

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



REQUEST FOR PROPOSAL: ATNS/RFP09/03/2025/26/NAV_AIDS

**APPOINTMENT OF A SERVICE PROVIDER FOR NAVIGATION AIDS
COMMUNICATION NETWORK COMPONENTS UPGRADE**

Volume 1A Appendix B

**TECHNICAL SPECIFICATIONS, PROJECT
MANAGEMENT AND LOGISTIC SUPPORT**

March 2026

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ABBREVIATIONS AND ACRONYMS

ATA	Aviation Training Academy
ATC	Air traffic Controller
ATNS	Air Traffic and Navigation Services
ATSU	Air Traffic Service Unit
BITE	Built-in Test Equipment
COTS	Commercial Off-The-Shelf
CVOR	Conventional VOR
DME	Distance Measuring Equipment
DVOR	Dopler VOR
FACT	Cape Town International Airport
FAEL	East London Airport
FAGG	George Airport
FALE	King Shaka International Airport
FAOR	OR Tambo International Airport
FAPE	Port Elizabeth International Airport
FAT	Factory Acceptance Test
GHz	Gigahertz
Hz	Hertz
LRU	Line Replaceable Unit
MCS	Navigation aid equipment Monitoring and Control System
MHz	Megahertz
NAVAIDS	Navigational Aids
OEM	Original Equipment Manufacturer
OPEX	Operational Expenditure
PBU	Period Of Beneficial Use
PCB	Printed Circuit Board
RCMS	Remote Control Monitoring System
RT	Remote Terminal
SLA	Service Level Agreement
SAT	Site Acceptance Test
TSAT	Transformational Satellite Communication System
VOR	Very High Frequency Omni Range
OMT	Ortho Mode Transducer
BUC	Block Up Converter
LNB	Low Noise Block

DEFINITIONS

Within this document:

System	is defined as the TSAT communication network.
TSAT	is defined as the service provider of the existing satellite backhaul communications solution.
TSAT modem	is equivalent to TSAT Remote Terminal Indoor Unit.

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1 GENERAL INSTRUCTIONS TO BIDDERS

The Bidder shall submit all responses, diagrams, documentation and drawings according to the GENERAL INFORMATION AND INSTRUCTIONS TO BIDDER'S document and in the English language.

To assist Bidders only, each paragraph or article has been appended throughout with the letters "(M)", "(D)", "(O)" or "(I)", to indicate whether the requirement is **M**andatory, **D**esirable, **O**ptional or for **I**nformation only.

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

BIDDERS 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 Bidder's offer meets the requirement. Bidders 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"**.

Bidders shall declare compliance to each and every paragraph of this document, based on the paragraph classification, in the response block provided opposite the column labelled "Compliance". Bids will be evaluated 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)

Bidders shall, for paragraphs declared "PC" or "NC", include a statement as to the nature of the variation and may supply additional supporting information in the space provided to demonstrate how the proposal may still meet the needs of ATNS.

Paragraphs marked "(M)", indicates that the requirement is mandatory and Bidders that do not comply with the requirement **shall** be disqualified for further evaluation.

Paragraphs marked "(D)", indicates that the requirement is desirable, and the Bidder is expected to declare their level of compliance, provide a formal response and reference supporting documents.

Paragraphs marked "(I)", indicates that the requirement is for information, however the Bidder 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 Bidder may decide how to respond.

2 INTRODUCTION

2.1 Overview

This project calls for the upgrade of the communication network utilised by the ATNS Navigational Aids (NAVAIDS) Remote Control Monitoring System (RCMS).

The NAVAIDS equipment provides navigation information to aircraft enabling safe navigation of the South African airspace.

The purpose of the RCMS is to monitor the performance and availability of the NAVAIDS equipment and enables maintenance personnel to perform maintenance and configuration actions on the NAVAIDS equipment. It also enables the distribution of the operational status of the NAVAIDS system to designated maintenance centres.

The existing satellite-based communication network were originally implemented under a navigation aids replacement project from 2005/2006 to 2007/2008. Since the original implementation the network has been expanded to include additional NAVAIDS sites deployed, and additional HUBs provided at the maintenance centres. The satellite bandwidth was increased from 0.5 MHz to 1 MHz and the network management system (NMS) and Remote Terminal firmware were upgraded to ensure consistency between all the sites and the maintenance centres.

The existing NAVAIDS Communication network (TSAT satellite communication network) is dedicated to low data rate communication via satellite.

The requirement is to upgrade the communication medium to cater for obsolete components on the network and address future data communication requirements for the organisation.

2.2 Project Deliverables

The Navigation Aids Communication network components upgrade project will facilitate the replacement of the aging and obsolete components on the network which will ensure that the network continues to provide the required service reliability and availability. The upgrade will also bring all components to the same hardware and software version, thus simplifying maintenance. It will improve the network performance and capacity by taking advantage of the new functionality available on the new hardware and software. The upgrade will ensure that the communication medium that is deployed will handle ATNS's future data communication requirements. (I)

The project caters for the upgrade of the Navigation Aids communication network system components. The scope of the project includes: (I)

1. Decommissioning of the obsolete components.
2. Disposal of the obsolete components in line with the approved ATNS waste management policy.
3. Supply, delivery, installation and commissioning of the new equipment/ components.
4. Civil work, electrical work and cabling as required.
5. Provision of basic and advanced training to maintenance personnel.
6. Maintenance and Support of the upgraded system

2.3 Document Contents

The technical specifications are divided into the following chapters: (I)

1. Chapter 1 – Current System Overview.
2. Chapter 2 – System Specifications.
3. Chapter 3 – Integrated Logistics Support Specifications.
4. Chapter 4 – Project Management Specifications.
5. Chapter 5 – Environmental Requirements.

