At age 37, the sea – not the sky – is the only limit

As a 14-year-old who learned AutoCAD to help in his dad's business, Jason Gearn never dreamed he might someday be called on to help with the world's worst oil spill. But then again, his life has been a series of interesting surprises - one challenge leading to another, like steps on a ladder leading to … well, it's hard to tell, because Gearn is not yet even 40 years old.

The recent oil spill in the Gulf of Mexico, which resulted from an explosion of an oil rig called the Deepwater Horizon, is just the latest example. Gearn, a resident of Hereford, Texas and a civil engineer, was asked to examine a ship that would be used to handle high-pressure hoses that BP officials wanted to use to help capture petroleum fouling the Gulf.

"They ran into a situation where they needed some fast answers," said Gearn. "We needed to do a pretty detailed analysis of the sub-deck of the boat to see if it could handle the additional loads they were going to ask it to do."

Gearn put his civil and mechanical engineering training - and his considerable self-taught knowledge about the structure of ships - to work.

The issue was simple, but determining the answer was not. The vessel was built to handle hoses used to test underwater wells in the gulf. As such, it carried giant hose reels - something like a house's garden hose reel, except 15 feet tall. The challenge was that for the cleanup work, the hoses would be much bigger and heavier and would be handling much higher pressures. Thus, the loads being absorbed by the ship's substructure would be much higher.

Would the boat handle the additional stress? That was the question for Gearn. After poking around the inside of the boat and running the numbers, his answer was yes.

"We had to analyze a lot of data fast," Gearn said. "It was a challenge. But right about then, DraftSight, a new free 2D CAD product was released, and it really helped. It could not have come at a more perfect time."

Gearn's timing is usually good as well. Back when he was 14, he quickly learned how to help his dad, Tim Gearn, who built milling equipment to process cattle feed. Back then it was just a matter of coming up with designs - "pretty pictures" - to help his dad sell the equipment.

Now Gearn runs his own companies - plural. One designs and manufactures winches and hose reels for the oil rig industry. These are not your standard garden hose reels and winches. The hoses are 8 inches in diameter and cost $1,500 per foot. They're actually known as flexible pipe. While hydraulic hoses are good up to about 3,000 PSI, the flexible pipe Gearn works with is good to about 20,000 PSI.

As part of this business, Gearn works internationally with big players like BJ Services, Technip and Schlumberger. His company is currently doing or has done work in Malaysia, France, Brazil, the North Sea oil field, Dubai and India. In fact, the static kill that finally sealed the Deepwater Horizon well was pumped directly through Gearn's Offshore hose reels.

The hoses his rigs handle are used to convey fluids associated with well production. For example, they may be used for "well stimulation." Say production is starting to taper off at an old well. Companies can "clean out" the well by injecting solutions at very high pressure into surrounding rock. The solutions open up pathways in the formation for more petroleum to flow. One rig installed in 1958 had been producing 18 years. After it was stimulated, it produced more oil in two years than it had for the entire 18 years combined.

Gearn and his dad also run a salt processing business, a calcium mining operation (calcium is often used as a dietary supplement) and a company that makes parts for farming irrigation systems. All told, their companies employ up to 40 people.

Not bad for a kid who, not long ago, was happy just coming up with pretty pictures to help his dad's business.