ISSUE 2 : 2012

FM Global

[reason]

PROPERTY RISK AND INSURANCE SOLUTIONS FOR A COMPLEX WORLD

AFTER SHOCKED

FULFILLING THE PROMISE AN INSURER MAKES *TO ITS CLIENTS ON THE DAY THE EARTH MOVED OFF THE COAST OF JAPAN*

+ BLOOD IS THICKER THAN WATER

Family-owned for generations, the Moore Company makes it through the worst

+ IGNITING CONTROVERSY

To avoid confusion, a major change in terminology

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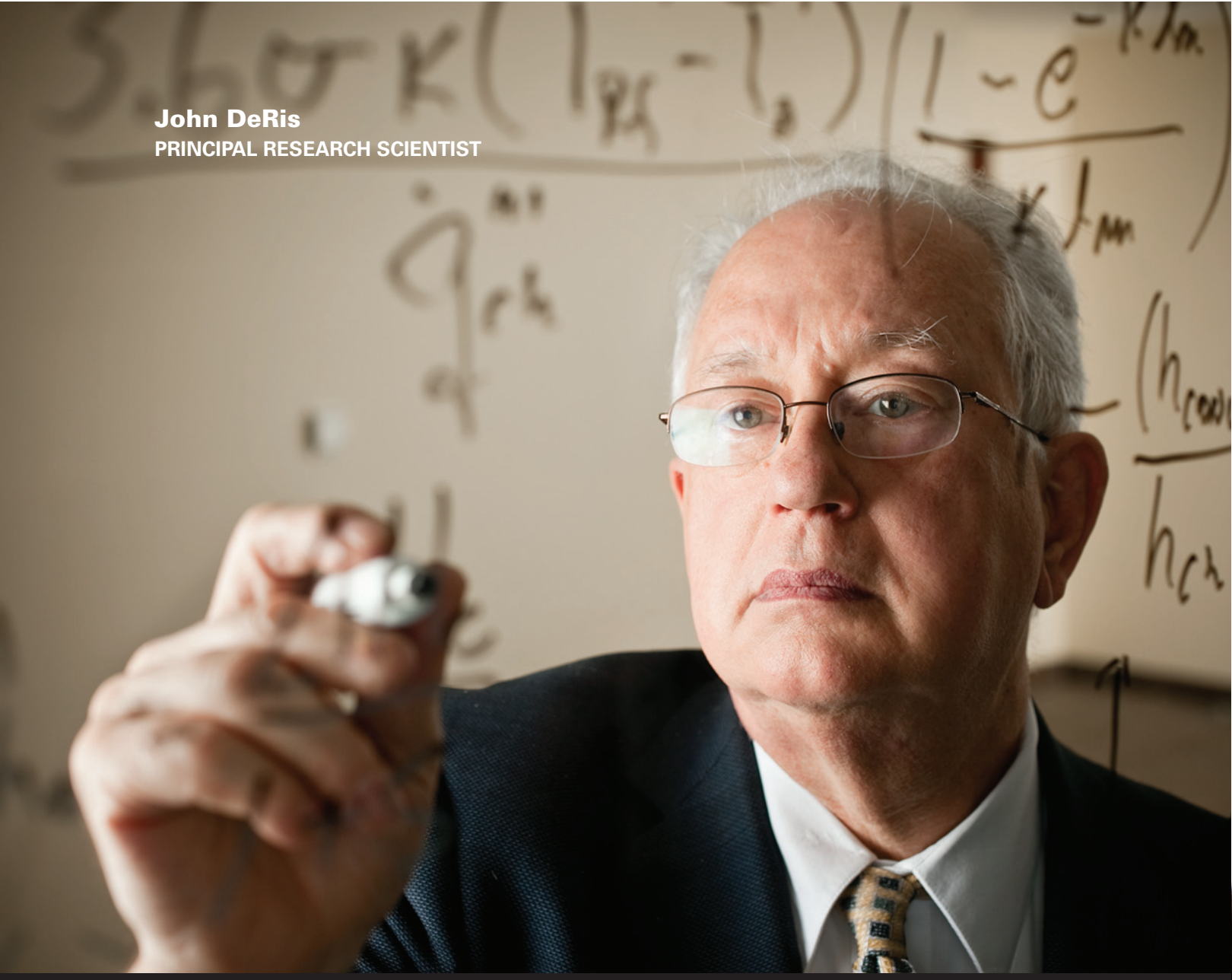

The Formula for Success

DeRis, an award-winning research scientist for FM Global, began his tenure in 1968 and retired in 2011. Throughout his career, he authored several landmark studies, specifically on heat transfer and the spread of fire, and his work has been of great benefit to our clients.

At FM Global, research holds a critical place in our business model. With scientists and researchers from 14 countries, speaking 16 languages, with 50 advanced degrees, the department blends integrated computational and experimental/testing activities, including both small- and large-scale experiments and testing at our 1,600-acre Research Campus, as well as 10+ teraflop scientific computing at our Center for Property Risk Solutions.

FM Global would like to thank John for his service, and a lifetime of scientific achievement.

