

## **Monument Junction Field: Role of Geoscience in Expanding Production in a Structurally Complex Antelope Shale Reservoir**

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### **Abstract**

The Monument Junction field is located on the structurally complex west side of the San Joaquin Basin, between the South Belridge and Cymric oil fields. The field was discovered by Nuevo Energy in 1997 with well Twisselman MJH-1 that encountered hydrocarbons within the Antelope Shale member of the Monterey formation at a depth of 6,000' SSTVD. Historically, the structure at Monument Junction is interpreted as a 'pop-up' structure between the South Belridge and Cymric structures, comprising gently dipping beds, bound to the southwest and northeast by reverse faults. Following discovery, the field was rapidly developed, with peak production of 3,200 BOEPD established by March 1998. After initial development had slowed, the field was acquired, first by Plains Exploration and subsequently by Occidental (now California Resources Corporation) in 2006. After an initial appraisal and stepout program failed to yield satisfactory results, Occidental left the field to naturally decline from 2006-2010. By 2011, the field was producing 240 BOEPD.

In light of notable exploration successes between 2008 and 2010, all fields within Occidental's California portfolio were re-evaluated from a fresh perspective. Established interpretations were disregarded, old ideas abandoned with fresh interpretations made, without bias and using all available data. Correlations within the Antelope Shale member of the Monterey were extended to the NW into the South Belridge field, to the SW into the Cymric field and to the SE into Occidental's Elk Hills field. The structural model of the field was re-interpreted to comprise significantly more complexity in the form of a series of tightly folded, detached anticlines within the Monterey formation. Additional exploration / exploitation targets were identified and targeted with a five well drilling campaign during 2011. Results were mixed but ultimately, production from the field was more than doubled, and a number of key learnings made, validating the revised structural and stratigraphic schemes, while enhancing the understanding of the petroleum system on the west side of the San Joaquin Basin.