



Supplementary Figure 4. Fragments of the high-frequency seismic acoustic profiles across the Mangyshlakian paleo lows. A – reflection of the interrelation of thin-layered clayey and non-layered sandy deposits (Area 3). B, C – a thin-layered structure reflecting the sequence of the filling of lows (a, b – a different wave patterns) (Area 4). The enclosing Upper Khvalynian deltaic deposits are characterized by a variety of patterns on the records, including manifestations of cross unidirectional bedding and criss-cross bedding (C). The overlying Neo-Caspian horizon is characterized by a layered structure, formed by extensive reflectors.