playback system or legacy versions thereof shall have been installed and in operation for at least 5 years in a similar environment. Tenderers shall provide detailed proof of the systems’ deployment with contactable customer references. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The submitted response shall include technical details and design information of the proposed ATC Recording and Playback system and all supporting infrastructure. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[D] The system shall be constructed from solid state technology and conservatively rated components without moving parts, except for components that are crucial for the reliable operation of the system. The Tenderer shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[E] The system shall be designed to use Internet Protocol (IP based), but able to record both analogue and digital lines. The Tenderer shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.7 Cabling

[A] All the cables that are needed for the system to be commissioned and deemed fully functional shall be provided with the system. The maximum distance to be covered by a cable can be assumed to be 40m. Tenderers shall include cable costs and associated cable lengths in the pricing schedule. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] All power and communication cables shall be installed in separate existing ducts, and clearly and neatly labelled. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[C] A clear interconnection diagram depicting the system components, system layout, cables and configuration shall be provided by the Tenderer. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[D] Labelling of cables shall be colour-coded and include a numerical identifier, cable type, source (unit name, port, location) and destination (unit name, port and location). Tenderers shall provide an example of the labelling format that shall be used. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

1.8 Equipment Cabinet

[A] New 42U 19-inch rack mountable equipment cabinets with a minimum depth of 800mm shall be supplied for each of the stations listed under this project. Tenderers shall provide full details on the proposed equipment cabinet including the cabinet design; and make provision for the cabinets in the pricing schedule. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[B] The system shall be installed in the rack mountable equipment cabinet that is supplied under this project. Tenderers shall indicate compliance to this requirement and provide the dimensions for all the equipment that will be installed in the cabinets. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The main and standby equipment shall be installed in the same cabinet at each site. The Tenderer shall provide an equipment layout diagram indicating all equipment supplied under this Tender which will be installed in the cabinet. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] The ATNS VCS (Voice Communication System) at each listed site is due for replacement and the new ATC Recording and Playback system shall be housed in the same cabinet as the VCS system. The existing ATC Recording and Playback system and supporting infrastructure occupy a total space of 8U (2U for the UPS, 2U for the battery pack and 4U for the Recorder). The Tenderer shall indicate in their response the total required cabinet space (in terms of “U”) required for the proposed system, including all auxiliaries and standby equipment to be house in the cabinet. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[E] The equipment cabinet shall be connected to an earth bar that is connected to the site earth. All equipment shall be appropriately earthed. The Tenderer shall indicate the earth bar in their interconnection diagram and provide reference to it. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[F] Each equipment cabinet shall have a static switch to connect the main and the standby power supply and a rotary isolator to isolate power during maintenance activities. The Tenderer shall indicate the static switch and rotary isolator in the cabinet design provided with their response. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[G] The equipment cabinet shall have an anti-static strap to prevent electrostatic discharge to the equipment. The Tenderer shall provide full details on the proposed anti-static strap and indicate the strap in the cabinet design. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[H] The equipment cabinet shall make provision for front and rear access to the system for maintenance purposes. Tenderers shall indicate how this requirement will be met in their equipment cabinet design. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[I] The front and rear panels of the new equipment cabinet shall be removable to allow for maintenance personnel to access the equipment. The Tenderer shall explain how this requirement is met by the proposed cabinet. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[J] The equipment cabinet shall be designed to account for natural heat dissipation and a proper cable management system. The equipment cabinets' door shall be perforated to permit sufficient air flow in and out of the equipment cabinets. The Tenderer shall explain how natural heat dissipation is achieved by the proposed cabinet; and provide details on the cable management system within the cabinet. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[K] There shall be cooling inside the cabinet to ensure that all components operate well within their individual temperature ratings within the specified equipment ambient temperature range. Tenderers shall provide full details on the cooling devices/ methods deployed within the cabinets. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[L] The equipment cabinet shall come with adjustable mounting rails and sliding shelves. Tenderers shall explain how this requirement is met by their proposed cabinet. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[M] Tenderers shall indicate in their equipment cabinet design, a detailed equipment rack layout and equipment placement scheme. The placement of all equipment shall be clearly visible on the provided layout. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[N] The new equipment cabinets’ doors shall be lockable. The lock shall cater for a master key. Padlock locking mechanisms are not acceptable. Tenderers shall provide full details on the proposed locking mechanisms for the equipment cabinets’ doors. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[O] The equipment cabinet shall protect the equipment from the ingress of dust. Tenderers shall provide full details on the methods/ devices used to prevent the ingress of dust in the cabinets. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.9 Lightning Protection

