**APPOINTMENT OF THE SERVICE PROVIDER FOR THE PROVISION OF THE WAM-ADSB PHASE 1 AIRCRAFT FLIGHT TRIAL SERVICES**

**REQUEST FOR PROPOSAL: ATNS/ RFP035/FY22.23/WAM-ADSB PHASE 1 AIRCRAFT FLIGHT TRIAL SERVICES**

**VOL 2,3&4**

**TECHNICAL REQUIREMENTS**

1. **Introduction**
	1. The Air Traffic & Navigation Services Company Ltd (Reg. No. 1993/004150/06) has identified a need for a cooperative secondary surveillance Project (WAM&ADS-B Surveillance Project) that will provide surveillance services to Air Traffic Management (ATM) or Air Traffic Control (ATC) applying Multilateration and ADS-B technology. The WAM&ADS-B system coverage is targeted at the airspace where there is minimal or no radar coverage.
	2. The WAM&ADS-B system is an aeronautical radio-navigation and radiolocation services provision system that operates within the allowable aviation spectrum of 1030MHz for transmission and 1090 MHz for receiving of surveillance data.
	3. Multilateration (WAM) applications, particularly when combined with Automatic Dependent Surveillance – Broadcast (ADS-B), are expected to provide important operational improvements by addressing some of the limitations of the traditional radar surveillance system optimising the controller workload, and providing benefits in the areas of safety, capacity, efficiency and environmental impact, thus contributing to the overall CNS/ATM objectives.
	4. To ascertain the technical performance of the WAM&ADS-B system, aircraft flight trial service provider is required to provide aicraft flight services for the above mentioned system.
	5. During the WAM&ADS-B flight trial exercise, dedicated Flight Tests are used to generate ASTERIX and GPS data for evaluation purposes whereby the aircraft’s behaviour can be controlled and position can be accurately measured using GPS equipment.
	6. Your company is therefore invited to submit a formal proposal for the provision of flight trial services during the testing of these new WAM&ADS-B system. Please provide ATNS with an official quotation for the hourly rate and any additional costs if applicable.
2. **Background**
	1. The WAM&ADS-B flight trial is scheduled to take place in **31** **October 2022**. The flight calibration activity is planned over a total of **40 estimated flight hours**. Actual flight briefing times will be communicated closer to the flight trial dates.
3. **Response to this document**
	1. 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.
	2. 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 **M**andatory, **D**esirable, **O**ptional or for **I**nformation only. **ALL RESPONSES TO THE REQUIREMENTS IN THIS DOCUMENT SHALL BE PROVIDED AS FOLLOWS:**
	3. TENDERERS SHALL RESPOND IN FULL TO EACH ITEM IN THE FORMAT PROVIDED AND REFERENCES 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**.
	4. 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”**.
	5. 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.

* 1. For paragraphs marked “PC” or “NC”, Tenderer’s shall 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.
1. **Applicable Documents**

The following standards shall apply:

1. EUROCONTROL Standard Document for Radar Surveillance in En-route and Terminal Areas (Document Reference SUR.ET1.1000-STD-01- 01, Edition 1.0, dated March 1997
2. EUROCONTROL Standard Document for Radar Sensor Performance Analysis (Document Reference SUR.ET1.ST03.1000-STD-01-01, Edition 0.1, dated June 1997 (Working Draft)),
3. ICAO Annex 10 (Recommendations) (up to the latest Amendment
4. ICAO Document 8071 "Manual on the Performance Testing of ATC Radar Systems" (latest Edition)
5. ICAO Document 9924 “Aeronautical Surveillance Manual” 3rd Ed
6. **Flight Test Aircraft – Technical and Operational Requirements**
	1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall either be Beechcraft Bonanza, Cessna Citation II, Sabreliner, Jet Commander, Pilatus PC12, Beechcraft Jetstar or any other jets or aircraft of similar size in line with ICAO Document 8071 Volume III stipulations. (D)

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

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be capable and certified to support comprehensive vertical coverage testing between 1000ft AGL to FL145, as well as comprehensive lateral testing of designated service volumes and performance volumes for the Terminal and en-route environment which includes critical controlled airspace coverages, uncontrolled airspace (class G), and adjacent FIR buffer areas (A typical flight test trajectory examples can be provided if required). (D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be required to operate accross South African international borders for a specified period of time. (D)

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| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be required to operate in the military airspace and restricted airspaces in line with ASBU (FRTO) requirements. (D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be equipped with certified Mode A/C transponder as the certified transponder is essential to ensure correct test results. (D)

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

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be equipped with a certified combined Mode- A/C/S transponder. (D)

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

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be equipped with a top and bottom omni-directional antenna (also known as diversity antennas). (D)

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

* 1. The dedicated aircraft used during the WAM&ADS-B system Flight Test(s) shall be equipped with a certified Automatic Dependent Surveillance – Broadcast (ADS-B) transponder with a corresponding and appropriate certification as the certified transponder is essential to ensure correct test results.

