Guidelines for Real Time GNSS Networks (RTN)

Administration

RTN Administration

- ☐ Efficiently operates the various components of the network
  - ■ Receivers
  - ■ Servers
  - ■ Communication networks
- ☐ Provides users with the information needed to utilize the network

RTN Administration

- ☐ Resources
  - ■ Hardware infrastructure
  - ■ Communication networks
  - ■ CORS

- ☐ People
  - ■ Users
  - ■ Administration staff to provide
    - ☐ Helpful support to users
    - ☐ Partnership with IT professionals

RTN Administration

☐ Key component of administration staff is the system administrator

- ■ Operates and maintains the RTN computer network

- ■ Distributes the GNSS information to the network's users in an efficient manner

RTN Administration

☐ Administrator abilities

- ■ Support and maintain computer servers and communication links
- ■ Ability to respond to service outages
  - ☐ User reported problems
  - ☐ Network problems
- ■ Helpful to have a background in geodesy and satellite positioning

RTN Administration

☐ RTN Administration Components

- ■ System Administrator
- ■ Communication
- ■ IT Partners
  - ☐ IT security
  - ☐ Firewall issues
  - ☐ Lightning protection
  - ☐ Power system backup

RTN Administration

□ Latency

- Bandwidth
- Transmission medium
- Router and switch performance
- Firewall
- Wireless network voice/data traffic

RTN Administration

☐ Reference Station Datum

    ■ Benefits of using a reference datum that is consistent with the datum used by NGS:

        ☐ Easy to verify

        ☐ Consistent with National CORS

        ☐ Can use OPUS to position RTN CORS

RTN Administration

☐ Reference Station Datum

   ■ Ramifications of using a datum that differs from the datum utilized by NGS

      ☐ OPUS and RTN solutions would be based on different reference datums:

         ■ OPUS could not be used to check RTN solutions

         ■ RTN could not be used to check OPUS solutions

      ☐ Could create confusion with users

RTN Administration

- ☐ Reference Station Datum
  - ■ Coordinates can be determined from a variety of sources
    - ☐ OPUS
      - ■ Rapid solution
      - ■ Minimum of five (5) days of twenty-four (24) data sets
      - ■ Minimum of three (3) National CORS that are within 250 km of your RTN
      - ■ Review the sixty (60) day solution of each National CORS used in the solution to ensure that each CORS is stable and operating within tolerances
      - ■ Carefully analyze the OPUS results

RTN Administration

- ☐ Adjustments
  - ☐ Minimum of five (5) days of twenty-four (24) hour datasets should be used
  - ☐ Commercial adjustment packages
  - ☐ NGS ADJUST
  - ■ Advantages
    - ☐ Distributes errors
    - ☐ Includes connection to NSRS
  - ■ Disadvantages
    - ☐ Takes more time

RTN Administration

- ☐ Connection to NSRS
  - ■ The minimum number of National CORS sites in the RTN should be the larger of the following two figures: 3 sites or 10% of the sites
  - ■ Recommend local static surveys be performed to connect RTN CORS with local NSRS passive stations
    - ☐ Provide information to develop local accuracies
  - ■ See section on "Recommendations for Obtaining and Maintaining Station Coordinates Consistent with NAD 83 and ITRS"

RTN Administration

☐ Connection to NAVD88

    ☐ Should be completed before the CORS antenna is installed

    ☐ May be completed afterwards if an offset leveling plate had been installed immediately below the antenna

   ■ Field techniques

    ☐ Geodetic leveling

    ☐ Trigonometric leveling

    ☐ NGS -58 survey

Questions?