

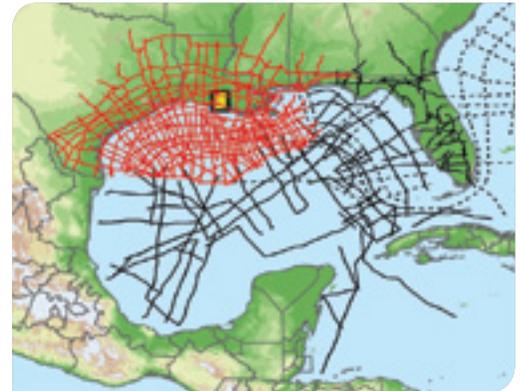
GulfSPAN

GulfSPAN™ is one part of the suite of Gulf of Mexico BasinSPANS™ (SPANS) programs, a mega-regional seismic study across the entire Gulf of Mexico that is unique to any margin in the world today and offers explorationists a true continental-scale view of the Gulf basin. Gulf of Mexico SPAN programs greatly improve our ability to document marginal development, perform crustal reconstructions and document the sedimentary filling history of the entire Gulf of Mexico.

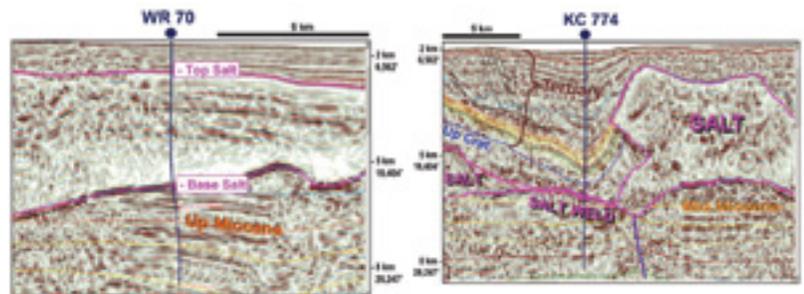
In 2002, ION began acquisition of the GulfSPAN program and over the consequent years the program has spread across the basin. A critical addition to the program was the grid of composite strike and dip lines which tie the onshore fields to the offshore regions and cross five states with a consistent, depth-imaged dataset.

The entire offshore GulfSPAN survey was recently reprocessed in 2010 by ION's GX Technology utilizing Reverse Time Migration (RTM) throughout all the imaging stages. This process included a complete rebuilding of all the velocity models and updating of the interpretation. Key wells and discoveries are also tied to the grid.

The updated configuration of salt required a major effort and included well control for salt tops and bases.

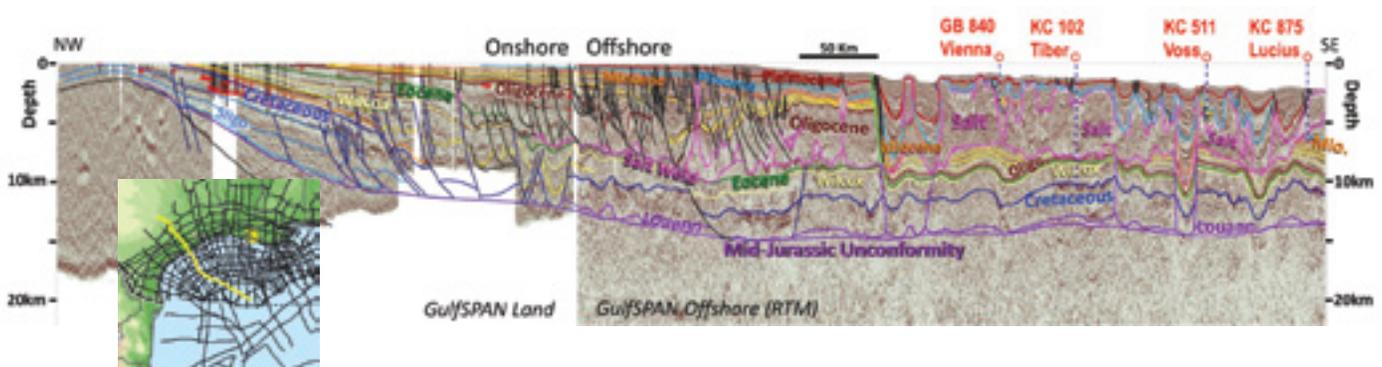


Completed/currently in progress: 42,000+ miles
Planned for 2015 and beyond: 22,000+ miles