[A] The system shall have suitable lightning protection devices (in accordance to SANS 10313:2012) on all communication cables. Tenderers shall provide full details on the proposed lightning protection devices. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[B] The system shall have suitable lightning protection devices (in accordance to SANS 10313:2012) on the main power supply. Tenderers shall provide full details on the proposed lightning protection devices. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The system shall have suitable surge protection (in accordance to SANS 10142:2012) on the power cables to the equipment. Tenderers shall provide full details on the proposed protection. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.10 Software

[A] All equipment related software shall be supplied on Compact Disk (CD) and Universal Serial Bus (USB) flash disk. Tenderers shall list the equipment that will be provided on CD and USB. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] All contents of the disks shall be allowed to be copied for backup purposes and internal distribution. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[C] All software delivered shall be placed under configuration control. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

1.11 Equipment Installation

[A] A list of tools that are required for the installation of the system shall be provided by the Tenderer with specific indication of specialized tools. Tenderers shall indicate the average time needed for the installation, set-up and commissioning of the system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[B] The Contractor shall be responsible for the installation, set-up and commissioning of the system, and adjustments during site acceptance tests included under this project. The project schedule submitted by the Tenderer, as defined in Volume 3, should clearly indicate how this will be achieved. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[C] The ATNS Project Manager reserves the right to attach ATNS Company officials to the Supplier’s installation party during installation, setting up and commissioning of the equipment for gaining practical on the job training (OJT) experience on the equipment. The Tenderer shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] The final configuration and setup including parameters and settings on the system shall be recorded on the successful completion of the site acceptance test; and will be made available to the Company as part of the As-Built document provided for each location. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

1.12 Electrical Work

[A] The supply, installation and connecting of power feeds to the equipment shall be performed by the Contractor. The power cables shall be labelled and installed neatly in existing cable trays and cable ducts. Tenderers shall provide a wiring diagram with their proposal. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] Any mains power wiring will be done in accordance with the WIRING OF PREMISES (SANS 10142) requirements. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] An Electrical Compliance Certificate as issued by a certified electrical contractor shall be supplied for each site. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

1.13 Environmental Sustainability Requirements

[A] An environmental management programme shall be documented and shall detail how identified environmental aspects will be managed throughout the project execution. The environmental management programme shall address, without limitations, the following:

(D)

- a. Energy efficiency pertaining to all aspects of the project;
- b. Environmentally sustainable materials and products; and
- c. Waste management.

Tenderers shall indicate compliance to this requirement.

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

2 SYSTEM SPECIFICATIONS

2.1 General System Specifications

[A] The ATC Recording and Playback system shall be ICAO Doc 9896 (ED-137) compliant. Compliance shall be reflected in reference documents provided by the Tenderer. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] The ATC Recording and Playback system shall comply to the ICAO Annexure 11 Standards and Recommended Practices. Tenderers shall indicate where the proposed system does not comply with the ICAO Annexure 11 Standards and Recommended Practices. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The ATC Recording and Playback system shall be capable of using the NTP server for time synchronization. Where available, the ATC Recording and Playback system shall use the existing ATNS NTP server for time synchronization. Tenderers shall confirm that the proposed system is capable of using the NTP server for time synchronization. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] The ATC Recording and Playback system shall allow remote monitoring and control. Tenderers shall confirm that the proposed system is capable of remote monitoring and control. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

