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Use of Pressure Data to indicate Vertical and Lateral Compartmentalisation in the Chirag Culmination of the ACG Oil Field, South Caspian

The ACG field is located 120km south-east of Baku, Azerbaijan in water depths of between 60m and 280m. The field comprises three distinct culminations, Gunashli, Chirag and Azeri. The northern tip of the structure began production in 1980. The remainder of the field has reserves in excess of 4,500 MMBO and is subject to a 30-year production sharing agreement (PSA) which came into effect in December 1994. Initial production within the PSA began from Chirag via a 25 slot platform in 1997. Pressure and production information from this development are critical to guide the design of several further platforms. To date these data suggest baffled vertical pressure communication, and large lateral compartments.

Vertical pressure communication has been assessed via collection of RFT data in 11 wells. The major pressure breaks correspond to major flooding surfaces, and have been distinguished via pressure depletion plots. More subtle breaks, and maps of vertical pressure barriers have been constrained by normalizing pressure drawdown (at any point in a well) with respect to the maximum differential drawdown within the reservoir (in that well).

Lateral communication has been assessed by (i) comparing RFT data with pressure build up data collected from 7 wells with downhole gauges; (ii) fault mapping and attribute analysis; (iii) analysis of fluid contact data; (iv) development of an integrated solid earth structural model and (v) flow simulation. Several compartments have been recognized. In general these are large and the boundaries between them are baffles rather than barriers