Formation of the Enorama Salt Diapir

Weld, Flinders Ranges South Australia

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FIELD STUDY AND DIAPIR FORMATION MODELLING OF A SALT DIAPIR WELD FLINDERS RANGES, SOUTH AUSTRALIA

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ABSTRACT

The Adelaide Geosyncline is a basin composed of Neoproterozoic and Cambrian sediments that were deformed by the Cambro-Ordovician Delamerian Orogeny. Early stages of basin development included the deposition of Willouran age (early Cryogenian) evaporites, which have formed the principal detachment surface for the Delamerian Orogen in the Flinders Ranges. Differential loading of the salt units has resulted in formation of several salt diapirs. This study looks into the development of the Enorama and Oraparinna Diapirs. Small scale (1.5 x 1.5km) field mapping project was undertaken and led to the discovery of Pualco Tillite in direct contact with the diapir indicating early Sturtian initiation of diapirism. Differentiation of diapir textures and distribution and composition of clasts indicates that mobility within the diapiric breccia was not uniform during growth of the younger Enorama Diapir. This is particularly due to the Brecciated Red Shale (BRS) which has been described for the first time within the diapir body in this location. It indicates a zone of high mobility relative to the bulk of the diapiric breccia. The BRS is only evident in the activity of the second minibasin to the south, after the active depocentre has moved from the north.

KEYWORDS

Salt Tectonics, salt, diapir, weld, Flinders Ranges, diapir rafts, differential load

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