ASSESSMENT OF DATA QUALITY AND MAP ACCURACY OF TOPOGRAPHIC MAPS

A PROJECT REPORT PRESENTED BY
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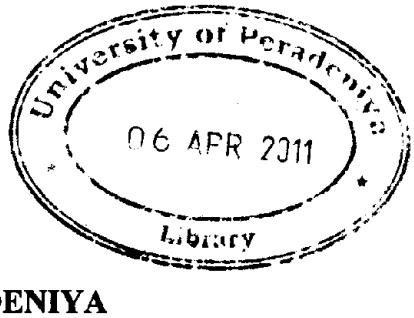

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ABSTRACT

A map is the most efficient shorthand to show locations of objects with attributes and their spatial distributions. Topographic maps contain planimetric details and elevation information. Elevations have typically been represented by contours, which are lines connecting points of equal elevations.

Geotechnologies in urban planning, engineers, highway officials and landuse planners use topographic maps as basic maps, because they are the main source of data for their GIS applications. The purpose of any GIS application is to provide information to support planning and management. This information is intended to reduce uncertainty in decision making. The acquisition and processing of spatial data should be able to assess the quality of the base data and the derived information product.

Most spatial data are collected and held by individual operators, specialized teams and various organizations. Some base data are generally the responsibility of the various governmental agencies, such as the National Mapping Agency, which has the mandate to collect topographic data for the entire country in accordance with preset standards. Local government departments, institutions and many others maintain data for their own particular purposes. If this data are shared, then user needs to know, what data exits, where and in what format it is held.

Accuracy analysis is one of the most important problem in the development and applications of the system. In this project, data quality and map accuracy regarding Survey Department 1: 10,000 maps have been investigated. For finding the data quality and map

accuracy, 320 ground points were observed and compared using GPS technology in recently updated 1:10,000 sheets (Nos. 42/18 and 42/19). The selection and identification of prominent points without unambiguously had been the main problem. In the field investigations, more time had spent to identify the names of the places, streams and revenue boundaries etc Several newly developed areas were found in the field which were not indicated in maps. One example was Wemadilla reservoir. Google images around Naula and Galewela area were used to investigate the land information and landuses.

Positional accuracy in this project was obtained as RMS error. Resultant planimetric accuracy was 2.836m and vertical accuracy was 0.231m. Statistically being proved, most planimetric differences are equal to 2.8 m in 95% confidence interval. Error matrix was used to find the attribute accuracy. The accuracies obtained for main roads and landuses are 99% and 87% respectively.

When considering the buffer distances, 98% of main roads and 100% of minor roads were included within 4 m buffer range respectively. Considering above all, it was proved that accuracy of Survey Department 1:10,000 maps are satisfied and comparable with USNMAS and USGS requirements.