

Activities of Survey of Bangladesh for Geodetic Works and Services towards Digital Bangladesh

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Geodetic Survey in Bangladesh was carried out with reference to old Datum until 1990. Survey of Bangladesh (SOB, website: <http://www.sob.gov.bd>), the National Mapping Agency of Bangladesh, established a Tidal Observation Station (1993), Horizontal (1994) and Vertical (1994) Datum under a JICA funded project "Study on Geodetic Survey in the People's Republic of Bangladesh". First Order Geodetic Control (Horizontal and Vertical) Network was carried out in two phases (1993-95 and 2000-03) under JICA funded project. SOB also carried out network adjustment of First Order Geodetic Control (Horizontal and Vertical) Network. Densification of Geodetic Control Points by Second Order Geodetic Control (Horizontal and Vertical) Network is being carried out since 2007 covering whole Bangladesh. Present density of Horizontal Control Points is about ten kilometers totaling nine hundred fifty. Vertical Control Points are laid for a leveling route length of sixteen thousand kilometers along major road systems of Bangladesh with a density of five kilometers totaling eighteen hundred numbers.

Horizontal Datum of Bangladesh was fixed in ITRF-1992 through seven days of measurement with four IGS stations: Tsukuba (Japan), Wettzell (Germany), Hartbeesthoek (South Africa) and Yarragadee (Australia). SOB plans to switch to ITRF-2008 as soon as possible and adjustments of countrywide Horizontal Network will be done subsequently.

Tide data is recorded for every six second using fuse type gauge for about last nineteen years. 18.6 years of data in hand is being used to fix Mean Sea Level addressing Lunar and Celestial effects; adjustments of countrywide Vertical Network will be done subsequently. Leveling surveys across big rivers and inside the mangrove coastal forest of Sundarban were very challenging experiences. SOB Tidal Station on the coast of Bay of Bangladesh is located at Chittagong on the confluence of River Karnafuli and this is recognized as the thirty sixth Global Sea Level Observation Stations under Indian Ocean Tsunami Early Warning System and having satellite link to Intergovernmental Oceanographic Commission (IOC).

A Geoid Undulation Map for Bangladesh is developed with one hundred eighty five three dimensional points; orthometric height accuracy is 10-20 centimeter. With judicious planning and continuous commitment, the number of three dimensional points rose to five hundred sixteen in recent time: Geoid Undulation Map is being revised. Benefits of this is outstanding as survey and mapping works with lower accuracy would be cost effective since most of the areas of Bangladesh belong to flat plains delta of Ganges, Brahmaputra and Meghna.

Six Global Navigation Satellite System-Continuously Operating Reference Stations (GNSS CORS) were established to provide hundred kilometer countrywide coverage for real-time mapping and navigation with GPRS transmission; SOB plans for establishing additional sixty GNSS CORS to provide effective GNSS CORS Network Correction to the RTK users with 20-30 kilometer coverage. The present GNSS CORS is on operation since December 2011 (To Access: <http://202.53.170.98>) and already being shared. The very introduction of GNSS CORS in Bangladesh is expected to boost up business for GPS enabled systems, so as in Geological and Geodetic Sciences.

SOB plans for introducing terrestrial Gravity and Magnetic Surveys to prepare Gravity Anomaly Chart and Magnetic Declination Chart for Bangladesh.

Presently SOB is in cooperation and association with many international organizations like GGIM-AP, Global Map, IOC, PC-GIAP and IGS.

Keywords: geodetic survey, geodetic control point, tide data, geoid undulation map, GNSS CORS, Survey of Bangladesh

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