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Zama Giant Discovery: Challenges and Solutions

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Summary

The Zama story began in July 2015 when Mexico's CNH opened the offshore basins with competitive bid rounds. Talos entered the Salinas Basin with two successful bids in the Mexico bid round 1.1, winning blocks 2 and 7. These two blocks garnered the most competitive bids and were the only blocks awarded in the bid round. Entering a new international basin poses significant challenges and operating in the Salinas Basin was no exception.

Talos was the first international operator to coordinate with CNH in developing the initial plan of exploration with new oil and gas regulations. Other challenges included logistics of getting operations equipment through customs clearance, harsh winter weather conditions with frequent port closures, and very limited infrastructure to operate the shore base. There were many geological and geophysical challenges, many common to entering an underexplored basin. These included sparse well control with limited and sometimes questionable paleo data and a well data base with location errors. Only one NAZ seismic volume which was a low frequency beam migration was delivered for bid round evaluation and contained no angle stacks or gathers. This low frequency beam migration data that lacked adequate reflector character for minibasin to minibasin correlations across fault and salt boundaries, and the 2D data provided was very poor for regional well ties away from the 3D volumes. Talos created multidisciplinary teams dedicated to the Mexico project to address the challenges and move forward with evaluation and well planning. After the contract was signed, CNH delivered additional reprocessed seismic volumes and raw gathers. The exploration team began the work of regional correlation, basin analysis, and prospect identification and mapping using the intermediate seismic volumes, working closely with consortium partners Sierra and Premiere.

Talos then launched a proprietary reprocessing project to merge surveys and process with a 45 Hz RTM output. Two primary plays were focused on. The first play was Miocene – Pliocene sandstones trapped on structural highs adjacent to and above salt. This play is DHI supported as indicated by fluid substitution modeling using local well data and proven by Pemex wells with oil pays that tie to the amplitudes. The second play was Oligocene – Cretaceous section in sub-salt three-way closures against salt. Talos focused on the shallower DHI-supported Miocene play that is similar to prolific Miocene shelf and deepwater plays in the northern GOM, where Talos has had significant success. Eight prospects were generated on Block 7, three were identified before the bid round on the older original seismic data set. Zama rose as the top prospect, with over 4000 acres of structural closure, over 400 meters of objective section, strong AVO support, a DHI with a good downdip fit to structure, and an excellent flat spot.

The operations team analyzed the operational challenges and created solutions that prepared Talos to move forward and set up our shore base at Dos Bocas. The Zama wildcat spudded May 21, 2017, drilled through the target section on July 4 and found 342 m (1,122') gross oil pay in upper Miocene sands which were full to base. XPT gradient showed one connected hydrocarbon column with an oil gradient of 0.35psi/ft. Fluid samples yielded 29.5° API gravity and 455 GOR. The Zama well was drilled under budget and ahead of schedule with an outstanding safety record. An appraisal plan is currently being generated.