02/07/2020

Akshatha.V.C
4AU18ECO05

→ Introduction to Global Positioning:

- why SBAS? : GNSS Aviation Integrity.
- GNSS is Cornerstone for National.
- satellite Navigation's Mission SBAS / GBAS implementation.
- Indian Regional Navigation Satellite System (IRNSS)

Brief History of Navigation:

→ Landmark based navigation: Stones - Trees - Mountains (Local use).
→ Celestial Navigation: OK for latitude, poor for longitude until accurate clock invented ~ 1760
→ 13th Century: Magnetic Compass.
→ 1907: Gyrocompass.
→ 1912: Radio Direction Finding.
→ 1930's: Radar and Inertial Navi.

• Precise point Positioning:

→ The Automatic Precise Positioning Service (APP
→ Leica (SmartLink (worldwide correction service)
→ RTX services by Trimtabe.

- Satellite Based Augmentation System:
- The Role of the Geostationary Satellite.
- Long term (2020-25) plan - Global SBAS.

Appointments | Notes | Walk to do

- eLoran System Concept:

- Satellite Navigation:
  A satellite navigation system is a system that uses satellites to provide autonomous geo spatial positioning. Example.

- Global:
  → Navstar GPS.
  → GLONASS.
  → BEIDOU.
  → GALILEO.

- Regional:
  → IRNSS.
  → QZSS.

- The GPS / GLONASS / Galileo:
  → Develop by the US DOD/USSR/EU.
  → Provides. - Position, Velocity, Time.
  → WGS84: Paramety Zemli 1990 (PZ-90.11)
  → Designed to replace existing navigation systems
  → Accessible by civil & Military.

- Program Description:
  - The next generation GPS III / GPS IV.

- GPS Signal Structure:
  → Each GPS satellite transmits a number of signals.

- Bandwidth allocated for L1 - 24 MHz, L2 = 22 MHz L5 - 28 MHz.

- The signal comprises two UHF carrier and two codes as low power radio signals as well as a satellite orbit message.

- GLONASS fundamental frequency is 5.0 MHz.

- Excerpt from Global Positionsiory System Standard Positioning Service.

- Receivers: → Single Frequency.
  → Dual & Multi-Frequency.

- 3 Classes of GPS receivers.
  - Geodetic class:
  - Mapping grade:
  - Navigation:

- GPS Surveying Techniques.
  → Static:
  → Rapid Static / Fast static.
  → Stop and Go.
  → Kinematic.
  → Differential GPS

- Principle of Differential - GPS / GNSS.
- Stereo Vision / Stereo plotting.
- Steps in Photogrammetry.