GPS Outage Simulations

Vince Massimini

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Background

• Outage experiments were spurred by concerns of interference with GPS

• Two experiments planned
  – GOERS (GPS Outage En Route Simulation)
    • October/November 2002
  – GOTS (GPS Outage Terminal Simulation)
    • Likely CY 2003

• Real-time simulations conducted at the FAA Technical Center near Atlantic City NJ

• Additional simulations likely based on results of GOERS and GOTS
Methodology (GOERS)

- Scenario are being developed where controllers are working traffic when a partial or full GPS outage will occur
- Objective is to measure controller workload when coping with the outage
- Outage will be ~100 nmi radius
- Three scenarios
  - Current (baseline)
    - All current avionics and Ground-Based Navigation Aids (GBNAs)
  - 2013-2015
    - Increased GPS equipage and all current GBNAs
  - 2013-2015
    - Increased GPS equipage and reduced GBNAs
GBNAs

- **Current**
  - Full set of GBNAs (VOR, DME, TACAN, ILS)

- **2013-2015**
  - Full set of GBNAs (VOR, DME, TACAN, ILS)

- **2013-2015**
  - Reduced GBNAs (Reduced VOR Network, DME, TACAN, ILS)
# Avionics Assumptions/Forecasts

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<tr>
<th>Simulation Timeframe</th>
<th>Navaid Reduction</th>
<th>General Aviation</th>
<th>Regional Turboprop</th>
<th>Regional Jet</th>
<th>Heavy Jet</th>
<th>Military</th>
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**Key**
- V/D = VOR and DME (not all GA have DME)
- V/D/T = VOR/DME and/or TACAN
- FMS = FMS Equipped
- IRS = IRS or INS equipped