CHAPTER 1 – CURRENT SYSTEM OVERVIEW

3 CURRENT SYSTEM OVERVIEW

The existing Terrestrial Satellite (TSAT) network consists of the following components: (I)

- HUB Stations
- Remote Terminals

3.1 HUB Stations

The system includes four Hub stations, with two located at the Johannesburg Maintenance Centre and two at the Cape Town Maintenance Centre. (I)

1. Hub 1 and Hub 2 is located at the Johannesburg Maintenance Centre with each hub consisting of the following: (I)
 - i. 1.8 Metre Parabolic Antenna and feed horn
 - ii. Ortho Mode Transducer (OMT)
 - iii. Block Upconverter (BUC)
 - iv. Low Noise Block (LNB)
 - v. Supervisory Terminal (PC with software)
2. Hub 3 and Hub 4 is located at the Cape Town Maintenance Centre with each hub consisting of the following: (I)
 - i. 1.8 Metre Parabolic Antenna and feed horn
 - ii. Ortho Mode Transducer (OMT)
 - iii. Block Upconverter (BUC)
 - iv. Low Noise Block (LNB)

3.2 Remote Terminals

The system includes a total of 52 operational and planned remote terminals and provision for 16 future remote terminals. (I)

1. Thirty-six (36) remote terminals are distributed between the operational navigation aid sites (DVOR/CVOR/DME) and maintenance centres and consisting of the following: (I)
 - i. 1.2m Antenna and feed horn
 - ii. Ortho Mode Transducer (OMT)
 - iii. Block Upconverter (BUC)
 - iv. Low Noise Block (LNB)
 - v. TSAT T3000 modem
2. Sixteen (16) remote terminals are distributed at the operational and planned navigation aid (DME standalone) sites each consisting of the following: (I)
 - i. 0.96m Antenna and feed horn
 - ii. Ortho Mode Transducer (OMT)

- iii. Block Upconverter (BUC)
 - iv. Low Noise Block (LNB)
 - v. TSAT T3000 modem
3. The network configuration makes provision for a further sixteen (16) remote terminals that could be deployed at future navigation aid (DME standalone) sites. (I)

3.3 Current Configuration and Allocation per Hub

1. The following tables show the **current** allocation of the Remote Terminals amongst the four hubs of the ATNS TSAT system. (I)

Table 1: Remote Terminals Currently Linked to Hub 1

No.	Site Name	Status	ID	RT	Site type
1.	Greefswald	Operational	GWV	3000	Remote (CVOR)
2.	Phalaborwa	Operational	PHV	3000	Remote (CVOR)
3.	Kruger Mpumalanga International airport	Operational	PKV	3000	Remote (DVOR/DME)
4.	Witbank	Operational	WIV	3000	Remote (CVOR)
5.	Pilanesberg	Operational	PNV	3000	Remote (DVOR/DME)
6.	Mahikeng	Operational	MMV	3000	Remote (CVOR/DME)
7.	Lanseria	Operational	LIV	3000	Remote (DVOR/DME)
8.	Grasmere	Operational	GAV	3000	Remote (CVOR)
9.	Heidelberg	Operational	HGV	3000	Remote (CVOR)
10.	Standerton	Operational	STV	3000	Remote (CVOR/DME)
11.	Warden	Operational	WRV	3000	Remote (CVOR)
12.	Greytown	Operational	GYV	3000	Remote (DVOR/DME)
13.	Ladysmith	Operational	LYV	3000	Remote (DVOR/DME)
14.	Pietermaritzburg	Operational	PMV	3000	Remote (DVOR/DME)
15.	Port St Johns	Operational	PJV	3000	Remote (DVOR/DME)
16.	Richards Bay	Operational	RBV	3000	Remote (CVOR/DME)
17.	ATA VOR	Operational	TST	3000	Remote (CVOR)
18.	Wonderboom	Operational	DPV	3000	Remote (DVOR)
19.	Upington centre	Operational		3000	Maintenance Centre (FAUP)
20.	TSAT test centre	Operational		3000	Maintenance Centre

Table 2: Remote Terminals Currently Linked to Hub 2

No.	Site Name	Status	ID	RT	Site type
1.	East London	Operational	ELV	3000	Remote (CVOR/DME) Maintenance Centre (LAN)
2.	George	Operational	GRV	3000	Remote (DVOR/DME) Maintenance Centre (LAN)
3.	Aggeneys	Operational	AGV	3000	Remote (DVOR/DME)
4.	Caledon	Operational	CDV	3000	Remote (CVOR)
5.	Alexander Bay	Operational	ABV	3000	Remote (DVOR/DME)
6.	Hoffmeyer	Operational	HMV	3000	Remote (CVOR/DME)
7.	Kimberley	Operational	KYV	3000	Remote (CVOR/DME)
8.	Nieuwoudtville	Operational	NVV	3000	Remote (CVOR)
9.	Petrusville	Operational	PVV	3000	Remote (CVOR)
10.	Port Elizabeth	Operational	PEV	3000	Remote (CVOR/DME) Maintenance Centre (LAN)
11.	Sishen	Operational	SSV	3000	Remote (CVOR)

12.	Sutherland	Operational	SLV	3000	Remote (DVOR/DME)
13.	Victoria West	Operational	LYV	3000	Remote (DVOR/DME)
14.	Welkom	Operational	PMV	3000	Remote (DVOR/DME)
15.	Ceres	Operational	CRV	3000	Remote (DVOR/DME)
16.	Bloemfontein	Operational	BLV	3000	CVOR/DME Maintenance Centre (LAN?)

Table 3: Remote Terminals Currently Linked to Hub 3

No.	Site Name	Status	ID	RT	Site type
1.	Bapsfontein	Operational	FAJS 1	3000	Remote (DME)
2.	Devon	Operational	FAJS 2	3000	Remote (DME)
3.	Magaliesburg	Planned	FAJS 3	3000	Remote (DME)
4.	Donkerhoek	Operational	FAJS 4	3000	Remote (DME)
5.	FACT 1	Future	FACT 1		Remote (DME)
6.	FACT 2	Future	FACT 2		Remote (DME)
7.	FACT 3	Future	FACT 3		Remote (DME)
8.	Sedgefield	Operational	FAGG 1	3000	Remote (DME)
9.	Jonkersberg	Planned	FAGG 2	3000	Remote (DME)
10.	Mosselbay	Planned	FAGG 3	3000	Remote (DME)
11.	Albertinia	Planned	FAGG 4	3000	Remote (DME)
12.	Oudtshoorn	Planned	FAGG 5	3000	Remote (DME)
13.	Outeniqua Nature Reserve	Planned	FAGG 6	3000	Remote (DME)
14.	FAPE 1	Future	FAPE 1		Remote (DME)
15.	FAPE 2	Future	FAPE 2		Remote (DME)
16.	FACT	Future			Remote (DME)

