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ACTIVITIES ON ESTABLISHMENT OF NATIONAL GEODETIC VERTICAL NETWORK

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The main geodetic activities of Lithuania are supervised by the National Service of Geodesy and Cartography under the Government of Republic of Lithuania. Since 1998 most of the main activities were related to the establishment of National Geodetic Vertical Network (NGVN). The NGVN should implement unified system of heights in the territory of Lithuania and guaranty reliable connection with other European height systems. The NGVN should be continuously updated for the purpose of heights and their accuracy determination. It was planned that establishment of NVGN will be finished in 2002. Due to latest cuts in financing the date when NVGN will be completed is unknown. Less than one third of planned 1900 kilometres is levelled until now (one loop of five). Two digital levels Leica NA 3003 and bar coded staffs Wild GPCL-3 (calibrated annually at the Finnish Geodetic Institute) were used. Reconnaissance of the existing benchmarks and building the new ones were performed at the second polygon. Every ground benchmark was coordinated by the GPS.

National Lithuanian Gravity Network is built on three absolute gravity points measured by Finnish Geodetic Institute (measurements should be repeated in 2001). Gravity observations for establishment of National Lithuanian Gravity Network were continued during the year 2000. Three gravimeters La Coste & Romberg were kindly provided by NIMA. Some observations of First Order Gravity Network were performed together with specialists of Polish Institute of Geodesy and Cartography. The establishment of National Lithuanian Gravity Network should be finished in year 2001.

Lithuanian levelling network data was prepared according the requirements of UELN in 2000. This was done following the Resolution of the EUREF Symposium adopted in Bad Neuenahr – Ahrweiler (1998). The data preparation and re-adjustment was performed with support of Bundesamt für Kartographie und Geodäsie. The levelling data of different epochs fit to each other at 1 mm per kilometre accuracy. The connecting lines between national networks of neighbouring countries also coincide at the same accuracy level. For achieving a higher accuracy the observations of the Lithuanian fundamental network should be finished as soon as possible. Also, these data will improve the kinematic height network and will be a basis for adoption of the European Vertical System 2000. The data of Lithuanian levelling network has entered the UELN database. It makes possible to integrate Estonian, Latvian and Lithuanian levelling networks into UELN.

The vertical datum of Lithuania and type of new National height System is not adopted yet. It seems that Lithuania will follow the resolution of the EUREF Symposium in Ankara (1996) and the normal heights system will be adopted. The normal gravity field of the Geodetic Reference System 1980 (GRS80) was adopted as a part of Lithuanian Coordinate System 1994 (LKS 94).

Densification of Lithuanian National GPS Network (third order) for local needs is going on since 1994 (density of network will be one station per 5 square kilometres). Districts of already densified network include over 10 000 GPS points. Densification of network should be finally finished in 2001. Minimal distance between densified Lithuanian National GPS network stations is 0.5 km, maximum 2.0 km. Minimal distance between GPS station and point for orienting is at least 0.3 km in the woods or obstructed area (this will allow ussage of conventional instruments directly from the third order of Lithuanian National GPS Network). Error of densified network stations co-ordinates with respect to Lithuanian National GPS Network is less than 5 cm.

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