

IMPACT OF GLOBAL POSITIONING SYSTEM (GPS)

A key element to the readjustment of the NAD27 was the observation and computation of a very precise *Transcontinental Traverse* (TCT) which was designed to provide overall scale to the network at an accuracy of 1:1,000,000. Doppler positioning became proven and dependable by the middle 1970's and was used to supplement the TCT. Global positioning system (GPS) surveying was being developed during the 1970's and early 1980's and was well established as a superior geodetic surveying tools by the time the network readjustment was completed in 1986.

The NAD27 was readjusted, in part, because practicing professionals in the user community were routinely using EDM/theodolite instrumentation and achieving results better than the network to which they were expected to adjust their results. In some ways, the NAD83 was obsolete before it was published because, with widespread use of GPS equipment in the user community, it was again possible for local users to survey routinely more accurately than the network to which results are expected to be attached.

To eliminate the possible proliferation of "proprietary" GPS networks and to avoid requiring GPS users to adjust high quality data to fit a less accurate geodetic network, the decision has been made in many states to install a statewide High Precision Geodetic Network (HPGN) based upon high quality GPS observations made or supervised by the NGS. Those data are published by the NGS as NAD83 (XX) where XX is the year in which the HPGN was published. The NGS is emphatic that the HPGN's are not a new datum, but represent a refinement to the existing NAD83.

Articles of interest relating to the statewide HPGN's include:

- **National Geodetic Reference System Statewide Upgrade Policy by Nicholas Bodnar 1990, then Chief of the National Geodetic Survey. Available from National Geodetic Information Center.**
- **High Accuracy Reference Networks: Development, Adjustment, and Coordinate Transformation by Dave Doyle 1992, Senior Geodesist with the National Geodetic Survey. Presented February 1993 at ACSM/ASPRS Annual Meeting, New Orleans, Louisiana.**
- **Do Surveyors Need Higher Accuracy Coordinates by Eugene Taylor 1991, retired Admiral from NOAA. ACSM Bulletin, June, 1991.**