Insurance Evolved FM Global®

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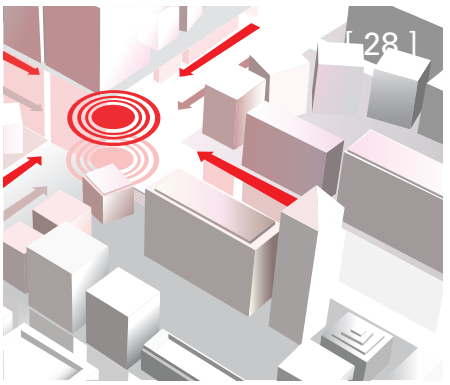

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GERRY ALONSO is senior vice president, claims and enterprise learning, in Johnston, R.I., USA.

Recent reads:

- *The Articulate Executive in Action: How the Best Leaders Get Things Done* by Granville N. Toogood
- *Turning of the Tide: How One Game Changed the South* by Don Yaeger with Sam Cunningham and John Papadakis
- *Decision Points* by George W. Bush

JOHN LEBLANC is assistant vice president and manager, special hazards, engineering and research, in Norwood, Mass., USA.

Recent reads:

- *The Name of the Wind (Kingkiller Chronicles, Day 1)* by Patrick Rothfuss
- *The Wise Man's Fear (Kingkiller Chronicles, Day 2)* by Patrick Rothfuss
- *Hell's Gates: The Terrible Journey of Alexander Pearce, Van Diemen's Land Cannibal* by Paul Collins

GREGORY TWOMEY is claims manager at the Norwalk, Conn., USA, branch office.

Recent reads:

- *Need You Now: A Novel* by James Grippando
- *Tribes: We Need You to Lead Us* by Seth Godin
- *Too Big to Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System—And Themselves* by Andrew Ross Sorkin

BILL ENGLUND is assistant vice president, senior general adjuster, claims, in Johnston, R.I., USA

Recent reads:

- *Coaching, Counseling & Mentoring: How to Choose & Use the Right Technique to Boost Employee Performance* by Florence M. Stone
- *Understanding Today's Electricity Business* by Bob Shively and John Ferrare
- *The Vintage House: A Guide to Successful Renovations and Additions* by Mark Alan Hewitt and Gordon Bock

Policies and People, Put to the Test

The last thing you'd expect from an insurance company is international intrigue and nail-biting tension, but that's what we got here at FM Global a little more than a year ago. Our cover story in this issue features the chronological accounts of staffers involved in responding to the Sendai, Japan earthquake and tsunami. In many voices, they recount the myriad challenges they encountered as they tried to protect their own people and keep the promise an insurance company makes to its clients. The chronology also looks at the complications and complexities posed by today's extreme events. What did it take to overcome these hurdles, especially in light of so much tragedy and devastation? It's a testament to the human spirit, a moment in time when ordinary people are put to extraordinary tests.

The Moore Company, a fourth-generation manufacturing firm established in 1909, also had its spirit put to the test last year, when a massive flood overtook one of its key facilities, threatening the livelihood of its dedicated hometown staff. Four feet of water rushed in as employees evacuated, wondering as they left if the plant had finally hummed its last few bars. But Moore's own fortitude and FM Global's quick reactions prevented total devastation, and the manufacturer got back up and running in impressively short time. We've captured this success story in print and on video as the latest installment of *Reason*'s "Working Together" series.

Bob Gulla, managing editor
reason@fmglobal.com

Selling risk management is getting more complicated because you're talking about events that affect others ***that could, in turn, affect you.***

Today, risk management professionals must think beyond the direct event that hits you ***to the indirect event that hits your business partner*** **and takes you along with it.**

– *Shivan S. Subramaniam,* *Chairman and Chief Executive Officer, FM Global*

On The AGENDA

ARIA 2012 ANNUAL MEETING

American Risk and Insurance Association
Minneapolis, Minn., USA
Aug. 5 – 8, 2012

Founded in 1932, the American Risk and Insurance Association is the premier academic organization devoted to the study and promotion of knowledge about risk management and insurance.

FIRE RESCUE INTERNATIONAL TRADE SHOW

Atlanta, Ga., USA
Aug. 23 – 27, 2012

Fire Rescue International provides leading manufacturers and suppliers of fire and rescue products and services the opportunity to meet and conduct business with a diverse audience of fire/rescue professionals, such as company officers, training officers, firefighters, wildland firefighters, fire and EMS chiefs, and federal disaster responders.

RIMS CANADA CONFERENCE

Saskatoon, Saskatchewan, Canada
Sept. 9 – 12, 2012

The RIMS Canada Council (RCC) is a standing committee of the Risk and Insurance Management Society, Inc. (RIMS) that addresses the strategic initiatives of RIMS and risk management issues in Canada.

2012 SFPE ANNUAL MEETING

Society of Fire Protection Engineers
Savannah, Ga., USA
Oct. 14 – 19, 2012

This conference highlights presentations on advanced and cutting-edge practices in fire protection engineering that are used to protect people, property and the environment from fire.

AFSA 2012 CONVENTION AND EXPOSITION

American Fire Sprinkler Association
Kona, Hawaii, USA
Oct. 15 – 20, 2012

Organized in 1981, AFSA is a nonprofit, international association representing open-shop fire sprinkler contractors dedicated to the educational advancement of its members and promotion of the use of automatic fire sprinkler systems.

