VOR and DME Coverage

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Backup Network
Concept of Operations

- In case of a GPS outage, a VOR-equipped (but non-FMS equipped) aircraft would
  - Climb, if necessary, to obtain VOR coverage (and DME coverage, if equipped)
    - Coverage should be available by 5000 ft AGL
    - In mountainous areas, coverage will be the same as the current VOR system
  - Proceed VOR to VOR through the outage or proceed to an airport served by a VOR non precision approach or an ILS precision approach
- Full DME coverage will be retained for FMS equipped aircraft
  - Some additional coverage may be desirable at low altitude near airports
VOR Backup Network Methodology

- Selected 200 airports with the highest instrument operations count
  - ~92% of total instrument operations
  - All major and most large regional airports included
  - All airports have a TRACON and at least one ILS
- Selected existing VOR that serves the airport
  - Some airports not served by a VOR
  - Some airports served by common VORs
- Plotted coverage of resulting 177 VORs at 5000 ft AGL
- Added existing VORs to provide coverage
  - In high-elevation areas, kept almost all existing coverage
VOR Backup Network

Caveats

- Only existing VORs were used
  - From VOR/VORTAC/VOR-DME sites
- Line of sight at 5000 ft AGL
  - No service volume restrictions
  - No consideration for ‘bad’ radials
- Priority was given to VORs that provided non-precision instrument approaches to airports
  - Work still in progress to refine VORs selected
- This is not intended to be a final list of NAVAIDs, but rather an estimate of the size of a backup system
VOR Backup Coverage - 429 VOR/VORTAC/VOR-DME (177 + 252 Fillers)
Existing DME Coverage
930 FAA DMEs (VORTAC/VOR-DME)

18,000 ft MSL