DOBRE: COINCIDENT DEEP NEAR-VERTICAL AND WIDE-ANGLE SEISMIC REFLECTION AND REFRACTION PROFILING ACROSS THE DONBAS FOLDBELT IN SOUTH-EASTERN UKRAINE

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DOBRE is a multidisciplinary project aimed at studying processes governing intracratonic rifting and inversion (uplift and shortening) targeted on the Donbas Foldbelt (DF), the strongly inverted and compressionally deformed segment of a Late Devonian intracratonic rift basin north of the Ukrainian Shield (UkS). DOBREflection (250-km deep seismic reflection data acquired in 2000 and 2001) provides detailed resolution of both basin infill and deep crustal structures and DOBREfraction (a coincident 350-km wide-angle profile acquired in 1999) provides a complementary velocity model of the sedimentary basin, crust, and upper mantle of the DF area. The integrated DOBRE results indicate that the thickness of sediments reaches some 20-km in the axial part of the DF. There is a good correlation of the basement reflection horizon with the base of the supracrustal sedimentary layer in the velocity model. Pronounced reflections from a thrust affecting the whole sedimentary succession as well as the upper crust beneath the southern margin of the has been smoothed out in the velocity model although wide-angle and refracted seismic phases indicate severe structural complexity. The Moho displays some topography but lies on average at about a depth of 40-km along the DOBREfraction profile. This generally corresponds to a broad (1 s) reflective band that can be traced along the whole reflection profile at about 14 s below the UkS and at 12 s below the DF. The crystalline crust thins significantly beneath the basin and this is attributed to rifting processes that affected the EEC in the Devonian. Reflectivity is seen in the entire crust, with a number of strong reflectors appearing within the UkS and continuing into the basin area. Isovelocity contours in the refraction model are parallel to sub-parallel to the reflectivity fabric in this area. Further north, a high velocity lower crustal layer is characterised by enhanced normal-incidence reflectivity. The reflectivity pattern of the crust and upper mantle and their velocity structure and other material properties are key factors for further interpretation of the dynamics of basin formation and inversion in basins such as the DF. DOBRE has demonstrated convincingly that the integrated study of the deep structure of partially inverted sedi-

mentary basins is crucial to a general understanding of processes involved in evolution of continental lithosphere.