CHINA FIRE

Beijing, China
Oct. 18 – 20, 2012

Approved by the Ministry of Science and Technology of P.R. China and the Ministry of Public Security, P.R. China, China Fire 2012 is the 15th international fire protection equipment technology conference and exposition organized by the China Fire Protection Association.

FERMA RISK MANAGEMENT SEMINAR 2012

Federation of European Risk Management Associations
Versailles, France
Oct. 22 – 23, 2012

Established in 1974, FERMA brings together the national risk management associations of 17 countries, and represents more than 4,800 individual members and a wide range of business sectors from manufacturing to financial services, charities, health organizations as well as local government organizations.

DKM

International Trade Fair for the Finance and Insurance Industry
Dortmund, Germany
Oct. 24 – 25, 2012

This is the leading international trade fair for the German finance and insurance industry.

SWE12

Society of Women Engineers
Houston, Texas, USA
Nov. 8 – 12, 2012

The Society of Women Engineers (SWE) is a not-for-profit educational and service organization that empowers women to succeed and advance in the field of engineering, and to be recognized for their life-changing contributions as engineers and leaders.

UPDATES

A PROFESSIONAL DEVELOPMENT

Spencer Educational Foundation awards universities US$100,000 in loss prevention education grants

Two university risk management programs are the latest recipients of Spencer Educational Foundation Loss Prevention Education Grants funded by the FM Global Foundation.

The Center for Insurance Studies at California State University, Fullerton, Calif., USA, and Old Dominion University in Norfolk, Va., USA, will both receive US$50,000 to develop course curricula that enhances their students' understanding of the value of loss prevention within the realm of risk management. Previous Loss Prevention Education Grant recipients include Ball State University in Muncie, Ind., USA, the University of Hartford in West Hartford, Conn., USA, and Virginia Commonwealth University in Richmond, Va., USA.

"FM Global believes most loss is preventable, not inevitable, and knows that risk managers who are well-educated and champion that philosophy can improve the quality of risk management within their organizations and help ensure the resiliency of their enterprises," said Brion Callori, senior vice president of engineering and research at FM Global.

> "FM Global believes most loss is preventable, not inevitable, and knows that risk managers who are well-educated and champion that philosophy can improve the quality of risk management within their organizations and help ensure the resiliency of their enterprises."
>
> **Brion Callori,** SENIOR VICE PRESIDENT OF ENGINEERING AND RESEARCH AT FM GLOBAL

In 2008, the FM Global Foundation contributed US$525,000 to the Spencer Educational Foundation, the largest gift in the foundation's history. This gift included US$300,000 earmarked to assist universities in helping students better understand the valuable role property loss prevention engineering can play in helping to effectively manage risk. The remaining funds go toward annual FM Global scholarship awards for students pursuing degrees in risk management or insurance.

"The FM Global Foundation's support has been critical to helping the Spencer Educational Foundation with its mission to enrich risk management education," said Peggy Accordino, foundation chair. "These grants are a critical investment in the next generation of risk managers and to enhancing the great value our profession can add to an organization's risk management culture."

Weather Report

TV channel showcases Research Campus

The Weather Channel recently featured FM Global in five monthly broadcast segments that were designed to help viewers be better prepared when Mother Nature strikes. The segments showcased FM Global's Natural Hazards Laboratory, which is capable, among other features, of replicating the intensity of large earthquakes. The laboratory is located at the company's US$125 million Research Campus in Rhode Island, USA.

Fitch: Thumbs Up!

Consistent recognition reflects strong standing in the marketplace

For the sixth straight year, Fitch Ratings has affirmed the 'AA' (Very Strong) financial strength rating and 'Stable' rating outlook for FM Global. According to Fitch, "The ratings continue to reflect FM Global's strong capital and long-term underwriting profitability, competitive advantages derived from the company's engineering expertise and global presence in specialty commercial property insurance markets, as well as benefits drawn from the company's mutual company status."

Cash on the Barrelhead

Adjuster expertise and claims confidence result in an accelerated payment process on smaller claims

Earlier this year, FM Global introduced an accelerated claims process for most gross claims less than US$100,000. And Renee Simms, assistant vice president, insurance, at RioCan, is quite pleased about that.

As Canada's largest real estate investment trust exclusively focused on retail real estate, RioCan has been working with FM Global since 2001. "We can definitively state that FM Global's new accelerated claims process represents a fundamental shift in our relationship—a shift in a positive direction," Simms said.

Clients talk, insurer listens

Surveys in which clients indicated they would appreciate a more expedited claims process played a role in FM Global's decision to consider new procedures. Another factor was the growth of Affiliated FM, a member of the FM Global Group that specializes in commercial property insurance for the middle-market segment of business and industry.

"As the Affiliated FM book has grown over time, we have seen a significant increase in the number of small claims we are handling," says Steve Abbott, vice president and claims manager, Eastern division, FM Global. In fact, 84 percent of claims filed with FM Global are for gross claims less than US$100,000; however, these claims represent a very small percentage of what FM Global pays out annually in settlements.

"It just makes sense to quickly resolve the smaller claims and spend more time on adjusting bigger claims," Abbott said. "We can be more responsive to our clients in their times of need on larger losses, and respond to large claim submissions faster, therefore improving client service not only on smaller losses, but also on larger ones."