Table 4: Remote Terminals Currently Linked to Hub 4

No.	Site Name	Status	ID	RT	Site type
1.	FAPE 3	Future	FAPE 3		Remote (DME)
2.	FAPE 4	Future	FAPE 4		Remote (DME)
3.	FAPE 5	Future	FAPE 5		Remote (DME)
4.	Frasers Camp	Operational	FAEL 1	3000	Remote (DME)
5.	Kidds Beach	Operational	FAEL 2	3000	Remote (DME)
6.	Mdantsane	Operational	FAEL 3	3000	Remote (DME)
7.	Amatola	Operational	FAEL 4	3000	Remote (DME)
8.	Jongilizwe	Operational	FAEL 5	3000	Remote (DME)
9.	Mcleantown	Operational	FAEL 6	3000	Remote (DME)
10.	FALE 1	Future	FALE 1		Remote (DME)
11.	FALE 2	Future	FALE 2		Remote (DME)
12.	FALE 3	Future	FALE 3		Remote (DME)
13.	FALE 4	Future	FALE 4		Remote (DME)
14.	FALE 5	Future	FALE 5		Remote (DME)
16.	FACT MCS				Remote (DME)

3.4 SYSTEM ARCHITECTURE

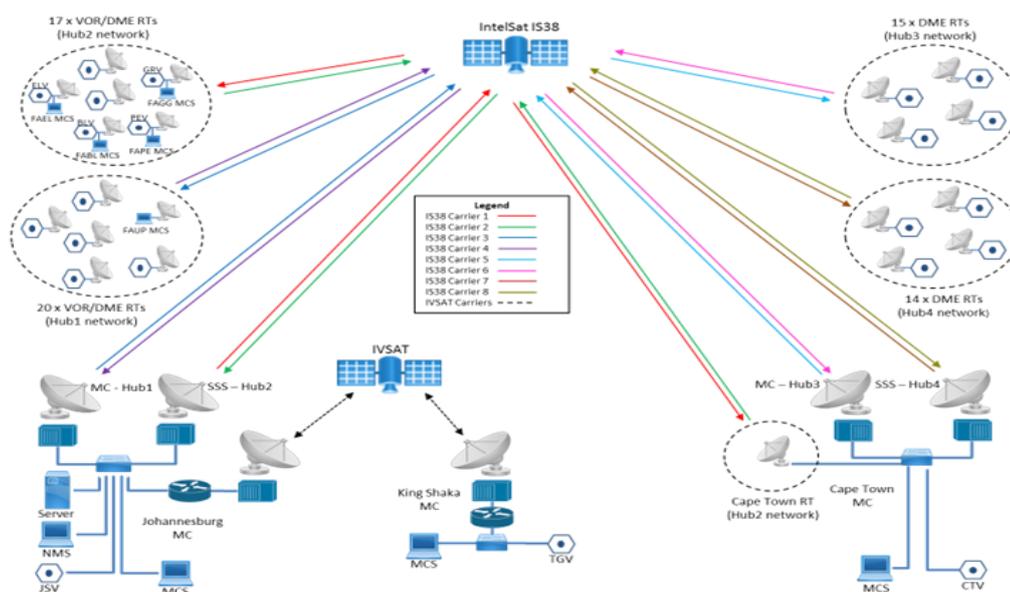


FIGURE 1: TSAT SYSTEM ARCHITECTURE

3.5 Proposed Configuration and Allocation per Hub

- The following tables show the **proposed** allocation of the Remote Terminals amongst the four hubs of the ATNS TSAT system. (I)

Table 5: Remote Terminals Proposed Allocation to Hub 1

No.	Site Name	Status	ID	RT	Site type
1.	Greefswald	Operational	GWV	3000	Remote (CVOR)
2.	Phalaborwa	Operational	PHV	3000	Remote (CVOR)
3.	Kruger Mpumalanga International airport	Operational	PKV	3000	Remote (DVOR/DME)
4.	Witbank	Operational	WIV	3000	Remote (CVOR)
5.	Pilanesberg	Operational	PNV	3000	Remote (DVOR/DME)
6.	Mahikeng	Operational	MMV	3000	Remote (CVOR/DME)
7.	Lanseria	Operational	LIV	3000	Remote (DVOR/DME)
8.	Grasmere	Operational	GAV	3000	Remote (CVOR)
9.	Heidelberg	Operational	HGV	3000	Remote (CVOR)
10.	Standerton	Operational	STV	3000	Remote (CVOR/DME)
11.	Warden	Operational	WRV	3000	Remote (CVOR)
12.	ATA VOR	Operational	TST	3000	Remote (CVOR)
13.	Bapsfontein	Operational	FAJS 1	3000	Remote (DME)
14.	Devon	Operational	FAJS 2	3000	Remote (DME)
15.	Magaliesburg	Planned	FAJS 3	3000	Remote (DME)
16.	Donkerhoek	Operational	FAJS 4	3000	Remote (DME)
17.	Wonderboom	Operational	DPV	3000	Remote (DVOR)

Table 6: Remote Terminals Proposed Allocation to Hub 2

No.	Site Name	Status	ID	RT	Site type
1.	Ladysmith	Operational	LYV	3000	Remote (DVOR/DME)

2.	Greytown	Operational	GYV	3000	Remote (DVOR/DME)
3.	Richards Bay	Operational	RBV	3000	Remote (CVOR/DME)
4.	King Shaka	Operational			Maintenance Centre (FALE)
5.	Pietermaritzburg	Operational	PMV	3000	Remote (DVOR/DME)
6.	Port St Johns	Operational	PJV	3000	Remote (DVOR/DME)
7.	FALE 1	Future	FALE 1		Remote (DME)
8.	FALE 2	Future	FALE 2		Remote (DME)
9.	FALE 3	Future	FALE 3		Remote (DME)
10.	FALE 4	Future	FALE 4		Remote (DME)
11.	FALE 5	Future	FALE 5		Remote (DME)
12.	Welkom	Operational	PMV	3000	Remote (DVOR/DME)
13.	Sishen	Operational	SSV	3000	Remote (CVOR)
14.	Kimberley	Operational	KYV	3000	Remote (CVOR/DME)
15.	Bloemfontein	Operational	BLV	3000	Maintenance Centre (FABL)
16.	Aggeneys	Operational	AGV	3000	Remote (DVOR/DME)
17.	Petrusville	Operational	PVV	3000	Remote (CVOR)
18.	Victoria West	Operational	LYV	3000	Remote (DVOR/DME)
19.	Hoffmeyer	Operational	HMV	3000	Remote (CVOR/DME)
20.	Uppington centre	Operational		3000	Maintenance Centre (FAUP)
21.	TSAT test centre	Operational		3000	Maintenance Centre

