Work shop on the applications of GNSS

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Planned DGPS System SANA'A International Airport

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Outlines

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1.Background

- In SANA'A International Airport, (CAMA is currently commissioning instrument landing system (ILS) comprising the following components localizer, glide path and distance measuring equipment (DME).
- Conventional methods are expensive, tedious and have some limitation ,
- Signals from GPS have proven to be fast, accurate and cheaper alternative to conventional methods. Recognized growing importance of DGPS, a new landing aid system based on GPS will be implemented .
- According the standard and recommended practices from ICAO,
- CAMA is now planning Differential GPS landing system for SANA'A International Airport

2.Introduction

- Since the implementation of GNSS operations requires to be considered a number of elements, CAMA will establish the GNSS implementation team .
- GPS systems' accuracy, availability and reliability are subjected to numerous biases or errors. To meet the operational requirement , augmentation system is required.
- After setting up team, goals and objectives, CAMA will move GNSS forward on step by step basis.
- Priority will be necessary GNSS ground infrastructure and local area ground-based augmentation system to enhance accuracy.

2.Introduction (continued)

- In order to provide CAT-I precision instrument approach and landing , GBAS will be installed in SANA'A International Airport.
- For wide area, SBAS and GRAS will be the future consideration.

3.Initial Phase

- GNSS implementation team was set up.
- Fully coordinate within ICAO planning and implementation regional groups.
- CAMA is frequently sending its staffs to abroad training in order to be able to cope with knowledge regarding to GNSS.
- GNSS master plan will be established to facilitate the smooth implementation of GNSS infrastructure and support the aviation industry.

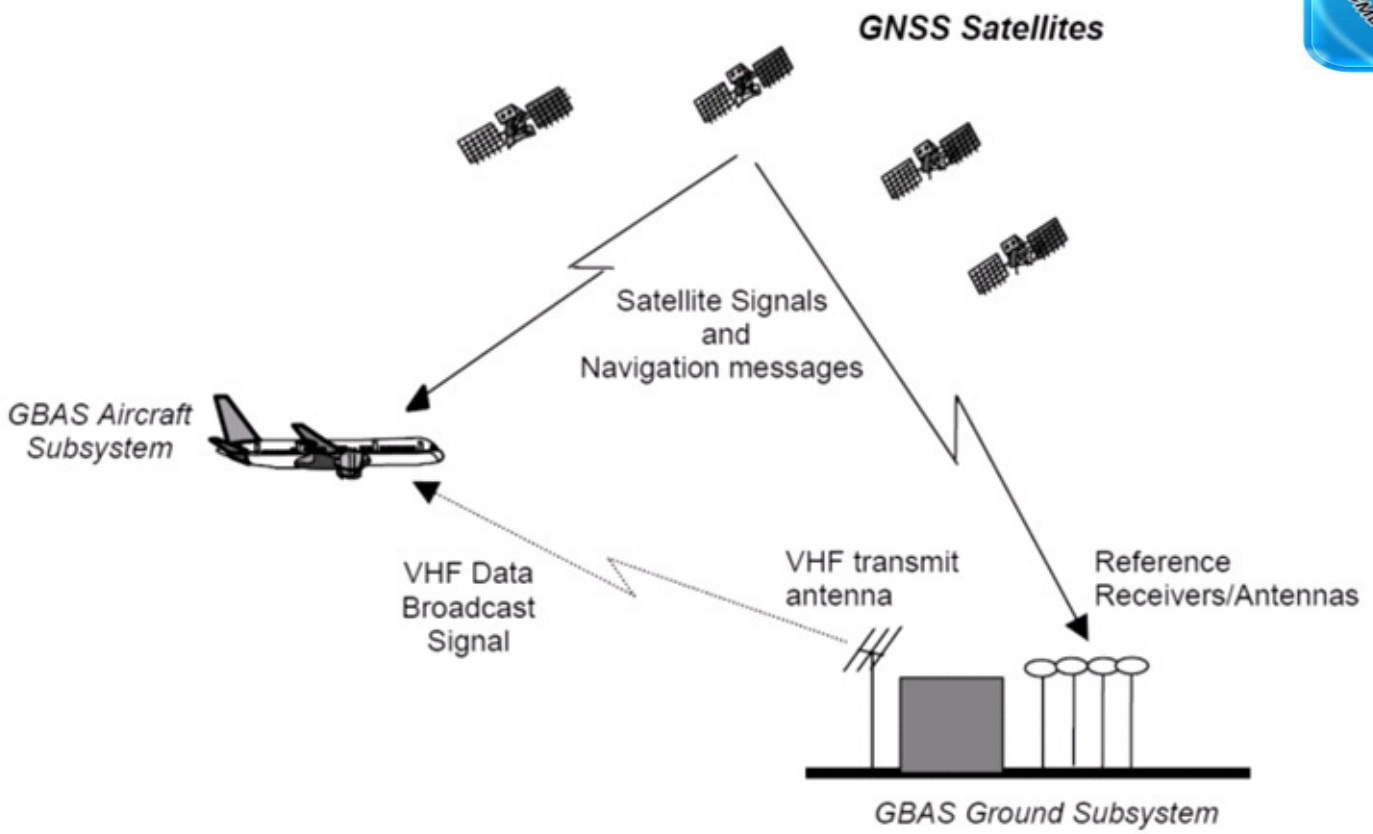
3.Initial Phase (continued)

- Engineers will foster a cooperative approach to developing the standards, systems, procedures and the terms and conditions of regulatory approvals that respond to the needs of the aviation community.
- GNSS will be implemented through active participation of regulatory, service provider organizations, and user representatives.

4.Steps to Implementation

- Organization of GNSS implementation team
- Feasibility studying
- Establishing master plan
- Training, workshop, seminar
- Establishing infrastructure
- Augmentation system enhancement
- Technology development
- International collaboration

5.Proposed GBAS architecture



5.Proposed GBAS architecture(Continued)

- In order to make sure that aircraft receive the benefits of GNSS technology in a timely and effective fashion, while maintaining high standards of safety.
- Provide precision approach capacity CAT-I at SANA'A International Airport.
- Focuses its service on the airport area (approximately a 30 km radius).
- Provide area navigation (RNAV) capacity, instrumental departures, and surface movement to operations in the terminal area.
- Carry out new advanced instrumental procedures to allow for a more flexible use of the air space.

5.Proposed GBAS architecture (Continued)

- In order to meet ICAO GNSS performance requirements, GBAS project will be great help of improve accuracy horizontal, accuracy vertical, integrity, continuity and availability.
- For safety-critical GPS applications, Receiver Autonomous Integrity Monitoring (**RAIM**) technology will be introduced to provide integrity monitoring of GPS for aviation applications.

Thank you For Attention

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