Expedited payments

According to Abbott, the new accelerated claims process puts payments into clients' hands much more quickly than in the past. "Our claims adjusters spend less time collecting documentation and compiling it into a claim package for approval."

Instead of waiting for a client to receive a price from the contractor for emergency services before settling the claim, FM Global adjusters are now able to rely on their extensive experience to recommend an estimate to the client. FM Global and the client can agree on a net claim and initiate payment the same day. Adjustments to the payment can be made if the estimate proves to be too low.

"We are still meeting the basic statutory requirements for file documentation and handling," emphasized Abbott.

Simms explained the claims process from RioCan's perspective: "Historically, a claim submitted under the policy would be paid after all invoices were actually received

by FM Global, and in most cases these costs would be paid first by RioCan. This process could take up to six months or more to see a claim to final resolution. But with the new accelerated claims process, a claim is submitted to FM Global with a copy of the approved contractor's estimate and a copy of our purchase order confirming our binding agreement with the contractor. Now, within 60 days, payment can be issued under our policy."

"We can definitively state that FM Global's new accelerated claims process represents a fundamental shift in our relationship—a shift in a positive direction."

Renee Simms
ASSISTANT VICE PRESIDENT
INSURANCE, RIOCAN

This is a dramatic improvement to RioCan's bottom line. "In most cases, the costs incurred due to an insured loss would mean that our operational cash flow was negatively affected; and sometimes this negative impact would remain on our books until the loss was paid, which could be up to six months. With the new accelerated claims process, the impact to our cash flow is proving to be negligible as claims are resolved more quickly."

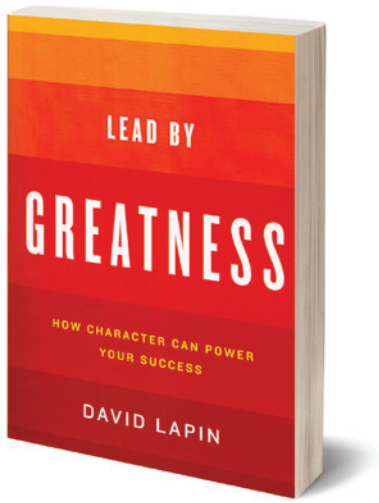
Traditional process still available

Abbott notes that clients can choose to have their claims processed the traditional way if they don't want to use the expedited process. He also explains that not all claims under US$100,000 are eligible for the expedited process.

If all goes well, FM Global will explore expanding use of the procedures to a broader subset of losses, for example, gross losses less than US$250,000.

Follow Your Leader

A book on business with a solid, spiritual foundation



LEAD BY GREATNESS
How Character Can Power Your Success
by David Lapin

Leadership is a subject that inspires volumes and volumes of words. In bookstores, only "love" and "happiness," the undeniable toppers of the self-help, abstract topic list, lend themselves to greater allegory and verbosity. Leadership, of course, is the hands-down winner in the business world, which makes David Lapin's *Lead By Greatness*, a source of natural attraction to those who aspire to ascend the corporate pay scale.

Fortunately, Lapin isn't a hack pop psychologist. He runs a leadership consulting company designed to help companies outperform their competition. Lapin, also a rabbi, has come to his understanding of leadership from an unusual perspective—as both a spiritual teacher and as a bottom-line management expert. He combines his knowledge of the workplace with his intuition of the human spirit in crafting the insight that goes into *Lead By Greatness*.

So what constitutes a great leader? Lapin has distilled it to eight key character traits that, he explains, all extraordinary leaders have. And the good news is that all of them can be developed. What are they exactly? Here's a hint: "Truly great leaders don't rely on their functional expertise or technical background," Lapin writes. "Great business leaders become experts in converting the spiritual dynamics of human energy into growth and economic value."

If you want to know more, you'll have to pick up Lapin's book. It isn't fair to pare his thoughts on leadership down to merely a list of traits—you'll miss out on the author's fine, anecdotal wisdom and deep reflections on the human experience. *Lead By Greatness* is enthralling, a mixture of grounded business advice and lofty spiritual guidance. It's a brainy blend that might just help you discover your own great leadership qualities.

Talk of the Town

When it comes to life safety, talking the talk is now the topic of conversation

[CLIENT]

You know, I've gotta give you folks credit. You are hyper-focused on preventing property loss, and there's no disputing that you're really good at it. But the one criticism I do have, and have had for some time, is that you seem indifferent when it comes to the safety of our workers. That bothers me.

[FM GLOBAL]

I get it. And you're right. We have been hesitant to address the issue of life safety in our risk improvement recommendations because our expertise is in protecting property. I'm happy to say we're no longer hesitant about discussing life safety. We've heard our clients and we're modifying our approach as a result.

[CLIENT]

Really? How's that?

[FM GLOBAL]

Well, first, we acknowledge there's a link between a well-protected property and the safety of that property's occupants. That might sound obvious and I guess it is. Well-protected properties are safer facilities, period. End of story.

[CLIENT]

I'm impressed. You're coming around. I mean, safety is critical in our organization; we're heavy industry, and some of our workers are in danger all the time. We spend our time and money developing safe practices, and we need you to hear us and empathize with our concerns about life safety.