Table 7: Remote Terminals Proposed Allocation to Hub 3

No.	Site Name	Status	ID	RT	Site type
1.	Alexander Bay	Operational	ABV	3000	Remote (DVOR/DME)
2.	Nieuwoudtville	Operational	NVV	3000	Remote (CVOR)
3.	Sutherland	Operational	SLV	3000	Remote (DVOR/DME)
4.	Ceres	Operational	CRV	3000	Remote (DVOR/DME)
5.	Caledon	Operational	CDV	3000	Remote (CVOR)
6.	FACT 1	Future	FACT 1	3000	Remote (DME)
7.	FACT 2	Future	FACT 2	3000	Remote (DME)
8.	FACT 3	Future	FACT 3	3000	Remote (DME)
9.	East London	Operational	ELV	3000	Remote (CVOR/DME) Maintenance Centre (LAN)
10.	Frasers Camp	Operational	FAEL 1	3000	Remote (DME)
11.	Kidds Beach	Operational	FAEL 2	3000	Remote (DME)
12.	Mdantsane	Operational	FAEL 3	3000	Remote (DME)
13.	Amatola	Operational	FAEL 4	3000	Remote (DME)
14.	Jongilizwe	Operational	FAEL 5	3000	Remote (DME)
15.	Mcleantown	Operational	FAEL 6	3000	Remote (DME)

Table 8: Remote Terminals Currently Linked to Hub 4

No.	Site Name	Status	ID	RT	Site type
1.	Port Elizabeth	Operational	PEV	3000	Remote (CVOR/DME) Maintenance Centre (LAN)
2.	FAPE 1	Future	FAPE 1	3000	Remote (DME)
3.	FAPE 2	Future	FAPE 2	3000	Remote (DME)
4.	FAPE 3	Future	FAPE 3	3000	Remote (DME)
5.	FAPE 4	Future	FAPE 4	3000	Remote (DME)
6.	FAPE 5	Future	FAPE 5	3000	Remote (DME)
7.	George	Operational	GRV	3000	Remote (DVOR/DME) Maintenance Centre (LAN)
8.	Sedgefield	Operational	FAGG 1	3000	Remote (DME)
9.	Jonkersberg	Planned	FAGG 2	3000	Remote (DME)

10.	Mosselbay	Planned	FAGG 3	3000	Remote (DME)
11.	Albertinia	Planned	FAGG 4	3000	Remote (DME)
12.	Oudtshoorn	Planned	FAGG 5	3000	Remote (DME)
13.	Outeniqua Nature Reserve	Planned	FAGG 6	3000	Remote (DME)

CHAPTER 2 – SYSTEM SPECIFICATIONS

4 GENERAL REQUIREMENTS

4.1 Installation

1. All new network components or devices to upgrade the Navigation Aids Communication network shall be installed at the existing operational and planned sites as listed in Table 5 to Table 8. The Bidder shall cater for the supply, delivery and installation of the network components or devices at each of the sites as listed in Table 5 to Table 8. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The Bidder shall provide the list of components or devices and material to facilitate the installation at each of the site listed. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4.2 Environmental Conditions

1. The Navigation Aids communication network system and all its auxiliary components shall be capable of operating under the South African climatic conditions, as stated in Table 9, without degradation in performance. This includes:

Table 9: Climatic Conditions

Indoor Conditions	Ambient Temperature	-20°C to +50° C
	Relative humidity	≤ 95% for temperatures ≤ 35° C and ≤ 60% for temperatures > 35° C
Outdoor Conditions	High and Low Temperatures	-20°C to +60° C
	Relative humidity (Mean - Max)	60% - Saturation
	Altitude	0 – 2500 m
	Average rainfall	≤ 1200 mm
	Wind speed	≤ 160km/h

The Bidder shall confirm and provide supporting documentation to indicate compliance to the environmental conditions. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. All outdoor elements, structures and other auxiliary components shall withstand the effects of rain, hail, snow, storms, and attacks of animals, as well as the outdoor climatic conditions stated herein. The Bidder shall confirm and provide supporting documentation to indicate compliance to the environmental conditions. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The outdoor elements, structures and other auxiliary components shall be hermetically sealed and protected against corrosion and water ingress. Their protective casings/enclosures shall be at minimum International Protection Rating IP65. The Bidder shall confirm and provide supporting documentation to indicate compliance to the environmental conditions. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4.3 Power Requirements

1. The Navigation Aids communication network system and supporting infrastructure shall be compatible with the following mains power supply voltage standards. (D)
 - [a]. A 400/230V, 50 Hz, 3 phase, 4 wire power supply with grounded neutral or Single phase 230 V AC, with the following specifications:
 - i. Maximum voltage fluctuations shall be $\pm 10\%$
 - ii. Frequency shall be 50 Hz
 - iii. Maximum frequency deviations shall be ± 2 Hz

The Bidder shall confirm and provide supporting documentation to indicate compliance to the mains power supply standards. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. In the event of a mains power failure, the Navigation Aids communication network devices, components and supporting infrastructure per site shall be powered from a backup power supply. The backup power will be supplied by ATNS. The Bidder shall confirm and provide

supporting documentation to indicate compliance to the connection to the backup power supply. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4.4 Lightning Protection

1. Suitable lightning protection devices on all cables leaving the equipment shelter shall be supplied. The Bidder shall confirm that suitable lightning protection devices shall be provided and installed on all cables, as provided and installed by the Contractor, and provide supporting documentation to indicate compliance to the environmental conditions. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. Suitable lightning protection devices on all communication cables shall be supplied. The Bidder shall submit details of the lightning protection devices as applicable. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. Suitable lightning protection devices on power supply cables to the building or shelter shall be supplied. The Bidder shall submit details of the lightning protection devices as applicable. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4.5 Tools and Test Equipment

1. Any special tools and test equipment required for maintenance of the provided equipment shall be supplied. The Bidder shall indicate if any special tools and test equipment is required and confirm that it has been included in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

5 OPERATIONAL REQUIREMENTS

The installed components shall meet the operational requirements for the:

1. The Navigation Aids Communication network components upgrade project shall cater for a communication link between FAOR and FACT and between FAOR and FALE through the TSAT network as a backup link. The main link will remain on the ATNS domestic VSAT network. The Bidder shall confirm that the network upgrade and configuration will cater for the backup (redundant) link between FAOR and FACT, and between FAOR and FALE. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The Navigation Aids Communication network components upgrade project shall cater for the upgrade of all the TSAT HUB's and TSAT 3500 modem firmware. The Bidder shall submit supporting documentation and confirm that the upgrade of the HUB's and firmware are included in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The Navigation Aids Communication network components upgrade project shall cater for the reconfiguration and design of the network to optimize network performance. The Bidder shall submit supporting documentation and confirm that the reconfiguration and design of the network are included in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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6 SYSTEM REQUIREMENTS

6.1 Built-in Test Equipment (BITE)

1. The Navigation Aids communication network devices shall be equipped with a suitable BITE function, which can be used to isolate faults to PCB/LRU level and test the performance of the hardware and software. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The BITE functions must be independent from the navigation aid equipment remote control and monitoring operation. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The results of the fault-locating BITE programs shall be easily comprehensible and accessible through the local and remote interface and display unit. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.2 Security

1. Network security is required. The use of firewalls and / or physical separation from other networks will be required and maintained to prohibit unauthorised access to the network. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
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<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>

2. Network security features must be configurable to allow for future expansion/upgrades of the navigation aid equipment remote control and monitoring software and/or network. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.3 System Lifespan

1. The Navigation Aids communication system components or devices shall be designed to operate within specifications under the stated environmental conditions for a period of 10 years. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The system devices, components and supporting infrastructure shall support the system throughout the 10-year lifespan. The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.4 Hardware Requirements

1. The Navigation Aids communication network upgrade project shall cater for the replacement (supply, install and commission) of all the existing operational TSAT3000 modems with the TSAT3500 modems based on the quantities included under Table 10: Supply and Deliver

Quantities. The Bidder shall provide supporting documentation and confirm that provision has been made in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The Navigation Aids communication network upgrade project shall cater for the replacement of all the existing spare TSAT3000 modems with spare TSAT3500 modems based on the quantities included under Table 10: Supply and Deliver Quantities. The Bidder shall provide supporting documentation and confirm that provision has been made in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The Navigation Aids communication network upgrade project shall cater for the supply and delivery of two (2) spare TSAT 3500 HUB's to the FAOR maintenance centre. The Bidder shall provide supporting documentation and confirm that provision has been made in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4. The Navigation Aids communication network upgrade project shall cater for the supply and delivery of ten (10) spare BUC (NJT8302N BUC or equivalent) and ten (10) spare LNB's (NJR2841HN / NJR2841SN Universal LNB or equivalent) to the FAOR maintenance centre. The Bidder shall provide supporting documentation and confirm that provision has been made in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.4.1 TSAT 3500 Modem Characteristics

- a. The TSAT 3500 modem shall comply with the following characteristics:

- Type (Access/modulation/error coding): TDM/TDMA, QPSK, FEC (Viterbi / Turbo)
- BUC Power: 24Vdc
- LNB Power: 18Vdc
- RF interface: N type female
- Data interface: RJ45 Ethernet

The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.4.2 TSAT 3500 Hub Main Unit Characteristics

a. The TSAT 3500 Hub Main unit shall comply with the following characteristics:

- Type (Access/modulation/error coding): TDM/TDMA, QPSK, FEC (Viterbi / Turbo)
- BUC Power: 24Vdc
- LNB Power: 18Vdc
- BUC/LNB Ref: 10MHz
- RF interface: N type female
- Data interface: RJ45 Ethernet
- Compatibility: Backward compatible to RT 3000 modems

The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.4.3 BUC Characteristics

a. The BUS (NJT8302N BUC or equivalent) shall comply with the following characteristics:

- Frequency: Standard Ku Band (14.0 to 14.5 GHz)
- Output Power: 3W
- Input interface: N type female
- Output interface: WR75 waveguide flange (with groove)

The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.4.4 LNB Characteristics

a. The LNB (NJR2841HN / NJR2841SN Universal LNB or equivalent) shall comply with the following characteristics:

- Frequency: Low Band 10.70 to 11.70 GHz, High Band 11.70 to 12.75GHz, mechanical switch band select
 - Input interface: WR75 waveguide flange
 - Output interface: N type female
- The Bidder shall provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.5 System Configuration

1. A network diagram showing the new network layout after installation shall be provided. This should include the existing NAVAIDS sites and the new operational DME-DME sites. The Bidder shall confirm and provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. TSAT3500 firmware must include tagged VLAN traffic routing. The VLAN configuration shall be stored in the configuration files on the HUBs and RTs and controlled from the NMS. The Bidder shall confirm and provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. A Mesh Network Topology is desirable: Due to the regional distribution of the ATNS maintenance centres, there is a need in the navigation aid equipment remote control and monitoring system for a RT to communicate to another RT with low latency. In a normal star connected network this requires that the data transits through the hub node adding additional delays. A single carrier mesh TSAT network topology would eliminate the hub transit and consequently minimize communication latencies between the two RTs. The Bidder shall submit their proposal of the network topology. (D)

COMPLIANCE (C/PC/NC/NOTED)	
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<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>

- The Navigation Aids communication network upgrade project shall include a proposal on the reconfiguration and design to optimize network performance. The cost associated with the implementation of the proposal shall be included. The Bidder shall confirm that their proposal on the reconfiguration and design and associated costs is included in the submission. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.6 Software

- The Navigation Aids communication network upgrade project shall cater for the upgrade of the TSAT Network Monitor Software (NMS). The Bidder shall confirm that their proposal includes the upgrade of the TSAT Network Monitor Software. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- The upgrade of the NMS software and any associated licencing shall include the Dynamic Access Schemes, Slot Reservation and Request capability in order to improve the network performance. The Bidder shall confirm that their proposal includes the software and licencing to support the requirement. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- All required software shall be supplied as part of the Navigation Aids communication network upgrade project. The Bidder shall confirm that their proposal includes all required software to support the requirement. (D)

COMPLIANCE (C/PC/NC/NOTED)	
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<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>

- The supplied software shall be delivered with suitable copies for backup and restore purposes. The Bidder shall confirm that their proposal includes suitable copies to support the requirement. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- All supplied software shall be included under configuration control. The Bidder shall confirm and provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- Except for the NMS licencing, licencing is covered within the existing provision of 100 licences. The Bidder shall confirm and provide supporting documentation to indicate understanding of the requirement. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6.7 Supervisory Terminal

