

Global Geophysical's *James H. Scott*, busy laying seismic lines in the Gulf of Mexico's open water transition zone.



## Explorers Migrate South From Louisiana

# Transition Zone Getting Deep Look

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Unconventional hydrocarbons are so like, well, *in* these days.

Indeed, coalbed methane, shale gas, oil sands and such have quickly become the darlings of many operators and financial analysts alike.

But there are other things to be excited about as well.

For instance, the longtime E&P activity involving conventional hydrocarbons in the long-productive Gulf of Mexico coastal region keeps on going – and going well.

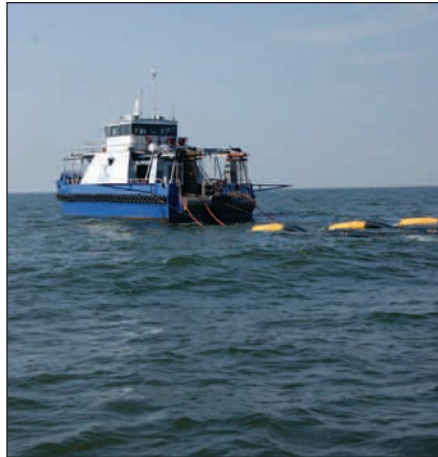
And despite all the years of drilling and production in this locale, there's a lot of territory still needing 3-D seismic.

"The thinking among veteran players in the region is there's plenty of remaining potential, including the relatively unexplored deep environments (>15,000 feet)," said Richard Degner, president of Global Geophysical Services. "This has prompted the need for long offset seismic data for more enhanced imaging."

Seismic crews are especially busy along the Texas coast, reflecting operators' interest in exploring the shallow water shelf area there and the transition zone, which – depending on who's talking – extends anywhere from two-six miles on either side of the beach.

It ain't easy.

The relatively narrow swath of the sparsely-surveyed transition zone encompasses a range of challenging, environments: ecologically-sensitive bays and estuaries, land



The custom-designed *James H. Scott* is outfitted with deepwater airguns for use in the open waters of the Gulf of Mexico's transition zone.



Photos courtesy of Global Geophysical Onland, swamps and marshes get coverage, too.



and open water. Each area requires different types of vessels as well as different sources for seismic data acquisition, e.g.,

dynamite, vibroseis and airguns.

Negotiating the permitting maze is an expensive, time-consuming process involving local, state and federal agencies.

"The transition zone hasn't changed," noted Steve Mitchell, vice president-division manager at Fairfield Industries. "It still faces the same issues it has forever.

"It's still very expensive to shoot," he added, "and most transition zone shoots that have happened have been proprietary."

### Mustang Island

One such proprietary 3-D survey is kicking off at Mustang Island in the south Texas coastal area near Corpus Christi. The 50-square-mile program is being implemented by Global Geophysical and underwritten by Southwestern Energy.

"This is transition zone in the best sense of the word," said Mike Rhodes, geophysical operations manager at Southwestern. "It runs from the Gulf of Mexico onto Mustang Island and into the bay.

"This is the first transition zone shooting for us," Rhodes continued. "We have acreage onshore that we've never properly

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imaged because of the narrowness of Mustang Island, so we're trying to exploit the acreage we have and look at the surrounding acreage."

The goal of the long offset (19,000 feet) survey is to image deep objectives, Rhodes said, which have become the target du jour in the Gulf of Mexico coastal region.

Mum's the word on the capital commitment. But whatever the price tag, the cost of a proprietary transition zone 3-D survey would pale in comparison to the ultimate potential payoff of a sizeable deep gas find.

"Mustang Island is classic transition zone shallow marine," Degner said. "We have lagoon work, so we have our small airgun boat – the *Tiny Tune*, with a 20 bar-meter source – that pops around in just a few feet of water. Then as we get into the swamps and marshes between the island and the lagoon, we'll use explosives and vibroseis."

Moving out into the open water, Global will employ its initial custom-designed source vessel – the shallow-draft *James H. Scott* – outfitted with deepwater airguns.

Two specialized Jet boats will be used to move the gear around in the shallow marine and marsh areas.