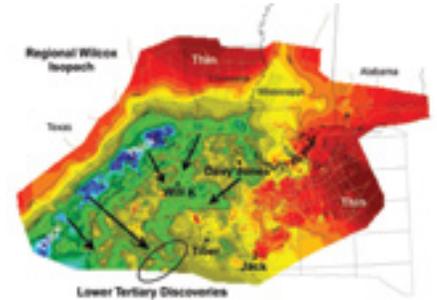
During the reprocessing, a total of 11,451 offshore wells were utilized throughout the velocity model building and interpretation stages.

Key discoveries in the deep water trend (Great White, Trident, Tiber, Jack) can now be related to new finds, emerging plays and dry holes across the entire basin. This mega-scale geologic perspective is appropriate for companies that want to 'see the Gulf in its entirety', identify areas for exploration expenditure and more accurately quantify relative exploration risk.

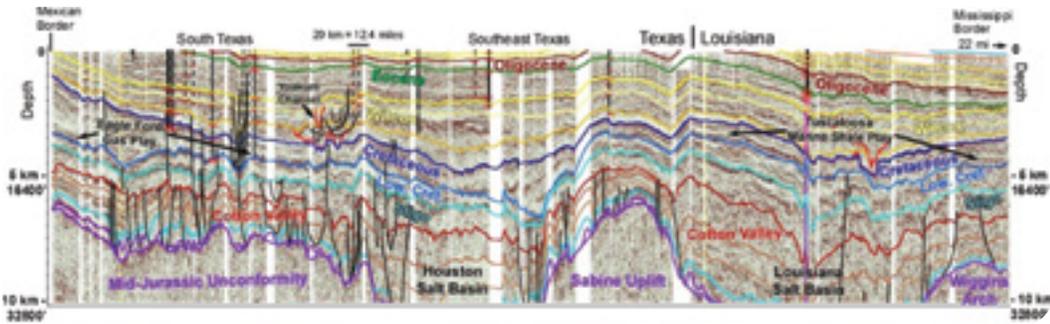


revealing exploration targets and major fairways. These maps assist exploration groups with creating better strategies for the long term.

Offshore RTM lines are merged with onshore data and robust onshore prograding margins and extensional fault systems are finally revealed. Listric extension faults and sediment expansions link to well-known compressional fold and thrust belts in deep water like the Perdido Fold Belt. Basinward translation of sediments is accommodated by several levels of detachment surfaces. Extensive salt welds are seen in their entirety for the first time and squeezed salt stocks are interpreted to have rifted Mesozoic sediments into suprasalt canopy positions that have been penetrated by wells.



The **expanded and improved onshore grid** is an important addition for a full understanding of the Gulf of Mexico. The reprocessed legacy data is composited into a series of basin wide strike and dip lines that show the structural setting of the onshore basins including the Maverick, East Texas, Louisiana and Mississippi Salt basins. These lines allow an enhanced correlation for geologic formations and deep features across state boundaries. Regional basins and arches are interpreted at the Base Louann which represents the Mid-Jurassic unconformity or top of the continental crust. Strike lines that transect several states give an insightful view of depositional fairways and expanding wedges that fill the basin accommodation space.



829 wells with tops are located within 1 mile of the Cretaceous strike line.



In total, 241,930 onshore wells with tops have been incorporated into the interpretation work of the onshore program alone. Of those, 21,705 wells fall within 1 mile of the lines. There are 34 check shot surveys and velocities from 27 synthetics integrated into the depth imaging.

Key findings include an enhanced understanding of the relationship of onshore plays like the successful Eagle Ford play in the west to the emerging Tuscaloosa Marine Shale Play in the east. Sweet spots for emerging plays can be better delineated.

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ABOUT BasinSPAN™

BasinSPAN surveys are geologically inspired, basin-scale seismic data programs acquired and depth-imaged using the most advanced geological and geophysical processing tools available. They provide upstream companies with the ability to evaluate the geologic evolution, deep basin architecture and depositional and structural histories of entire petroleum systems in a region. Our global 2D BasinSPAN library consists of data from virtually all major offshore petroleum provinces providing asset managers significant risk mitigation as they develop exploration and appraisal programs with greater confidence.

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