



Macro- and micro- geodynamic of Terebliya-Riksk geodetic man-caused polygon of Ukrainian Carpathians influenced by specificities of structure-geological and hydro-geological conditions

A Kulchyzky (1), Y Serebryanny (2), K Tretyak (1), I Trevogo (1), and V Zadoroznyy (1)

(1) National University Lviv Polytechnic, Institute of geodesy, Lviv, Ukraine (kornel@polynet.lviv.ua, +380322582698) , (2) Doka Ltd Lviv, Ukraine

Terebliya-Riksk diversion power station is located on two levels (with difference of 180m) of south mountainside of Ukrainian Carpathians and separate parts of this power station lie inside rock. Therefore influential parameters of it's stability are geological, tectonic and hydrogeological conditions in complex.

Monitoring of intensity and nature of displacements of flow (pressure) pipe and other objects of power station with geodetic methods indicates that fluctuations of water-level in reservoir caused both by natural and artificial effects are of great influence on objects mentioned. Based on geodetical high-precision observations made by LeicaTPS 1201 robotic total station short-periodic components of fundamental vibrations which result in their destructive deformation were determined. Mathematical apparatus (which uses function of Fourie series and theory of cinematic coefficients) for displacements determinations of pressure pipe was disigned.

Complex of engineering-geological surveys gave an opportunity to define the origin of macro- and micro-geodynamics movements of Terebliya-Riksk diversion power station region.

Engineering-geological conditions which influence on power station structure most of all were determined as following : small foldings and cleavage areas appearances, also fluctuations of level of underground water (referred to hydrogeological conditions).

Periodic micro-displacemets appearances (which operate on reducing-stretching scheme) fixed on power station structure are turned to be in direct relation on to what extend reservoir is filled up.

Permanent macro- displacements appearances (which operates in north-west direction) fixed on pressure pipe are the result sum of residual micro-displacements caused by return periodic movements and are determined by structure-geological, engineering-geological and tectonic conditions.