[FM GLOBAL]

We recognize that and we do hear you. The fact is sound property loss protection strategies promote safer work environments. In the past, our single-minded focus was detached from our clients' concerns and it confused people. We're clearing things up right now. We can talk more proactively about promoting life safety through property loss prevention.

[CLIENT]

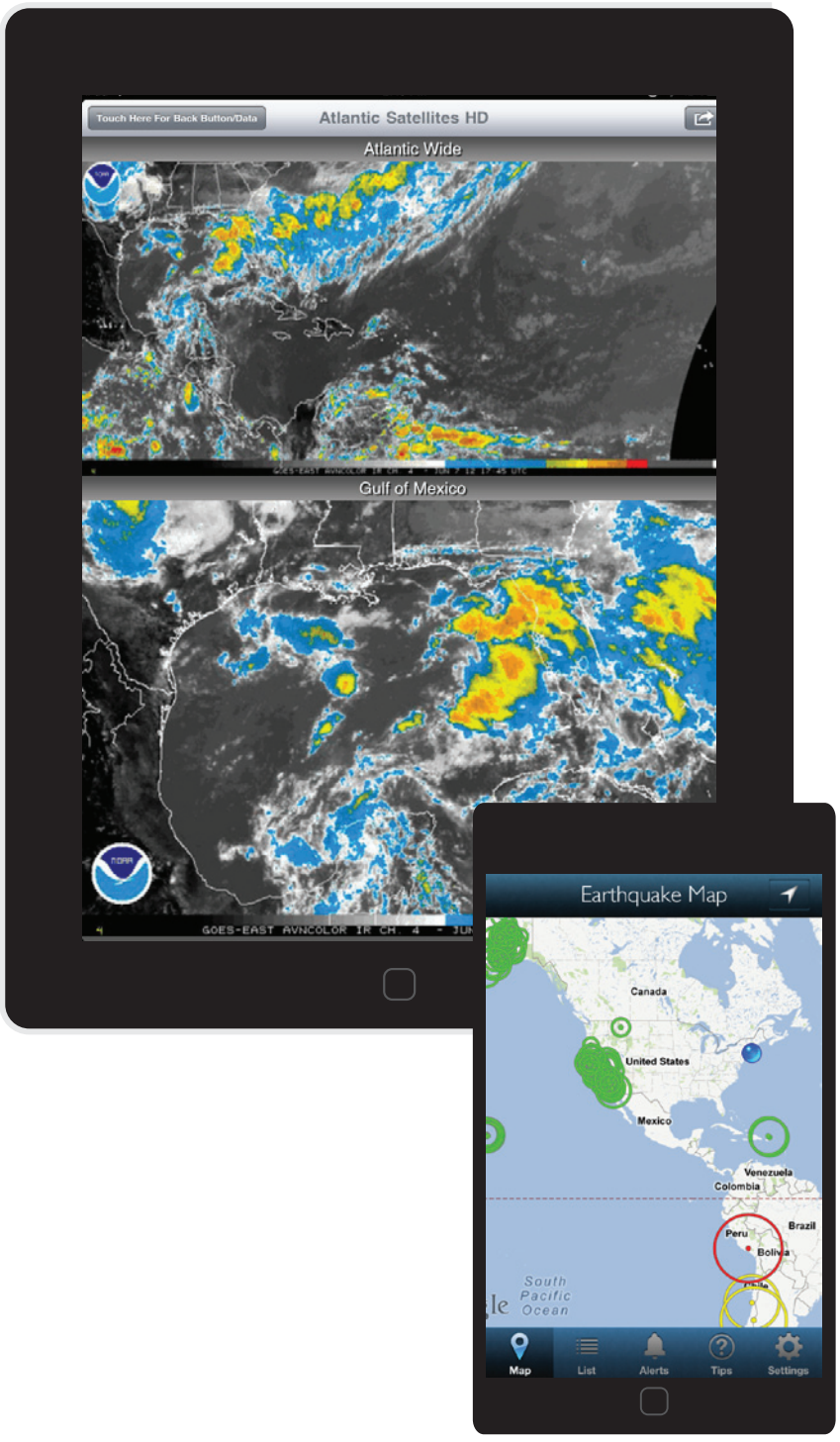
That takes a load off my mind. Seriously, knowing that you're hearing our concerns is a welcome change. Now what's left to chat about?

[FM GLOBAL]

You tell me … I'm still listening!

At Your Fingertips

Tap into these apps to complement your personal portfolio of risk management tools



Mobile technology is changing the game for risk managers. Apps have added value to our knowledge base in ways that we couldn't have imagined just a few years ago. While we certainly do not feel that apps are acceptable substitutes for the reliable channels you already use to consume information, we believe they can serve as a nice complement to your loss prevention utility belt.

Hurricane Tracker

You don't have to be a meteorologist to appreciate the data provided by this nifty app. While it generally focuses on the storms in the Atlantic and Eastern Pacific, the app is well-designed, glitch-free and fun to navigate. You'll get forecasts, future outlooks, animated satellite maps in real time, and other goodies, making it a worthwhile way to spend some time storm tracking. It's especially helpful if you've got a geographical or business interest in regions frequented by these events. *Available for smartphones and tablets.*

Earthquakes!