- [E] The ATC Recording and Playback system shall be IP Based. Where required, an analogue to digital conversion at the interface can be used to accommodate analogue lines. Tenderers shall explain how this requirement will be met by the proposed system.
- (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

- [F] The ATC Recording and Playback system shall have the following minimum number of recording channels per station as defined in Table 3. Tenderers shall provide full details with reference to technical datasheets, to explain how the requirement is met by the proposed system. (D)

Table 3. Required Number of Recording Channels at Each Station

SITE	Number of Digital Recording Channels	Number of Analogue Recording Channels
FAUT	24	8
FARB	24	8
FAMM	24	8
FAVG	24	8
FAPM	24	8
FAUP	24	8
FAPN	24	8
FAGC	24	8
FAGM	24	8
ATA	24	8
FAPP	32	8
FAKN	32	8
FAWB	32	8
FAKM	32	8

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[G] The ATC Recording and Playback system shall support storage expansion to accommodate future requirements of stations. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[H] The ATC Recording and Playback system shall support channel expansion to accommodate future requirements of stations. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[I] The expansion process shall be documented and intuitive, allowing authorised personnel to easily integrate additional channels and storage. Tenderers shall explain how this requirement will be achieved for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[J] After channel and storage expansion, the system shall maintain consistent performance and reliability. Tenderers shall explain how this requirement will be met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[K] The ATC Recording and Playback system shall have multiple storage drives. The Tenderer shall provide detailed information on the storage drives for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[L] The ATC Recording and Playback system shall have redundancy on all critical components. The Tenderer shall provide block diagrams of all system components, clearly demonstrating redundancy, and indicating non-redundant components. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[M] The changeover from the main system to the standby system shall happen automatically based on the relevant fault condition. The manual changeover from the main to the standby system shall be operator initiated. The failure of one system shall not affect the operation of the other. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[N] The system shall record simultaneously on the local as well as on the centralized remote storage located at Johannesburg centre (FAOR). Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

2.2 Recording Function

[A] The ATC Recording and Playback system shall record all audio spoken to/from the ATC through the voice communication system (VCS) in the control tower cab on different channels. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[B] The ATC Recording and Playback system shall date, and time stamp all recordings. The time stamp used must be in UTC. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[C] The ATC Recording and Playback system shall allow simultaneous recording of all channels available. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[D] The ATC Recording and Playback system shall record ambient audio using a VCS microphone or an external microphone. There shall be continuous recording of ambient audio. Tenderers shall explain how ambient audio will be recorded by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[E] The system shall guarantee the recording of the communication systems without any loss of information. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[F] In case of a channel failure on the recorder system, the system shall automatically switch to a stand-by channel; given there is a standby channel. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[G] The ATC Recording and Playback system shall connect to the Johannesburg centre (FAOR) using the ATNS Wide Area Network (WAN). Tenderers shall explain how the proposed system will connect to the Johannesburg centre (FAOR). (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[H] In case of failure to connect to the remote storage, the ATC Recording and Playback system shall continue recording locally, and when the connection is re-established, the system shall automatically update the remote storage. Tenderers shall explain how the proposed system meets the requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[I] The ATC Recording and Playback system shall be equipped with automatic gain control to compensate for variations in analogue audio inputs. Tenderers shall provide full details on the automatic gain control on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[J] The ATC Recording and Playback system shall, at least, have the following record activation triggers:

- a. Voice Operated Exchange (VOX);
- b. Off-hook;
- c. Continuous;
- d. Schedule;
- e. On-demand; and
- f. Voltage

Tenderers shall provide full details on the record activation triggers for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

