



Billy Bergeron

Deep water is a challenging environment, and mooring systems for floating structures are critical to moving production safely into this frontier.



Billy Bergeron, senior mooring analyst, Delmar Systems Inc., has been in the offshore drilling industry since early 1973. Determined to become an anchor handler, he began mooring rigs early in 1977 when shallow-water mooring was truly hard and dirty work, frequently carried out with minimal equipment. Industry demands have changed mooring technology considerably since that time, with installations becoming much safer and more effective.

Bergeron had the opportunity to observe and participate in what he calls “amazing improvements” in mobile offshore drilling unit (MODU) designs, anchor-handling vessel refinements, and major improvements in personnel and equipment safety.

His early years working in the MODU mooring field prepared him for the opportunities he is now realizing in his current role with Delmar Systems, which includes R&D.

Bergeron has secured several US patents that have greatly improved mooring operations. One of his inventions, a male/female mooring connector, was an industry first. Because it provides the ability to disconnect and reconnect to an installed anchor at will, the connector has proven extremely beneficial to the mooring industry by allowing flexibility in presetting mooring installations, making rig connect/disconnect operations faster.

The connector also delivers financial benefits for rig operations in the form of time savings. Connecting a MODU to pre-set moorings can be achieved in as little as two days versus four to five days for conventional self-contained mooring/anchoring operations. Deeper locations can realize much greater cost savings due to the reduction in the large number of mooring components that have to be used and the time required to carry out operations.

The methodologies and connectors for mooring line connections Bergeron developed and patented are in general use around the world today, and he is working with other developers at Delmar on MODU mooring enhancements with a goal of formalizing industry-first anchor designs, improving mooring line components, and refining

methods for pre-setting anchor and mooring lines.

Our goal is to enhance current MODU mooring capabilities to allow for deeper water applications than traditional self-contained mooring systems allow,” Bergeron said, “an achievement that will open fields in deeper water to exploration and production.”

Delmar’s extensive variations of in-house mooring system designs includes choices of anchor foundations, subsurface buoys to suspend components above seafloor infrastructure, and synthetic and hybrid mooring lines. Using synthetic mooring lines to moor a rig poses little risk of damage to seafloor assets, Bergeron explained.

“I foresee the acceptance of synthetic line mooring winches as a strong contender to the wire or chain mechanisms in use on today’s MODU fleet,” Bergeron said. “The current proposed designs seem to have viability. Rope manufacturers are stepping up with variations of synthetic ropes to satisfy the strengths and friction coefficients that will ultimately satisfy regulatory and insurance entities.”

Synthetic mooring lines also deliver weight savings that can be substantial. Gulf of Mexico construction criteria have become more strict following the severe 2005 hurricane season, resulting in mooring system requirements that add weight to the floating structures, reducing available variable deck loads.

With synthetic line winches, a potential weight savings of 1,000 tons of wire weight and as much as 2,000 tons of chain could be realized. This, coupled with winch design changes, could result in additional massive weight saving benefits to hull structures of rigs around the world, Bergeron said. New generations of drilling vessels could save millions in steel costs by implementing significant reductions in overall dimensions.

“The industry challenges to the mooring field clearly require that we safely and efficiently anchor MODUs and other floating structures,” Bergeron said. “We thrive on the challenge of discovering unique solutions presented by an industry that is always pushing the limits.” **ENR**