

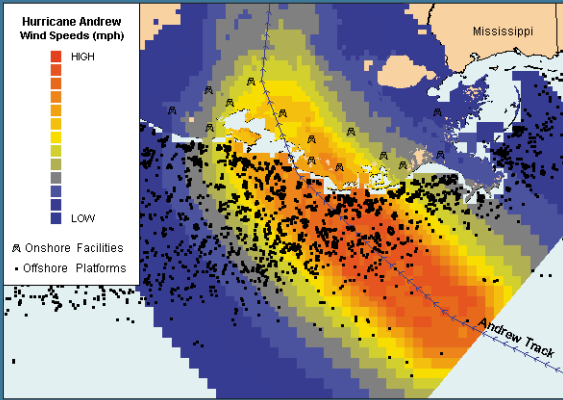


## Offshore Platform

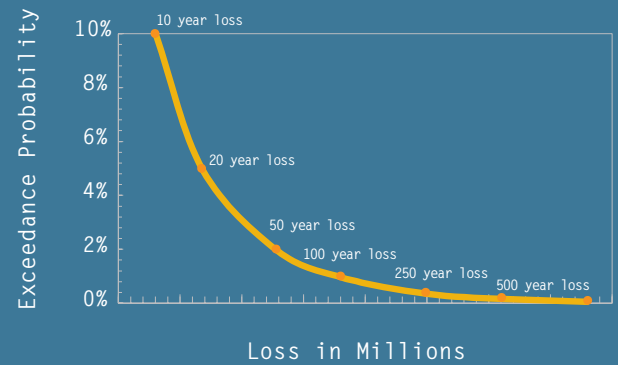
There are more than 4,000 offshore oil and gas platforms in the Gulf of Mexico, worth over \$100 billion. They sit in an active hurricane corridor, exposing their insurers, owners, and investors to potential catastrophe losses. RMS has applied its market-leading hurricane technology to offshore platform risk, creating a probabilistic model for insurers, reinsurers, oil and gas companies, and brokers.



Risk Management Solutions



*Windspeeds are modeled for both offshore and onshore exposures, as shown here for Hurricane Andrew*



*The EP curve goes beyond scenario analysis to quantify probabilistic loss over a full spectrum of return periods*

## OFFSHORE PLATFORM HURRICANE RISK ANALYSIS

Offshore platforms sit in open waters, exposed to severe wind and wave forces from hurricanes in the Gulf of Mexico. The damage from Hurricane Andrew is a prime example of the potential risk to platforms in the path of a hurricane. Wind gusts during Andrew reached 160 miles per hour in several locations, close to the 100-year design criteria for offshore platforms.

The RMS™ Offshore Platform model provides the user with a complete perspective on property and time element loss levels, including the probability of exceeding various levels of loss. The model employs both historical and stochastic storm events to generate a robust estimate of the risk posed to an individual platform or a portfolio of platforms.

State-of-the-art wind hazard data and comprehensive exposure data for over 4,000 fixed and floating platforms are included with the model to aid in accurate high-resolution analysis.

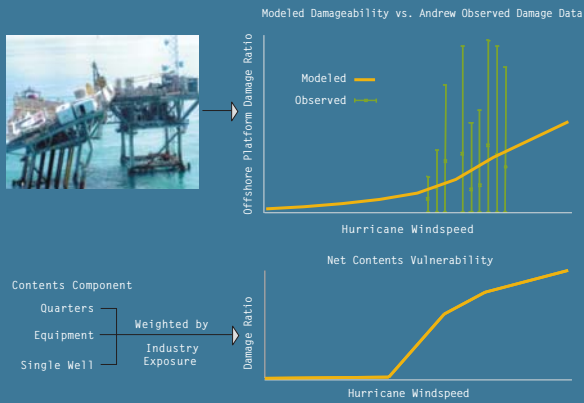
## THE FULL SPECTRUM OF PROBABILISTIC LOSS ESTIMATES

Using the same underlying wind hazard model and storm set as the RMS™ U.S. Hurricane model, the Offshore Platform model allows simultaneous loss calculation of onshore and offshore exposures from a single storm set.