2.3 Recordings Storage

[A] The ATC Recording and Playback system shall store all recorded data. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] The ATC Recording and Playback system shall retain recordings for at least thirty (30) days as defined by ICAO Annexure 11, Paragraph 6.1.1.3 and Paragraph 6.2.2.3.8 and ICAO Doc 9426 chapter 8, par 8.4. Compliance shall be reflected in reference documents provided by the Tenderer. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] After the thirty (30) days, the recordings (excluding impounded recordings) shall be automatically archived locally and at the centralised remote storage (Johannesburg centre (FAOR)). Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] Impounded recordings shall not be archived until they have been released. Tenderers shall explain how impounded recordings will be handled by the system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[E] The ATC Recording and Playback system shall only perform storage clean up automatically if the system has raised the alarm and no intervention from technical personnel is required; and the storage level has reached the user-defined level (e.g. 90 % full). Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[F] The ATC Recording and Playback system shall use the First in First Out (FIFO) method to clean the system storage if it is full. Tenderers shall explain how full storage is handled by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[G] The centralised remote storage should make use of virtual servers. Tenderers shall provide full details on the centralised remote storage for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[H] The system shall have multiple storage mediums (e.g., hard-drives, discs, Storage Area Network). The hard drives are a preferred primary storage medium. Tenderers shall provide a list of the storage mediums for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[I] The system shall have multiple storage drives in case one fails, it shall automatically switch over to a standby storage drive. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[J] The local storage drives shall have a minimum total storage of 8 TB (Terabyte) per site. The local storage drives shall have enough capacity to store recordings as defined by ICAO Annexure 11, Paragraph 6.1.1.3 and Paragraph 6.2.2.3.8 and ICAO Doc 9426 chapter 8, par 8.4. Compliance shall be reflected in reference documents provided by the Tenderer. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[K] The remote storage drives shall have enough capacity to store recordings as defined by ICAO Annexure 11, Paragraph 6.1.1.3 and Paragraph 6.2.2.3.8 and ICAO Doc 9426 chapter 8, par 8.4. Compliance shall be reflected in reference documents provided by the Tenderer. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[L] The ATC Recording and Playback system shall ensure that there are no breaks in archive recording while storage modules are exchanged. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[M] The ATC Recording and Playback system, by default, shall store recordings using date and time; and the user shall be able to change or update the file naming. Tenderers shall explain how files are stored and named by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[N] The storage mediums, both local and remote shall be provided. Tenderers shall provide full details on the storage mediums that will be provided. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

2.4 Playback Function

[A] The ATC Recording and Playback system shall allow retrieving of archived files for incident/accident investigations or learning purposes. Tenderers shall explain how archived files can be retrieved by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[B] The ATC Recording and Playback system shall allow a replay of stored (short and long term) recordings from local or the remote storage. Tenderers shall explain how replay of stored recordings is achieved on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[C] The ATC Recording and Playback system shall have a search function using metadata, including, but not limited to:

- a. Date
- b. Time
- c. Channel number or name
- d. Dialed number
- e. Caller ID number

Tenderers shall provide full details on the search function on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[D] The ATC Recording and Playback system shall allow sorting of search results in an ascending or descending order. Tenderers shall explain how sorting of search results is performed on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[E] The ATC Recording and Playback system shall allow simultaneous replay of individual, multiple or all channels. Tenderers shall explain how the requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[F] The ATC Recording and Playback system shall allow simultaneous live monitoring of all channels. Tenderers shall explain how the requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[G] The ATC Recording and Playback system shall allow the selection and deselecting of any individual channel to allow further interrogation of the selected channel(s). Tenderers shall explain how the requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[H] The ATC Recording and Playback system shall have the following playback functions:

- a. Play;
- b. Pause;
- c. Stop;
- d. Rewind;
- e. Repeat;
- f. Fast-forward;
- g. Speed adjustment; and
- h. Selection to play individual or combined channels