If earthquakes are an issue for you, a little pocket change on this app would be money well spent. It features a satellite map of the world, with pins plotted to represent recent seismic events. Across the top, a simple seismographic band presents magnitude readings. You'll be stunned at the frequency of earthquakes throughout the world, and if you tap the "open source" button, you'll find more detail on each event, courtesy of the U.S. Geological Survey. *Available for smartphones and tablets.*

Bellwether Storm

A destructive tornado in 1953 prompts the National Weather Service to take decisive action

How often have human affairs miscarried because of the unexpected? Consider the June day in 1953 when Worcester, the second largest city in New England, USA, was hit by an unprecedented weather event that most people thought "can't happen here"—a tornado.

John F. McDonald, who was a boy at the time of the tornado, recalls spotting the characteristic funnel cloud from his neighborhood in nearby Shrewsbury. However, when he ran home to tell his mother, the TV repairman working at the house told him he was "crazy" and assured him tornadoes simply didn't occur in Massachusetts.

It was a belief held by many others at the time, and it probably had something to do with the slow response by individuals, authorities and even weather forecasters to manifestations of the atmosphere's impending fury.

In fact, the conditions that created the tornado began on June 7, when high pressure and low pressure air masses collided over the Midwest, yielding multiple tornadoes in Nebraska, Ohio and, most notably, Michigan where on June 8, the Flint-Beecher tornado became the last single tornado to cause more than 100 deaths in the United States, with the exception of the 2011 Joplin, Mo., USA, tornado. By June 9, the same troubled atmosphere was roiling New York State with thunderstorms and moving into Massachusetts.

John F. Kennedy, a Massachusetts senator in 1953, surveys the aftermath of the tornado. *Photos courtesy of Bill Chittick.*

According to Bill Chittick, a historian of the storm, forecasters at the U.S. National Weather Service saw all the signs of an impending tornado, but did not issue a warning, instead contenting themselves with issuing the first severe thunderstorm warning ever posted in the region.

It was not until late in the afternoon that what was to become known as the Worcester Tornado first formed, touching down in a rural community, Petersham, where it caused its first injuries. About this time telephone company officials became aware of the storm, and some public safety officials may have also gotten wind of it. But with no precedent for responding to a tornado, they did nothing.

Thus, the city of Worcester and a few nearby towns were hit successively by a tornado, which, at its maximum extent, spanned more than a mile in width.

Rumbling eastward at about 35 miles per hour (56 kilometers per hour), the storm continued through Shrewsbury and neighboring Westborough before starting to finally dissipate, about an hour after it began its rampage. Ironically, the National Weather Service Boston office did issue a tornado warning when the storm was over. By then, recalls McDonald, his earlier tornado sighting was reconsidered when a neighbor came stumbling down the street, disheveled and nearly incoherent, sobbing out her story of a ride home from work in a city bus that had nearly been carried off by the wind.

She was one of the fortunate ones. In its wake, the tornado left behind nearly 100 dead, more than 1,000 injured, and thousands of buildings obliterated or damaged beyond repair—including much of

a local college campus. According to later assessments, a total of 10,000 people were left homeless. Damage at the time amounted to US$53 million, the equivalent of at least US$1 billion today, depending on the method of calculation.

Chittick says it was a bellwether storm by many measures. At the time it was the costliest tornado in U.S. history. The real key, though, is in the lessons learned. Just eight days later, the National Weather Service reorganized its storm prediction service. "That was the beginning of the modern storm prediction center—they had actually been formed a few months before but they weren't fully organized, and this event galvanized them into action," says Chittick. Likewise, the practice of issuing thunderstorm and tornado warnings, then in an experimental phase, became routine.

Radar, just starting to be adopted for weather forecasting, was given further impetus. "Radar scientists working near Boston had clear images of the storm, but for whatever reason, they did not use that information," says Chittick. The organization of storm spotters to help track storms once they were on the ground also got a boost.

Specialist Shangyao Nong, based on a special report issued by Intergovernmental Panel on Climate Change (IPCC), the confidence level of scientists in detecting any trends in tornadoes is low because of limited reliable historical data. "Current climate models," says Nong, "cannot predict future tornado trends, including those that may be related to climate change. That's why preparedness remains the best defense against the destructive power of tornadoes."

Preparedness is indeed the best defense. According to Eric Jones, manager of FM Global's business risk consultant group, all that is required is to take a good look at the world. "It's unfortunate that people are just now waking up to the fact that disasters do happen. Having to sell that fact hasn't really been an issue lately because the media does it for us. What we do as business risk consultants is get people to understand that, from a business continuity planning standpoint, we need to consider worst-case scenarios like tornadoes. It's surprising how often we find companies undertaking business continuity planning without considering worst-case scenarios."

> "Current climate models cannot predict future tornado trends, including those that may be related to climate change. That's why preparedness remains the best defense against the destructive power of tornadoes."
>
> **Shangyao Nong,** SENIOR RESEARCH SPECIALIST, FM GLOBAL

As a result of these changes, Chittick says the number of casualties from tornadoes nationally began to drop. "With the exception of Joplin, the number of people killed or seriously injured as a result of severe windstorms has dropped," he says.