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| **CMPLIANCE (C/PC/NC)** | *Only responding C/PC/NC will not be accepted without proof.* |  |
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| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The flight test aircraft transponder shall have the capability to switch off ADS-B transmission.(D)

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| **CMPLIANCE (C/PC/NC)** | *Only responding C/PC/NC will not be accepted without proof.* |  |
| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The aircraft transponder(s) used during the Flight Test(s) shall be compliant to the ICAO adopted technical standards found in EUROCONTROL Standard Document for Radar Sensor and MLAT and ADS-B Performance Analysis as well as ICAO Document 8071 Volume III and Document 9924.(D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The aircraft transponder(s) shall be compliant to EUROCONTROL Standard Document ED-73E, ED 102/A and show the following specifications: (D)

|  |  |
| --- | --- |
| Transponder Type | Mode A/C/S Class 1  |
| ADS-B 1090 ES  | ICAO link Version 1/2 |
| Transponder Power | ≥125 watts (51 dBm)  |
| Transponder Sensitivity | ≤ -73 dBm  |
| Transponder Antenna Gain | 0 dB  |

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The aircraft shall be equipped with a GPS receiver. (D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The aircraft shall be equipped with high accuracy GPS equipment capable of measure horizontal position with sub-meter accuracy. (D)

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

* 1. The GPS equipment shall be able to record position at least once per second and providing data recordings in NEMA GGA format. (D)

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| *[INSER FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. If the aircraft has the GPS coupled to the flight management system / autopilot, it would be a benefit if it has a data download feature*.* (D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The GPS receiver shall be able to record data in NMEA0183 GPGGA format. This receiver can be a stand-alone receiver with position accuracy of ≤10m. A logging rate of 1s is preferred. (D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. The Contractor shall provide an AMO proof of a Ramp Test performed that confirms that the transponder/s (Mode A/C/S and ADS-B) are serviceable and meets the operational requirements as well as technical standards. (D)

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| *[INSERT FULL RESPONSE FOR EVALUATION HERE]* |
| *[INSERT REFERENCE TO ADDITIONAL INFORMATION HERE]* |

* 1. It shall be possible to manually switch on/off the transponder and to manually change the following information: (D)

- Aircraft ID (In case of Mode-S transponder and ADS-B transponders)

- A Code (incl. Emergency Codes)

- To trigger SPI

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

*Should you require any clarifications or additional information, please do not hesitate to contact the undersigned.*

1. **Flight Test Aircraft – Aircraft and Operator Information**

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|   |   |   |   |   |
|   | **Name of Company/Operator, Address & Contact Details:** |  |   |
|   |  |  |  |   |
|  | **Date of Application:** |  |  |  |
|  |  |  |  |  |
|  | **Aircraft Specification:** |  |  |  |
|   |  | * Aircraft Type, Registration, Call Sign, Color:
 |  |   |
|   |  | * Flight Management System(s) Details:
 |  |   |
|  |  | * Data download feature (Yes/No):
 |  |  |
|  |  | * GPS(s) receiver type:
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|  |  | * GPS position accuracy:
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|  |  | * GPS data output format:
 |  |  |
|  |  | * GPS logging rate:
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|  |  | * Aircraft equipped with certified Mode S 1090 ES (ADS-B), Mode A/C, transponders (Yes/No):
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|  |  | * Certified transponder(s) (Yes/No), Type, Class, Quantity, and details:
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|  |  | * Number of transponders and location:
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|  |  | * Dedicated Mode-A/C only transponder (Yes/No):
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|  |  | * Dedicated Mode-S and ADS-B transponder (Yes/No), Quantity, and details:
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|  |  | * Aircraft transponder(s) ICAO Compliant (Yes/No), meet ICAO ratings (Yes/No):
 |  |  |
|  |  | * Transponder(s) power:
 |  |  |
|  |  | * Transponder(s) sensitivity:
 |  |  |
|  |  | * Transponder Antenna Gain:
 |  |  |
|  |  | * VHF COM 1 and 2
 |  |  |
|  |  | * Altimeter 1 and 2
 |  |  |
|  |  | * SATCOM / SAT PHONE
 |  |  |
|  |  | * TCAS
 |  |  |
|  |  | * Diversity Antennas
 |  |  |