3D POST STACK DATA ENHANCEMENT - S.E. DARIEN, TRINIDAD

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ABSTRACT

The S.E. Darien area is located approximately 40 km off the east coast of Trinidad in 60 m of water. The area is located immediately east of, and downdip to, the Samaan Field, and appears to exhibit roll in the north-south direction. Establishing the existence and location of fault bounded traps is the primary risk to be evaluated prior to exploratory drilling in the area.

In early 1993 Amoco acquired a 48 fold 3D seismic survey that covered an area of approximately 112 square kilometers. The purpose of this survey was to gain a better understanding of fault patterns and trap definition. 3D data quality varies across the survey from good to very poor. The poor data zones are probably the result of a combination of effects related to shallow gas wipe-out, acquisition, and processing "footprints". These data problems hamper our ability to make reliable structural interpretations and to fully understand trap definition.

Our reprocessing goals in the S.E. Darien area were to remove the observed acquisition and processing "footprints", reduce overall noise in the data volume, sharpen fault signatures and, if possible, improve imaging below the shallow gas zone. Application of various 3D post stack image enhancement processing techniques resulted in noticeable improvements in the interpretability of the S.E. Darien survey. Processing techniques included velocity filtering, spatial and temporal amplitude balancing, bandpass filtering, and edge detection. As with many post stack processing techniques, a critical part of the procedure is the interaction between the interpreting and processing geoscientists in the parameterization and evaluation of the results.