



International Civil Aviation Organization

**MIDANPIRG CNS/ATM/IC Sub-Group
(CNS/ATM/IC SG)**

**Seventh Meeting
(Cairo, Egypt, 07 – 09 October 2013)**

Agenda Item 5: Regional Air Navigation Planning and Implementation

**PROGRESS REPORT ON NAVISAT PROJECT
AIR NAVIGATION SATELLITE SYSTEM FOR MIDDLE EAST AND AFRICA**

(Presented by Egypt)

SUMMARY
<p>This paper describes the Status of the NAVISAT project, and its future steps that will mainly provide significant benefits for the Civil Aviation Community in Africa and Middle East Regions</p> <p>Action by the meeting is at paragraph 6.</p>
REFERENCES
<ul style="list-style-type: none"> - GNSS TASK FORCE (GNSS TF/7) - MIDANPIRG/11 - MIDANPIRG/12 - PBN/GNSS TF/2
<p>This Working Paper is related to Strategic Objectives: D</p>

1. HISTORICAL BACKGROUND

1.1 NAVISAT project started as an Egyptian initiative to support the Aviation Communication and Navigation infrastructure in the Middle East and Africa Region.

1.2 In November 2006 NAVISAT Middle East & Africa Company had been established, in accordance with the provisions of the laws in force in the Arab Republic of Egypt Law No. 159/1981 and in March 2007 the Egyptian Cabinet approved the establishment of the "NAVISAT Middle East and Africa" as a Regional company.

1.3 NAVISAT finalized the Business and Technical studies of the project in November 2012 with the assistance of International consultants.

1.4 The Business and Technical studies had a cost of 8 M US\$.

1.5 NAVISAT started the fund raising of the project in December 2012.

1.6 The tender RFP has been released in 2013 and it is planned to sign the manufacturing contract of the Satellite systems by the end of 2013.

2. DISCUSSION NAVISAT MISSION

2.1 NAVISAT Middle East & Africa, aims at filling the gap in the Worldwide Satellite-Based Air Traffic Management services in Africa and Middle East Region with a safe, highly-available, multifunctional satellite system and complied with ICAO requirements to improve airspace safety and efficiency with competitive prices. The system is envisaged to provide Safety Communication, Augmented Navigation and Surveillance/Air Traffic Management (CNS/ATM) Services over the Middle East and Africa Flight Information Region (FIR), NAVISAT also offers a large capacity of Ka-band for Commercial use.

3. NAVISAT HIGH LEVEL STRATEGIC OBJECTIVES

3.1 To allow Major Improvements in CNS/ATM services, and to contribute to improving the safety and efficiency of air transport.

3.2 As a secondary mission, the system shall support other Aviation, Maritime and Land Based Complimentary Services.

3.3 To be the Preferred Provider in Terms of Quality of Service & Cost-Effectiveness from both the system operator and the users' viewpoints.

3.4 To Use Existing Infrastructure to the extent reasonable and possible.

3.5 To cover a large Region (AFI/MID), while being Interoperable with systems from other Regions.

3.6 To setup a Governance Structure that reflects the International nature of the project.

3.7 To have an operational system in place by 2016.

4. OFFERED SERVICES

4.1 The NAVISAT is planned to offer the following services in the Middle East and Africa Regions at competitive price.

Aeronautical Mission

4.2 The main mission of NAVISAT is to provide Aeronautical Satellite Services to aviation stakeholders in Africa & Middle East.

4.2.1 Mobile Communications for Civil Aviation's and Airlines (Ground-air voice and data communications for air traffic control and operational services).

I. Air Traffic Services

- Aeronautical Mobile Satellite Services (AMSS), which Can be used for Air Traffic Services (ATS):
 - Satellite Voice
 - Satellite Data Link (Controller Pilot Data Communications CPDC)
 - Satellite ADS (Automatic Dependents Surveillance)
- This NAVISAT Service offerings can support an implementation of FANS operations in Africa and the Middle East.
- NAVISAT also supports aircraft communications to Air Line Operational Centers (AOC).

II. Airline Communication

- NAVISAT can provide non safety critical communication, i.e. airline administrative communications (AAC).

4.2.2 Fixed Communications for Civil Aviation's (Ground-ground voice and data links for air traffic services and operational services).

I VSAT Communication Link

- VSAT communication link to ANSPs and aeronautical VSAT Network Operations (e.g. SADC, NAFISAT, ...)
 - VSAT Voice (narrow bandwidth, low latency)
 - VSAT Data (high bandwidth)
- This NAVISAT Service offering can support the connection between remote CNS infrastructure and ATC centres e.g Radar Stations, VHF, radio stations, ground navigation aids, ...)

4.2.3 **Navigation Payload**

- I Broadcast of SBAS signal in space over the region of the Africa & Middle East.
- II. Operation of SBAS supported Approach flight procedures where no precision approach systems (Instrument Landing Systems, ILS) are available.
 - Integrity Data
 - Correction Data
 - Enhancement of GPS Accuracy

Complementary Mission

4.3 NAVISAT complementary mission provide Telecom services to commercial and private FSS network operators.

4.3.1 Broadband services, FSS communication capacity to commercial Network Operators:

- Commercial Public networks (e.g. internet service providers)
- State-owned networks (e.g. telecom infrastructure support)
- Private (e.g. corporate communications)

4.3.2 Enterprise VSAT, the customer is a business purchasing networking and internet services for Oil & Gas, Mining, Corporations, Banking, ..etc.

4.3.3 Cellular Backhauls, provide the service of relaying cellular data between gaps in mobile operator's tower network

- An operator connecting a remote area to the core network

4.3.4 IP trunking, provide the service of relaying data between points in core network An operator looking to provide redundancy.

4.3.5 SNG, would serve the customer by relaying the data uploaded to the studio

- Video is shot by onsite reporting team then uploaded via satellite to the studio
- Video is shown live or edited and shown later

5. NAVISAT STATUS

5.1 Fund Raising, NAVISAT held a conference for the potential investors in December 2012 and NAVISAT has received a letter of commitment of more than 50% of the required Equity from a major investor and in process to get the remaining portion of the Equity from other potential shareholders, NAVISAT has signed a mandate letter with a group of (6) Egyptian banks to provide more than 60% of the Debt portion and the remaining Debt will be provided through the Export Credit Agency (ECA).

5.2 The RFP documents have been finalized and released to the potential Satellite vendors for the procurement of the satellite systems, it is planned to sign the procurement contract in December 2013 and the satellites will be launched in year 2016.

5.3 Frequency Coordination's: NAVISAT has (6) orbital slots registered in the ITU (Navisat-2A, -7A, -9A, -11A, -12A and -14A), NAVISAT has almost finished the frequency coordination with the majority of the affected administrations and the coordination with the remaining administrations (few) is going well, NAVISAT has a high confidence to secure the required frequencies for NAVISAT system.

6. ACTION BY THE MEETING

6.1 The meeting is invited to note the information contained in this paper.