- A supervisory terminal that functions as the maintenance position and interface system for Remote Control, Monitor and Maintenance purposes shall be provided. The Bidder shall confirm and provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]

- One supervisory terminal shall be provided for each of the FAOR and FACT maintenance centres (two in total). The Bidder shall confirm and provide supporting documentation to indicate compliance to the requirements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
[INSERT FULL RESPONSE FOR EVALUATION HERE]	
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]	

7 QUANTITIES

Table 10: Supply and Deliver Quantities

Items	Quantity	Notes
TSAT3500 modem (RT)	36	For the VOR/DVOR network sites
TSAT3500 modem (RT)	10	For the DME-DME network sites
TSAT3500 modem (RT) Option	6	Option for the FAGG DME-DME network sites.
Spare TSAT3500 modem	10	Spares
Shipment, Installation, Commissioning	52	Installation, material and components to effect a turn-key implementation.
Spare TSAT3500 HUB	2	Spares
Workstations (Supervisory Terminal) - FAOR & FACT	2	Supervisory terminals

The Bidder shall confirm that their proposal includes and covers the items and quantities as indicated. (D)

COMPLIANCE (C/PC/NC/NOTED)	
[INSERT FULL RESPONSE FOR EVALUATION HERE]	
[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]	

8 SYSTEM INTERFACE REQUIREMENTS

8.1 Existing Interfaces

- All interfaces to the existing Navigation aid equipment at the existing sites will be maintained. (I)

9 TRAINING SYSTEM

- The training system (ATA VOR) at the ATA shall be installed to provide:

- a. Exposure to the technical staff to evaluate and demonstrate competence in fault finding; and
- b. Training of the technical staff to analyse and perform corrective maintenance on the system.

The Bidder shall confirm and provide supporting documentation to indicate compliance to the requirement. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

CHAPTER 3 – INTEGRATED LOGISTIC SUPPORT SPECIFICATIONS

10 LOGISTIC REQUIREMENTS

10.1 Integrated Logistic Support Plan (ILSP)

1. An ILSP to define, in detail, the support system that will be implemented for the ongoing support of this project shall be developed. An ILSP shall be submit as part of the proposal.

(D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The following Logistic Support Elements shall be included as part of the ILS Plan:

- [a] RAM.
- [b] Maintenance and support.
- [c] Installation and transitioning.
- [d] Packaging Handling Storage and Transportation (PHS&T).
- [e] Spares.
- [f] Test equipment, tools, and accessories.
- [g] Documentation.
- [h] Training and maintenance.
- [i] Warranty and PBU (Period of Beneficial Use).
- [j] Support Contract.

The Bidder shall provide supporting documentation and confirm that the ILS Plan covers the following elements. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.2 Reliability, Availability and Maintainability (RAM)

1. The Navigation Aids communication network devices shall be available for use with an availability of 99.98% throughout the system lifespan of 15 years. The Bidder shall indicate how the requirement will be complied with. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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2. The reliability and availability figures shall consider planned system downtimes for routine hardware and software maintenance. The Bidder shall indicate how the requirement will be complied with. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.3 Maintenance and Support

1. The Navigation Aids communication network devices shall be maintained using the current ATNS maintenance concept, based on O, I & D maintenance levels.
 - [a] O & I level maintenance shall be performed by our Technical Services personnel (Technicians).
 - [b] D level maintenance shall be provided by the OEM, through a maintenance and support agreement.

The Bidder shall indicate how the requirement will be complied with. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The software shall be configured in such a way that after the system has been commissioned, experienced and qualified computer programmers are not required for the operation and maintenance of the system. The Bidder shall indicate how the requirement will be complied with. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.4 Installation and Transitioning

1. Installation and Commissioning Plan, specifying all installation and commissioning activities shall be developed. The plan shall be approved by ATNS prior to the installation. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The Installation and Commissioning Plan shall state all aspects of the installation and transitioning. The plan shall include at least the following:
 - [a]. Installation and testing procedures.
 - [b]. Cabling arrangements, routing, identification.
 - [c]. Electromagnetic compatibility (EMC), Interference, susceptibility to foreign radio frequencies.
 - [d]. Earthing arrangements.
 - [e]. Equipment mounting, cooling.
 - [f]. Security and safety of equipment, materials, and tools during installation.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. A transitioning plan detailing all procedures, processes, and activities to be undertaken to ensure a seamless transition from the current system to the new system shall be developed and approved by ATNS. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.5 Packaging Handling Storage and Transportation (PHS&T)

- All PHS&T instructions, procedures and additional hardware requirements for the shipping and dispatch of items for repair/replacement shall be developed and provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.6 Spares

- All spare parts required to ensure the required availability of the Navigation Aids communication network devices system over its 15 years lifespan shall be provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- An itemized spare plan inclusive of all associated costs is required. The plan shall be based on maintaining and supporting the required Navigation Aids communication network devices availability figure throughout the 10 years lifespan. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.7 Test Equipment, Tools, and Accessories

- A list of recommended specialised test equipment, tools and accessories required to operate and maintain the Navigation Aids communication network devices and its auxiliaries down to LRU level shall be supplied. The Bidder shall indicate what specialised test equipment, tools and accessories are required and confirm that it has been included in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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2. The specifications and quantities of these test equipment, tools and accessories shall be provided. The Bidder shall confirm that it has been included in the proposal. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.8 Documentation

1. All project related documentation shall be provided to ATNS prior to SAT, in both soft and hard copies. At least, the following documentation is required:
 - [a]. Packaging, Handling, Storage and Transportation (P, H, S & T) plan.
 - [b]. Installation, testing and transition plan.
 - [c]. Logistics support plan.
 - [d]. Configuration management plan.
 - [e]. Life cycle cost document.
 - [f]. Interface control document.
 - [g]. Equipment specific documentation.
 - [h]. Documentation Plan.
 - [i]. As-built documents.
 - [j]. Spares Plan.
 - [k]. Training plan and documentation.
 - [l]. Service Manuals.
 - [m]. OEM and COTS documentation.
 - [n]. Brochures.
 - [o]. Maintenance support plan.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. All documentation shall be in the English language. (I)