Tenderers shall provide full details on the playback functions on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[I] The ATC Recording and Playback system shall have an option to impound recordings. Tenderers shall explain how impounding of records is achieved by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[J] The ATC Recording and Playback system should be able to playback impounded recordings. Impounded recordings must be accessed securely using password protection. Tenderers shall explain how impounded recording will be accessed on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[K] The ATC Recording and Playback system shall have a playback function to loop between two user-defined points. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[L] A variable playback speed shall be possible without degradation of speech quality. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[M] The ATC Recording and Playback system shall be able to detect silence in a recording when playing back. Tenderers shall explain how silence is detected in a recording by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[N] The system shall have an option to skip silent phases on the recorded data when playing back. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

[O] The recordings shall be immediately available for playback purposes locally and on the network; given the connection has been established. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

2.5 Security/IT Requirements

[A] The ATC Recording and Playback system shall implement access control to control permissions to files, directories, registry keys, and restricting user activities such as

modifying system logs or installing applications. Tenderers shall explain how access is controlled on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[B] The System shall implement Secure Management of identifiers/accounts; including, changing default account names, determining length of time until inactive accounts are disabled, using unique usernames, establishing user groups. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[C] The ATC Recording and Playback system shall implement Secure Authentication controls: including, password length, use of special characters, minimum password age, multifactor authentication/use of tokens. Tenderers shall explain how the requirement for Secure Authentication controls is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[D] The ATC Recording and Playback system shall implement Secure Audit settings; including, capturing key events such as failures, logons, permission changes, unsuccessful file access, creation of users and objects, deletion and modification of system files, registry key and kernel changes. Tenderers shall explain how the requirement for Secure Audit settings is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[E] The ATC Recording and Playback system shall implement Secure System settings; including, session timeouts, number of remote connections, session lock. Tenderers shall explain how the requirement for Secure System settings is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[F] The ATC Recording and Playback system shall use Cryptography - use only FIPS 140-3 validated cryptographic protocols and algorithms to protect data in transit and in storage. Tenderers shall explain how Cryptography is applied for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[G] The ATC Recording and Playback system shall allow for vendor-released patches in response to identified vulnerabilities, including, software updates to be installed. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[H] The System shall use approved, signed software, if supported. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[I] The ATC Recording and Playback system shall implement safeguards through software to protect end-user machines against attack, including, antivirus, antispyware, anti-
adware, personal firewalls, host-based intrusion detection systems. Tenderers shall
provide details on the safeguards implemented on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[J] The ATC Recording and Playback system shall apply network protections, including,
TLS, IPSEC. Tenderers shall provide details on the network protections implemented
on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[K] The network installation security requirements; for example, within a demilitarized
(DMZ), on a specific subnet, as required, shall be defined for the system. Tenderers
shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

[L] The ATC Recording and Playback system design shall cater for and ensure that, the
installation is behind the firewall and Intrusion prevention systems. Tenderers shall
indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[M] The ATC Recording and Playback system design shall ensure that all applications are only accessible publicly via the firewall. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[N] The ATC Recording and Playback system shall implement access rights to enable role-based access control at application and device level, with the ability to allow single sign; based on User-ID from Active directory; if possible. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[O] The ATC Recording and Playback system shall be able to monitor the recording storage and alert the technical personnel through alarms. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[P] The ATC Recording and Playback system shall be able to generate a detailed report of all alerts and alarms on the system. Tenderers shall provide details on the reports that can be generated by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

2.6 Software

[A] The ATC Recording and Playback system software shall be compatible with Windows 10. Tenderers shall provide full details on the required operating system for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] The ATC Recording and Playback system software shall have a Human Machine Interface (HMI) to guide the user in operating the system. Tenderers shall provide full details on the HMI using references to technical datasheets and images for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The HMI display shall have a minimum resolution of Full High Definition (FHD), 1920 x 1080 pixels. Tenderers shall provide the resolution of the HMI for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[D] The software updates, patches, new versions and new releases shall be cumulative. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[E] Software updates, patch, new versions, and new releases implemented or installed shall not alter any user-configured settings. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[F] It shall be possible to revert to the previous software version. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[G] The ATC Recording and Playback system software shall have the following playback functions:

- a. The ATC Recording and Playback system software shall have a visual representation to determine audio content and silence within a record, over and beyond the requirements stipulated in section 2.4 Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
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[INSERT FULL RESPONSE FOR EVALUATION HERE]

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

- b. The ATC Recording and Playback system software shall allow multiple text annotations to be added to recordings along the timeline, for documenting the timing of necessary actions and / or events. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

- c. The software shall provide a view grid that shows time, channels that are being recorded and frequencies and telephone lines being recorded at minimum. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

- d. The ATC Recording and Playback system software shall allow customization of the view grid. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

- e. The software shall be able to create groups that allow the grouping of all recordings of related incidents/events. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

- f. The software shall have a tool/ mechanism to protect recorded information. Tenderers shall explain how this requirement is met by the proposed system. (D)
(D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

- g. The software shall allow exportation of recordings to the following external media;
 - i. USB flash drive.
 - ii. CD/DVD
 Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

- h. The software shall allow sending of recordings via email. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[[INSERT FULL RESPONSE FOR EVALUATION HERE]]</i>		
<i>[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]</i>		

- i. The ATC Recording and Playback system shall be able to export recordings in the following formats supported by the standard Windows Media Player. Tenderers shall explain how this requirement is met by the proposed system. (D):
 - i. WAV
 - ii. MPEG
 - iii. MPG

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

- j. The Tenderer shall supply the software required to play recorded material on normal laptops. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

- k. The impounded recordings shall be in an encrypted format to prevent tampering. Tenderers shall explain how the impounded recordings will be encrypted on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

- l. The ATC Recording and Playback system software shall allow access to all recording systems remotely. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[H] Exported files shall be renamable. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>		
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>		

2.7 System Interface Requirements

2.7.1 General

[A] The ATC Recording and Playback system shall be able to interface the following systems via the listed interface:

- a. PABX;
- b. PCUG;
- c. Radios ;
- d. Telephone lines;
- e. VCS;
- f. External Microphone; and
- g. NTP server.

The ATC Recorder and Playback system shall support the above systems using the below interface types and possible analogue to digital conversions at the interface:

External system	Input from external system to the recorder	Type	Protocol interface
PABX	Audio	Digital	TCP/IP
PCUG	Audio	Digital/ Analogue	TCP/IP and 2 wire balanced line
VHF Radios	Audio	Digital/ Analogue	TCP/IP and 4 wire E&M

Telephone Lines	Audio	Digital	TCP/IP and ISDN
VCS	Audio	Digital/ Analogue	TCP/IP and 4 wire E&M
External Microphone	Audio	Digital/ Analogue	TCP/IP and 4 wire E&M
NTP Server	Time	Digital	TCP/IP or UDP

Tenderers shall provide full details of the interfaces between the ATC Recording and Playback system and the listed systems, explaining how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] The system shall able to interface with systems using the following interfaces:

- a. 2 wire and 4 wire telephone lines
- b. E1/T1 trunks lines
- c. ISDN (PRI)

Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

2.7.2 Ethernet Interfaces

[A] The ATC Recording and Playback system shall be able to connect to the LAN and WAN using the Ethernet port. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[B] The ATC Recording and Playback system shall have dual Ethernet interfaces in case one fails, it shall automatically switch over to the next port. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The Ethernet port shall have a minimum transfer speed of 100\1000 Mbps. Tenderers shall provide the minimum transfer speed of the ethernet port on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] The ATC Recording and Playback system shall, at least, support the following serial interfaces:

- a. RS232
- b. SPI

Tenderers shall list the serial interfaces which are supported by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

2.8 Network Interfaces

[A] The ATC Recording and Playback system shall, at least, support the following protocols:

- a. Transmission Control Protocol/Internet Protocol (TCP/IP)
- b. Simple Network Management Protocol (SNMP)
- c. Network Time Protocol (NTP)
- d. User Datagram Protocol (UDP)

Tenderers shall list the protocols which are supported by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