Also slated for deployment in the Mustang Island program is the custom cable vessel *Ms. Cordelia*, which is a 150-foot catamaran named for Degner's mother. The vessel is specifically designed to deploy and retrieve the Sercel 408 ULS recording gear.

"One of the things that's particularly unique about this survey is we'll probably be shooting all four different sources in the same day in this one, reasonably small 50-square-mile survey," Degner said. "This will be achieved in cooperation with three, and possibly four, receiver types: dual sensors (hydrophone and geophone), land geophones, marsh geophones and hydrophones.

"Today, we can execute this multi-source project using one seamless recording architecture," Degner commented, "which in this case is a specific ocean bottom cable system.

"In fact, we'll record the whole survey from the island," he noted. "Even though we have different sources, we'll never leave the island with the recording instruments – even when we're shooting at 50 feet of water depth."

### OBC for the Transition Zone

While many folks associate ocean bottom cable more with deeper water applications, Global considered OBC to be ideal for the Mustang Island transition zone program as well.

Degner noted the system being used is a medium tackle configuration versus the big, heavy tackle, power-down-the-cable systems commonly associated with deep-water seismic surveys.

"The cables will connect directly into our land system and directly into a very shallow light tackle system," he said. "We can seamlessly have cable telemetry that runs through deeper areas, into shallows across the island and into the estuaries with the same telemetry configuration and power throughout."

When all's said and done, Mustang Island will be a highly cost-effective shoot, Degner predicted. The planned two-month program will get under way sometime after Labor Day, when the beach crowds have thinned and the nesting season for certain protected wildlife species is over.

### Matagorda Activity

Just a tad north of Mustang Island, Global has inaugurated a shallow water 3-D survey for Seismic Exchange Inc. (SEI) in waters between 60 and 165 feet deep off Matagorda Island. The *Global Scout* – a deeper draft, 100 bar-meter source vessel – will take on this job.

"Matagorda is a 1,000-square-mile shoot where we're adding on to data we already have, extending it out to deeper water," said Randy Johns, vice president of offshore marketing at SEI. "This is all very long offset OBC, dual sensor, high fold, high definition 3-D."

The recording method being used for Matagorda Island is noteworthy.

"Instead of the recorder being on a boat, we're using land style recording by putting the instrumentation on a big jackup," Degner said. "The recording instruments have their feet planted in the earth – albeit under maybe 100 feet of water. We have sensors 22 kilometers away from the recording vessel that are connected by underwater cable."

The crew at Matagorda is the same group fielded by Global to implement SEI's long offset, high-density 3-D program at Lone Star Bayou along the upper Texas coast. The survey area extended from High Island state waters off Texas to West Cameron state waters off Louisiana.

"The main purpose of the 3-D design effort at Lone Star Bayou was to improve the seismic image quality of the deeper sediments – between 20,000 and 30,000 feet deep – by using a 30,000-foot offset range," noted Tom Fleure, vice president of geophysical technology at Global.

The now-completed survey is tied to the area of the Shell Joseph well at High Island Block 10, which reportedly reached TD at 22,000 feet about mid-2005. Results of the well still have not been released, giving rise to much speculation over what may – or may not – have been discovered.

Not surprisingly, there's considerable scurrying for data in the region.

"Our data are not completely processed yet," Johns said, "but we have people begging to look at it once it's completed."

### Moving Westward

Johns believes the Texas coastal seismic activity represents a gradual shift in focus by the industry away from Louisiana and toward Texas.

"We see a trend of people now looking at coming toward Texas, which is underexplored compared to Louisiana, and the terms of the state are reasonable," he said. "We're trying to get out in front of that crowd to get new data of interest for the industry."

Still and all, no one's writing off additional potential for the Louisiana coastal region, including the tedious-to-work transition zone.

"The transition zone really started in Louisiana," noted Dan Smith, vice president of exploration at Sandalwood Oil & Gas, which has long been active in both this area and elsewhere in the state.

"We still see a lot of activity there and think it's moving toward Texas because it's been so successful in Louisiana," Smith added. "It's not done in Louisiana by a long shot." □