Although short-term forecasting of tornadoes has improved steadily, long-range forecasting remains problematic. According to FM Global's Senior Research

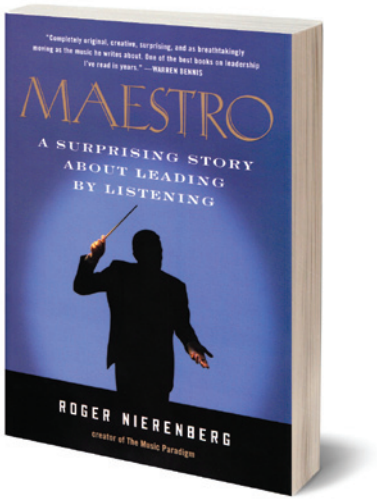
Another aspect of preparedness is knowledge. In 1950s Massachusetts, only a few people recognized the tornado for what it was. Chittick says by chance, the Atomic Energy Commission conducted a "readiness" study of the Worcester area—primarily related to concerns about nuclear attack. They asked citizens who had seen the tornado what they thought of it. Most said they had thought it might be a tornado but a significant number had refused to even consider that possibility.

As a side note, rather than simply blaming the vagaries of Mother Nature, Chittick says some speculated that the Flint-Worcester tornado outbreaks might have been caused by an atomic bomb test in Nevada a few days earlier, on June 4. However, testimony before the U.S. Congress showed that the winds and debris associated with that test had passed over the Gulf coast region, and had no association at all with the severe weather far to the north.

For those who survived, though, the event remained simply unforgettable. McDonald says about eight years later he panicked when a large "dust devil" came swirling across his college campus heading right toward his dorm. "I literally ran for cover as quick as I could. Once you have experienced what a tornado can do, you never forget," he says.

Listen to the Music

Why a wise leader should direct her reports as a conductor would an orchestra



MAESTRO
by Roger Nierenberg
Penguin Press, New York, N.Y., USA, 2009

Leadership is about listening, empowering and providing inspirational vision to others—these are the keys to enabling an organization to reach its full potential. Author Roger Nierenberg, in his book, *Maestro*, says these traits are no better demonstrated than in a symphony orchestra. A renown conductor, Nierenberg shows how these principles are in play in real time between the orchestra and its conductor during a concert.

In the book, Nierenberg uses his personal experiences to tell the story of a struggling executive who finds an unlikely source of wisdom and inspiration in a symphony orchestra. The executive faces the daunting challenge of turning around a struggling division with a deeply divided, bickering team. Puzzled by his failure to establish a new vision through traditional means known to him, he asks his daughter's violin teacher, who happens to be a member of a symphony orchestra, what makes him an extraordinary violin player. The musician invites him to sit in on a series of orchestra rehearsals. Through those rehearsals, the executive begins to realize that the maestro is an effective leader because of three traits:

1. A maestro will not micromanage. He or she will not demand mindless obedience. Instead, he or she will communicate a larger vision, inviting people to leverage their talents to the fullest extent.
2. A maestro also will enable people to feel ownership of the whole piece, not just their individual parts.
3. A maestro will lead by listening to others. When people feel that they are being listened to and acknowledged for their knowledge and expertise, they offer more of their full potential.

In the story, the key points can be summed up in two statements: "Musicians definitely do feel a certain link to the conductor, but it will never be as strong as their connection to the sounds they are making, and to the other musician's sounds. A wise leader will leverage that, and use it to direct the orchestra toward making the vision happen."

It is no different for risk management in the corporate world. FM Global research has revealed that the role of a risk manager is to be the maestro. The risk manager's goal is to get his or her organization to adopt a particular risk management philosophy, primarily through influencing those who "own the risk," from senior management down to facility management. The risk manager needs to communicate an inspirational vision that allows those who own the risk to draw upon their talents to make it happen.

He or she needs to make those people feel the ownership in risk management as a whole, not just their individual contributions. And, finally, the risk manager has to listen to those whom they are trying to influence by understanding their agendas and then demonstrating how risk management can help move their agendas forward. Only then can the vision of a strong and consistent risk management philosophy, and thus a potential competitive advantage, ever be achieved.

The risk manager has to listen to those whom they are trying to influence by understanding their agendas and then demonstrating how risk management can help move their agendas forward.

Human Errors

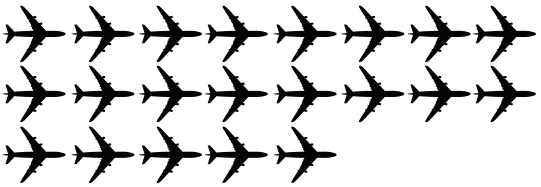
Man-made disasters accounted for nearly US$6 billion in insured losses in 2011

Since 2005, man-made disasters have been declining. For the last two years, the number of disasters attributable to human error was lower than the number of natural catastrophes. In 2011, human element disasters cost insurers US$5.8 billion—up from US$4.7 billion the previous year—accounting for 5 percent of the US$110 billion in insured losses. Fire and explosion were the costliest man-made disasters, with US$2.5 billion in insured losses last year. Man-made disasters fall into nine major categories: fire and explosion; aviation; maritime; rail; mining; the collapse of buildings or bridges; social unrest; terrorism; and miscellaneous losses.