10.9 Training and Maintenance

1. A list of all routine maintenance tasks that needs to be performed on the Navigation Aids communication network devices to ensure that the system performs to specifications for the duration of its lifespan shall be provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A maintenance and support contract shall be proposed to ATNS for consideration. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The maintenance training on the Navigation Aids communication network devices shall cover:
 - [a]. Basic maintenance training for shift personnel, and
 - [b]. Advance maintenance training for Engineering Technicians to maintain the system (all hardware and LRUs) including system configuration and software.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.10 Warranty and PBU

1. A period of one-year warranty starting from the date of site acceptance shall cover all repairs and replacements of hardware, as well as all corrections or modifications to software required for reasons of non-compliance with specifications or errors not detected during acceptance tests. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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- The operation of the Navigation Aids communication network devices will be monitored and evaluated at set intervals during the warranty period. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- The PBU is intended to monitor the performance of the system. The PBU shall run from the Site Acceptance Test (SAT) of the first installed site to the end of one year after the acceptance of the full system. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10.11 Support Contract

- A comprehensive support contract for all hardware and software components of the provided Navigation Aids communication network devices and supporting infrastructure shall be proposed for consideration by ATNS. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

CHAPTER 4 – PROJECT MANAGEMENT SPECIFICATIONS

11 PROJECT MANAGEMENT REQUIREMENTS

11.1 General

1. A project plan detailing the plan on how to execute the project as per the required quality, within budget and on time shall be provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The project plan shall detail the management, performance, monitoring, and coordination of the whole project from the project kick-off until the completion of the contract. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The project plan shall cover at least the following for review and approval by ATNS:

- [a] Project Management.
- [b] Resource management.
- [c] Risk management.
- [d] Quality management.
- [e] Communication management.
- [f] Installation, Transitioning and Commissioning.
- [g] Environmental Management Programme.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.2 Project Management Plan (PMP)

1. A Project Management Plan (PMP) for the project shall be developed in consultation with ATNS project manager. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A draft PMP that will be refined as necessary during the execution of the contract shall be submitted at the tender stage. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. The Project Management Plan shall include at least the following:
 - [a] Project scope and overview.
 - [b] Project deliverables.
 - [c] Work Breakdown Structure (WBS) defining the scope of work and resources necessary to meet the contract requirements. The work breakdown shall also include the work to be performed by ATNS.
 - [d] Project organization and responsibilities.
 - [e] Master Time Schedule (Gantt Chart).
 - [f] Quality assurance activities to be performed in the project.
 - [g] Configuration management activities (regarding hardware, software, and documentation version changes).

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4. The PMP shall be kept up to date, any changes made to the PMP will be subject to formal ATNS’s approval. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.3 Project Delivery Schedule and Scope Management

1. A project delivery schedule which details all project activities that needs to be undertaken for the successful completion of the project scope of work shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A Work Breakdown Structure (WBS) illustrating the breakdown of the project scope into activities that can be managed, monitored, and measured in terms of duration, cost and resources shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.4 Resource Management

1. A resource management plan that provides details of the project team allocated to carry out the scope of the project shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A roles and responsibility matrix shall be drawn up for each project team member to highlight their involvement on the project. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.5 Risk Management

1. A risk management plan that stipulates how project related risks will be identified, assessed, and mitigated shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The plan shall articulate the assessment methodology to be used in quantifying risk ratings attached to each identified risk. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.6 Quality Management

1. A proof or copy a valid ISO 9001:2015 or equivalent Quality Management System Certificate shall be submitted to ATNS. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A Quality Assurance Plan for the project detailing how quality will be controlled, assured, and maintained throughout the lifecycle of the project shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
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<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>

- The Quality Assurance Plan shall describe the organization, processes, tasks, and responsibilities with respect to quality assurance. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- The Quality Assurance Plan shall identify all documents to be produced in appropriate phases of the project and shall state how these documents are checked for adequacy. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- The Quality Assurance Plan shall identify the standards, practices, conventions, and metrics to be applied and shall state how compliance with these items is to be monitored and assured. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.7 Communications Management

- A communications management plan for the project detailing how project related information shall be communicated to various project stakeholders shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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2. Preparation, active participation, and response to project meetings as per the project schedule is desired. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. Reports shall be prepared, presented and adequate documentation shall be produced as and when required for project meetings. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4. A project status report shall be compiled and submitted to ATNS at agreed intervals during the project to inform ATNS of the status of the project. The project status report shall include the following:
 - [a] The project risks and their mitigation plans.
 - [b] Project issues and their proposed resolutions.
 - [c] Tasks completed and tasks outstanding.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.8 Installation, Transitioning and Commissioning

1. An installation, transitioning and commissioning plan detailing how the scope of work will be carried out at each site shall be prepared. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
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<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>

- The Installation, Transitioning and Commissioning Plan, specifying all installation and transition activities, shall be approved by ATNS authority prior to the installation. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- The system installation and setting up to work of the system shall be the responsibility of the contractor. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- ATNS authorities shall be notified when installation on a site is finished, and commissioning may commence. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

- ATNS authorities shall conduct an inspection of the site and the installation itself prior to site acceptance taking place. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6. If defects or deficiencies are found during the site inspection, ATNS’s Project Manager shall notify the contractor’s representative with a report of all issues found. Necessary remedial actions at no expense to ATNS shall be implemented if any issues are found, and the site inspection procedure shall be repeated. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

7. The commissioning and transition to the new system shall be the responsibility of the contractor. Transition activities shall be performed in accordance with the final Installation Plan. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

11.9 Environmental Management Programme

1. An environmental management programme detailing the approach to be taken for minimizing negative environmental impacts through the project phases for all sites, which must be approved by ATNS prior to project implementation, shall be prepared. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

12 SYSTEMS ENGINEERING

12.1 General

1. A turn-key solution (i.e., fully integrated, operational, and maintainable system), is required. (I)
2. A description of how technical requirements will be integrated to ensure compatibility of all physical, functional and software interfaces in a manner which optimizes system definition

and design shall be provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. A description of how design problems will be resolved during the development, installation, setting to work, testing, and commissioning phases to ensure the final product is consistent with performance requirements shall be provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

