The Energy Sector's Next Top Model

by Tom Larsen

When Hurricanes Katrina and Rita churned through the Gulf of Mexico in 2005, they destroyed 115 platforms, severely damaged another 52, and disrupted some 650 pipelines. The resulting multi-billion dollar losses reignited the anxiety for insurers, reinsurers, risk managers and energy companies about the potential for future damages in the Gulf.

In the aftermath, insurers reduced available offshore energy capacity, stopped writing some coverages and increased premium rates. The consequence for offshore facility owners and operators was a higher cost of insurance and increased risk retention.

In general, the damages and losses were greater than those predicted, highlighting the difficulty of modeling offshore energy hurricane risk and the need for better tools to understand, quantify and manage risk for highly exposed offshore energy assets. The hazard is so complex because wind, waves and currents must be taken into account to estimate damage to offshore platforms, as well as the pipeline networks that connect to onshore facilities. And the hazard is so vast that one EQECAT study showed that a storm similar to the notorious Category 5 Hurricane Camille of 1969 could generate offshore energy damage and loss of more than $65 billion.

With oil prices hovering near $100 per barrel, business interruption is another major exposure. More than half of the insured loss from Hurricane Ivan in 2004 resulted from business interruption (BI) coverage and contingent business interruption (CBI), primarily due to pipeline damage that prevented product from reaching onshore production facilities. These interruptions expose producers to large disruptions in cash flow and many seek to mitigate this risk with BI insurance, however, it is expensive and many insurers do not offer it because of the challenges in both underwriting and pricing.

In response to these various industry concerns, EQECAT set to design a model specifically to quantify offshore energy risk and enable underwriters, for the first time, to confidently write BI coverage. The goal was to provide a model that accounted for the highly specialized needs of the offshore energy industry, including pipeline fragility, reliability and repair time to efficiently estimate BI and CBI risk.

In the Gulf of Mexico, oil exploration and production has always wrought with risk. A 2007 model, however, hopes to provide greater understanding to the industry.

For a model to be really useful it must simulate the principal agents of damage—wind, waves and currents—and the vulnerability functions had to properly reflect the performance of the unique structures, machinery and equipment in the offshore energy domain. Additionally, the tool needed the capability to provide financial modeling consistent with the way in which offshore energy insurance coverage is written.

Believing these conditions satisfied, EQECAT launched its Offshore Energy Model (OEM), along with partner ABS Consulting, before the 2007 hurricane season. This marked the first probabilistic model providing both such specialized capabilities to assess offshore energy hurricane risk in the Gulf and proper estimation of risk given the different insurance coverages and practices currently in the marketplace.

Additionally, it is able to account for the real-world hazards driving losses—from risk in the region to currents, subsurface drag forces and underwater landslides. The model also helps users to understand operational extra expenses such as the control of the well and removal of debris.

Moreover, the hazard analysis component of the offshore model consists of the same set of stochastic events used in EQECAT's North Atlantic Hurricane Model, enabling users to correlate offshore and onshore risks within a single policy.

Some have already done just that. EQECAT provided the analytical support for the first offshore energy catastrophe bond, opening up the capital markets as another viable offshore risk transfer vehicle.

Concern about a Camille-like storm—or even smaller storms—is, of course, not going to fade away. If anything, such a concern may become more acute.

But having a proper model is an important step towards better understanding and management of this risk, and should also help insurers regain some semblance of confidence in pricing offshore energy exposure. ■

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