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Seismicity and Aeromagnetic Features of the Gulf of Aqaba Region

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ABSTRACT

Recent seismicity in the Gulf of Aqaba region has been examined in relation to pull-apart tectonics and structures indicated by bathymetry, surface geology, and new analyses of aeromagnetic data. Forty earthquakes occurring in the region from 1985 to 1989 were located using data from a network of five telemetered seismographs in the Midyan region of Saudi Arabia east of the Gulf of Aqaba and from a network north of the gulf in Israel. Interpretation of aeromagnetic data from the Gulf of Aqaba and the adjacent Midyan region confirms previous estimates of offsets across the zone of transform faulting in the gulf. Aeromagnetic anomaly patterns, obtained by reduction-to-the-pole techniques, and earthquake locations provide evidence for continuation of the faulting regime from the gulf northeastward into the Midyan region. The vicinity of the Elat Deep (primarily the southwest flank) probably is undergoing active normal faulting. Other seismicity and first-motion polarity data confirm the regional pattern of KNE trending sinistral strike-slip faulting.