12.2 Engineering Approach

1. A proposal of the system engineering management plan that will articulate the systems engineering process to be followed for requirements validation, verification and management shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A proposed test and evaluation plan covering all methods and procedures to be followed in performing various tests to be conducted during the project (e.g., FAT, SAT, etc) shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. A plan on how the transition from the existing installation, commissioning and acceptance of the new Navigation Aids communication network shall be developed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4. A Contract Data Requirements List (CDRL) that shall incorporate all data requirements in line with the project specifications and understanding of the project scope of work shall be proposed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

12.3 Factory Acceptance Testing (FAT)

1. Factory acceptance testing (FAT), where required, shall be performed to verify that the equipment fully complies with the specification requirements. Non-complying equipment will not be accepted. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A test specification (FAT plan and procedures) with at least the following, shall be provided:
 - [a] A detailed description of the proposed test techniques and procedures to verify all equipment parameters.
 - [b] Conditions under which the tests shall be conducted and approved.
 - [c] The forms of documenting test results.
 - [d] A schedule for such tests.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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3. All factory acceptance tests shall be carried out before the system installation and based on a test specification submitted to ATNS. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4. The FAT plans and procedure shall be sent to ATNS and agreed upon before any FAT can be carried out. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

5. All FAT procedures shall comply with and be performed in accordance with applicable standard documents, recommended practices, or procedures (e.g., ICAO, EUROCAE). The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6. ATNS technical team reserves the right to request some further tests to be performed (which are not listed in the FAT specification) if deemed necessary. These tests shall be also noted in the FAT report. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

7. ATNS will have the option to participate and be part of the FAT process and activities. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

8. All failures that occur during the FAT shall be rectified at no cost to ATNS, and all relevant tests shall be repeated. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

9. A report stating all the successful completion or unsuccessful attempts of the FAT with all measurements and results shall be compiled. The report shall be agreed upon and signed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

10. The FAT Certificate shall be issued after successful completion of the FAT. The FAT Certificate shall be prepared, signed, and sent to ATNS within an agreed time according to the official communication procedure. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

12.4 Site Acceptance Testing (SAT)

1. The purpose of a Site Acceptance Test (SAT) is to demonstrate compliance of the delivered equipment and proper functioning of the system after commissioning. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. The SAT shall be carried out after the system installation on each site based on a test specification. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. ATNS reserves the right to request further tests to be performed (which are not listed in the SAT specification) if deemed necessary. These tests shall be also included in the SAT report. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

4. All failures that occur during SAT shall be rectified at no cost to ATNS, and all relevant tests shall be repeated. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

5. All test equipment that are deemed necessary for the SAT shall be provided. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

6. A report stating all the successful completion or unsuccessful attempts of SAT with all measurements and results shall be compiled. The report shall be agreed upon and signed. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

7. After successful completion of all site acceptance tests, the system shall be formally accepted by ATNS. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

8. ATNS shall grant formal acceptance if the system complies with the contract specification, SAT have been successfully completed and signed and approved SAT report have been issued. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

9. A SAT Certificate shall be issued after successful completion of SAT. The SAT Certificate shall be prepared, signed, and sent to ATNS within an agreed time according to the official communication procedure. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

CHAPTER 5 – ENVIRONMENTAL REQUIREMENTS

13 SAFETY, HEALTH AND ENVIRONMENTAL (SHE) REQUIREMENTS

13.1 Environmental Requirements

1. Environmental requirements should address at least the following deliverables:
 - [a] Assessment of existing environmental authorizations should be conducted to ensure considerations of the approval conditions are complied with
 - [b] Screening of project activities and location for potential of triggered listed activity as per National Environmental Management Act (No. 107 of 1998) EIA Regulations 2014 (as Amended 2017), shall be conducted to determine if an environmental authorization is required
 - [c] Environmental Management Programme detailing how identified environmental aspects will be managed throughout the project execution
 - [d] Waste Management Plan
 - [e] Rehabilitation Plan
 - [f] Responsible sourcing of sustainable materials shall be prioritized, where practical.
 - [g] Energy Efficiency

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

13.2 Occupational, Health and Safety (SHE)

1. All work carried out for the project shall comply with the requirements of the Occupational, Health and Safety Act where applicable. Provision for any costing involved with these requirements shall be included in the pricing Schedule under the relevant heading on the Project Management sheet. The response shall include the following documents:
 - [a] Letter of good standing.
 - [b] Company SHE policy.
 - [c] SHE plan.
 - [d] Baseline risk assessment as per the client’s scope of work.
 - [e] OHS competency certificate i.e. First aider, legal liability, incident investigator, H&S representative.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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2. A SHE file shall be submitted to the ATNS SHE unit before the commencement of work. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

13.3 Sustainability

1. 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 at least the following:
 - [a] Energy efficiency pertaining to all aspects of the project.
 - [b] Environmentally sustainable materials and products.
 - [c] Biodiversity management i.e., soil erosion, clearance of vegetation, rehabilitation of the site, all flora and fauna protection.
 - [d] Waste management.
 - [e] Water management.
 - [f] Air quality management i.e., dust suppression; and
 - [g] Visual impact.

The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

13.4 Materials

1. Environmentally friendly materials shall be used, where practical, in the design and manufacturing of the NAVAIDS communication network devices and its auxiliary components to reduce the environmental and social impact of the product lifecycle. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	

<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>
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13.5 Waste handling and disposal

1. Waste management shall be done in accordance with the ATNS Integrated Waste Management Policy and Procedure. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

2. A waste management plan, including a disposal plan, must be developed per the principles of the National Environmental Management Act (NEMA): Waste Act (No.59 of 2008). Certificates of disposal must be submitted to ATNS. The technical specifications of the project need to consider the environmental risks associated with the project and it must adhere to ATNS' Environmental Policy. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

3. As per NEMA, Section 28 (Duty of Care) each site shall be rehabilitated to the state it was found in or better prior to the execution of project activities. Therefore, a Rehabilitation Plan will have to be compiled and submitted to ATNS for approval. The Bidder shall provide supporting documentation to indicate compliance. (D)

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

13.6 Energy Efficiency

1. The NAVAIDS communication network devices and its auxiliary components shall be energy efficient as far as possible, that is: The Bidder shall provide supporting documentation to indicate compliance. (D)

[a]. The NAVAIDS communication network devices shall be equipped with an automatic power-down feature to enable the equipment to remain on idle or standby mode when not in use to save power.

COMPLIANCE (C/PC/NC/NOTED)	
<i>[INSERT FULL RESPONSE FOR EVALUATION HERE]</i>	
<i>[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]</i>	

THE END