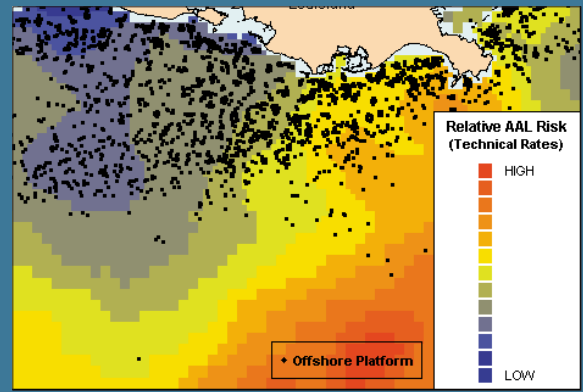
Underwriters can analyze an account with both onshore and offshore locations in a single analysis, and catastrophe portfolio managers can evaluate their aggregate risk to hurricane loss for all insured exposures.

This model provides the user with a complete view of exposure, key events driving losses, and a full range of probabilistic loss estimates including:

- Ground up (before insurance) property loss
- Gross loss based on the application of insurance program structures common to offshore energy business
- Exceedance Probability (EP) curve representing the full frequency/severity loss relationship
- Average annual loss
- Event loss table displaying critical loss events



*Component-based vulnerability curve developed based on observed structural hurricane damage data*



*Relative risk for offshore platforms in the Gulf of Mexico, based on average annual hurricane loss*

## STRUCTURAL VULNERABILITY AND EXPOSURE DATA

Extensive loss data from storms of varying intensities, including Hurricane Andrew, has been incorporated into the RMS™ Offshore Platform model to engineer damage functions. This data includes detailed and aggregate insurance claims as well as engineering studies of component damage to specific platforms in historical events.

Building and contents vulnerability functions are available for the complete spectrum of offshore platform structures in the Gulf of Mexico including shallow water structures, fixed platforms, and deepwater structures.

The offshore industry exposure database contains detailed information on over 4,000 fixed and floating platforms, including:

- Platform name
- Coordinate level location (latitude/longitude)
- Construction class
- Replacement cost values for building and contents

Additional data fields include distance to shore, water depth, area code, block number, operator, and installation date.

## RMS MODELED LOSSES FOR THE GULF OF MEXICO

Application of a probabilistic modeling approach allows the user to quantify both the frequency and severity of potential hurricane losses to the offshore energy market. The model also includes deterministic analysis for key historical storms.

Using these capabilities, in conjunction with the offshore industry exposure database, users can generate key benchmarks for industry loss comparisons. For example, RMS estimates that Hurricane Andrew would cause structure and contents damage in excess of \$1.7 billion to offshore platforms if it were to occur today; Hurricane Camille would cause approximately \$2.2 billion in damage. On a probabilistic basis, the 200-year loss for the industry exposure would be approximately \$4 billion.

Similar loss statistics can be easily developed for specific company exposures to understand and manage hurricane catastrophe risk to energy exposures in the Gulf of Mexico.

## HISTORY

- Released in 2003
- Available in RiskLink®-DLM (Detailed Loss Module)

## GEOGRAPHIC SCOPE

- Gulf of Mexico

## EXPOSURE RESOLUTION

- Latitude/Longitude
- Area/County (e.g. Eugene Island)

## PROBABILISTIC EVENT SET

- 15,716 stochastic events for the continental U.S., of which approximately 7,000 affect offshore energy risk in the Gulf of Mexico
- Employs the same event set and event rates as the RMS™ U.S. Hurricane model

## HAZARD MODELING

- Full life cycle hurricane track modeling captures storm behavior within the Gulf of Mexico, as well as correlation with onshore risk
- Hurricane windfields modeled using a Variable Resolution Grid (VRG) covering the Gulf of Mexico, with higher resolution in areas of high exposure

## VULNERABILITY MODELING

- Covers property damage and combined operators extra expense and business interruption
- Unique damage functions for shallow water structures, fixed platforms, and deepwater structures
- Vulnerability curves based on observed structural damage and insured loss data
- Includes effects of wind and wave damage

## OFFSHORE PLATFORM INDUSTRY EXPOSURE DATABASE

- Offers comprehensive coverage of building and contents values for over 4,000 fixed and floating platforms in the Gulf of Mexico
- Includes information on platform name, latitude and longitude, construction class, property replacement cost values, distance to shore, water depth, area code, block number, operator, and installation date

## INDUSTRIAL FACILITIES MODEL

- RMS™ Industrial Facilities model may be licensed separately for analysis of onshore energy risks

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