With the passage of the Terrorism Risk Insurance Act, commercial property and casualty insurers are required to offer coverage for losses due to international terrorist activity within the United States. For the first time, insurers are required to make difficult pricing decisions regarding terrorism risk. The AIR Terrorism Loss Estimation Model is designed to help P&C insurers meet the requirements of the new legislation, provide information to rating agencies and to determine their reinsurance needs. The fully probabilistic AIR model estimates property, workers’ compensation, life, accident & health, and disability losses from possible future terrorist attacks to support pricing and underwriting decisions down to the individual policy level.

The AIR model, launched in September 2002, is the first detailed terrorism loss estimation model to provide fully probabilistic loss costs. In fact, the AIR model was used to develop the advisory loss costs filed by ISO.

The AIR Terrorism Loss Estimation Model provides the quantitative information that insurers, reinsurers, and corporate risk managers need in order to understand the financial impact of potential acts of terror and to support decision-making. The AIR model can be used to:

- Analyze concentrations of exposures and their proximity to likely targets
- Examine the effects of attack scenarios that affect specific exposures
- Perform fully probabilistic analyses for company-specific portfolios
- Support pricing, portfolio management, and overall risk management
- Analyze correlations of estimated losses across multiple lines of business on an event basis
- Provide information to A.M. Best and other rating agencies

AIR’s structured approach provides probabilistic loss calculations for:

- Property
- Workers’ Compensation
- Life
- Accident & Health
- Disability

Attack Location, Frequency and Severity

Historical data on terrorist attacks is significantly limited due to the fortunate rarity of such events. Uncertainty surrounding the frequency and severity of future terrorist activity is therefore much higher than in the case of natural catastrophes. To develop estimates of the frequency, location and severity of potential future terrorist attacks, AIR employed the Delphi Method, assembling a highly credentialed team with national and international, high-level operational and analytical expertise in counter-terrorism.

With input from the expert team, AIR identified possible targets for future terrorist attack. The resulting “landmark database” consists of over 300,000 targets that include commercial, industrial, educational, medical, religious, and governmental facilities. A subset of trophy targets carry a higher probability of major attack.

The model analyzes various threats posed by domestic extremists, formal international and state-sponsored terrorist organizations, and loosely affiliated extremist groups. The nature of the selected targets and of the weapons used is a function of the goals and capabilities of the individual groups. A wide variety of weapon types is considered. These include the full range of conventional weapons, including bombs of various sizes, as well as general and commercial aviation crash. Also modeled are the effects of nonconventional weapons, including chemical, biological, radiological, and nuclear (CBRN).

The AIR landmark database includes over 300,000 potential targets.
Weapons Effects on Structures and Lives

The AIR terrorism model takes a rigorous engineering-based approach to estimating damage and injury from weapons effects on both the target and surrounding buildings. These effects are multiple and include pressure and shock waves, fire, and both falling and projectile debris.

To model the effects of nonconventional weapons, the AIR terrorism model utilizes the Consequences Assessment Tool Set (CATS), a GIS-based software developed for the Defense Threat Reduction Agency (a unit of the Department of Defense) and the Federal Emergency Management Agency. CATS is capable of simulating various attack types, including chemical agents such as sarin and VX, and biological agents such as anthrax and smallpox. Nuclear and radiological attacks using materials such as cesium and cobalt are also modeled.

Probability Distributions for Loss and Injuries

The AIR terrorism model generates the full range of potential losses to property, workers’ compensation, life, and accident and health, along with their likelihood of occurrence. The loss calculation takes into account policy coverage structures and, for workers’ compensation, benefit structures.

The full range of both conventional and nonconventional weapons is modeled, including explosives, aviation crash, chemical, biological, radiological and nuclear.

Identify concentrations of property and populations and their proximity to likely targets.

Estimate losses across multiple lines at any resolution.

Analyze “what if” scenarios for specific exposures.

Please contact AIR or your ISO representative for more details on how your company can utilize this critical new technology. To find out more about AIR, visit www.air-worldwide.com.