3 Training System

[A] The training system for the ATA shall comply with all system specifications as defined in Chapter 1 and Chapter 2. Any deviation from the compliance statements as detailed in Chapter 1 and Chapter 2 shall be clearly identified and motivated. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[B] The training system shall have the capability to accommodate more than one technical workstation for ease of training. The Tenderer shall state any limitations on accommodating more than one technical workstation on the training system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

4 Workstation Requirements

4.1 General

[A] The ATC Recording and Playback system shall have two workstation platforms at each site ie. a technical maintenance workstation and a playback workstation. Tenderers shall provide a full system layout diagram showing all the required workstations. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] Remote monitoring maintenance workstations shall be located at the following stations:

- a. Bram Fischer International Airport (FABL);
- b. O.R. International Airport (FAOR);
- c. King Shaka International Airport (FALE); and
- d. East London Airport (FAEL)

Tenderers shall provide a detailed design for the maintenance workstations and make provision for the maintenance workstations in the pricing schedules. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The technical maintenance and playback workstations shall be provided with loudspeakers and headphones. Tenderers shall provide full details on the proposed loudspeakers and headphones for the workstations. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

4.2 Remote Monitoring Workstation

[A] The remote monitoring workstation shall remotely access all the different stations for monitoring and maintenance purposes. Tenderers shall provide full details on the proposed remote monitoring workstation and how remote monitoring will be achieved for the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[B] The remote monitoring workstation shall enable maintenance personnel to remotely perform maintenance activities on the ATC Recording and Playback system. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The remote monitoring workstation shall produce and present alarms in case the equipment fails. Tenderers shall provide full details on the alarms which the remote monitoring workstation will produce. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] Alarm indications shall be both visible and audible. Audible alarms shall be volume adjustable. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[E] The alarms shall continue until acknowledged or disabled by technical personnel. Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[F] Visible alarm indications shall be indicated using the following colour logic:

- a. Green – No fault.
- b. Orange – Warning, the system can still operate but needs attention, i.e. storage running out.
- c. Red – Component failure needs immediate attention.

Tenderers shall explain the colour logic for the visible alarm indications on the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[G] The remote monitoring workstation shall be able to playback and monitor recordings.

Tenderers shall explain how this requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

4.3 Technical Maintenance Workstation

[A] The technical workstation shall be located at each of the 13 stations' equipment room and the ATA. Tenderers shall provide full details on the proposed technical maintenance workstation and make provision for the technical maintenance workstations in the pricing schedule. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[B] The technical workstation shall be physically connected to the ATC Recording and Playback system. Tenderers shall provide an interconnection diagram depicting how the technical workstation is connected to the system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[C] The technical workstation shall provide all system management and configuration functionalities to allow the system to perform at optimum. Tenderers shall provide full details on the functionalities of the technical workstation. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

[D] The technical workstation shall comply with all system specifications as defined in section 4.2 [A] – [G]. Tenderers shall indicate if there are any deviations from the specifications. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		
[[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]]		

4.4 Playback Workstation

[A] A playback workstation shall be provided for each site where the system will be deployed. Tenderers shall provide full details on the proposed playback workstation and make provision for the playback workstations in the pricing schedule. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[[INSERT FULL RESPONSE FOR EVALUATION HERE]]		

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

[B] The playback workstation shall be installed in the tower control cab at each airport where the system will be deployed. Tenderers shall provide the size dimensions of the proposed playback workstation. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[C] The playback workstation shall be able to perform playbacks for the local station only. Tenderers shall explain how the requirement is met by the proposed system. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

[D] The playback workstation shall have the capability to view and playback the records only. Any additional actions which are required must be performed on the technical workstation. Tenderers shall indicate compliance to this requirement. (D)

COMPLIANCE (C/PC/NC/Noted)	<i>Only responding C/PC/NC/Noted will not be accepted without proof.</i>	
[INSERT FULL RESPONSE FOR EVALUATION HERE]		
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]		

----- **END OF VOLUME 2** -----