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Marine Geophysical Investigations of the Reykjanes Ridge, Iceland

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In July-August 2003 we conducted a brief EM300 survey of the first Reykjanes Ridge segment offshore of the Reykjanes Peninsula. Seafloor spreading here has been active long enough so that the volcanism has coalesced into a focussed volcanic system. Two major en-echelon ridges characterize the research area, the Eldgja ridge and the ridge that extents from the Reykjanes peninsula. The ridges rise up to 100 m from the bottom. Few rift structures are visible on the bathymetry maps, perhaps because shallow explosive eruptions tend to bury them. Backscatter image of the area are informative. Several faults become apparent, being parallel to the ridge and also perpendicular. Extension of the youngest eruptive fissures on land is clearly visible by the backscatter data. As is a crater row from 1926 at the tip of Eldey ridge. At the tip of the land ridge there is a circular lava shield formation with a single crater. Two major avalanches are visible on the backscatter data. The avalanches originate in collapse of parts of the ridges. Submarine avalanches in this area can generate Tsunamis, which are of threat to neighbouring villages on the Reykjanes peninsula. Both ridges have a plateau at the depth of 100 to 80 m. Similar observations have been made in the Vestmaneyjar area and suggest lover sea-level during the Pleistocene. The approximately 20 degree change in azimuth between the en echelon volcanic system trends on the Reykjanes Peninsula and those observed on the Reykjanes Ridge occurs within this first offshore segment.