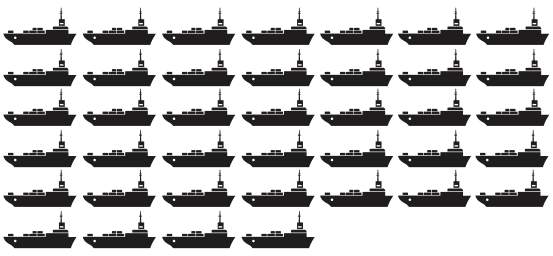
NUMBER OF INCIDENTS

INSURED LOSSES (US$ MILLIONS)

2,463



1,833



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The Cat's Out of the Bag

Everyone's talking about it: Property protection and life safety go hand in hand

Our property conservation advice helps clients protect their industrial and commercial facilities from the damage caused by fire, natural hazards and equipment breakdown. A well-protected and well-managed property is unlikely to experience a catastrophe—assembly lines continue to operate and products and services get delivered to clients. So much has long been understood and accepted. But does property protection also have a positive bearing on safety? It's a question our clients have been posing to FM Global.

Compliance with local building codes brings a certain level of protection for people, and protecting assets helps in terms of people safety. This idea is borne out through the experience at clients' sites around the globe, day in and out: a sprinkler-controlled fire in a warehouse that didn't spread throughout the factory, the flood wall that kept rising water out, and the hospital stayed open. It's also the case of the retail store manager who acted on a second's notice to a tornado warning by rapidly directing his customers and staff to the warehouse section; thanks to its reinforced design, it was the only part of the building to survive intact.

These are just a few examples showing what can—and often what does not—happen by virtue of the operation of a well-protected and well-managed property. Given the importance of safety to our clients, we asked if a positive impact to safety could be recognized in addition to issues that we already highlight in the regular course of our loss prevention work, such as business continuity, supply chain resilience and reduced environmental impact. This topic goes to longtime client concerns, namely that there are occasions when a sole focus on property protection can be perceived as a detachment from their safety goals. In fact, though, as illustrated by the previous examples, property protection and safety typically go hand in hand.

Therefore, we reflected and consulted with our clients and came to the conclusion that the topic of life safety can be safely raised. The consistent feedback from clients was that we should consider the subject appropriately, without distracting from what is our core property conservation mission. This means any discussion of safety

should happen without altering in any way our property insurance product and loss prevention services. Our areas of expertise have and will remain in these areas. Further, the assessment of the contributions that a site-specific property recommendation may have on business continuity, supply chain and safety will remain, as always, exclusively in the hands of those who are best-placed and most knowledgeable—our clients. Therefore, both our clients and FM Global agree that we will not assess the safety impact of the property hazards identified at our clients' locations, nor make particular safety recommendations.

During consultation with our clients, we have become aware of several circumstances in which property recommendations can be perceived as having a contradictory impact on safety. An often-cited example is the case of the sprinkler-valve operator as a member of the site emergency organization.

To help ensure that a sprinkler system does the job it's designed to do effectively and reliably, FM Global recommends that, in the event of a fire, a person should be assigned to attend the control valve of the operating sprinkler system and remain there and prevent unauthorized or premature closure of the valve. Sometimes these valves are only accessible from inside a building, and therefore, our clients need to take into consideration the safety of the designated person during that fire scenario. Where a client deems there may be cases where such an indoor valve should not be permanently attended, FM Global will acknowledge this client concern and, above all, work to find an alternative and satisfactory solution. In this particular case, some clients have found that a practical and low-cost solution for an existing facility is to provide a hatch in the wall, thereby allowing it to be accessed safely from outside the building. Naturally, in the case of a new facility, it is easier to account for and design safe and reliable access to such valves in the project phase using post-indicator valves. The same concerns may also influence the location choice for a fire pump room; avoiding their installation in below-grade spaces is also to be recommended.

Fundamentally, our clients want their employees to operate in a safe workplace. FM Global has the same aim. To this end, we are implementing renewed and strengthened health and safety policies and procedures in our company. We share with our clients the same sense of commitment; and we ensure that our employees, in the course of their efforts to assist in preventing and controlling property loss at clients' facilities, are not placed in harm's way. Recently, FM Global has taken the opportunity to highlight the positive contribution of property protection in the life safety realm. For example, consider the Q3 2011 *Reason* article about the 1976 Seveso disaster. The link between a well-protected chemical site and its level of safety is enshrined in process safety management, a series of systems that serve this industry from both a property and life safety perspective. Our readers can expect similar references in the context of future articles. FM Global's recognition of safety as one of the additional benefits of a well-protected property, along with our willingness to work with clients toward finding practical solutions, ultimately should create stronger, lasting relationships with our clients.

Brendan MacGrath is manager, international codes and standards at FM Global.

Other People's Money

As the world grows more complex, so too do the ways criminals find of turning illegal proceeds into legitimate money

In the past five years, the subject of financial crime has changed considerably, and what insurers and other companies need to think about has changed, too. Gone are the days when all we need to do to prevent money laundering is conduct the appropriate client identification checks.

As global business evolves, so do the efforts of law enforcement agencies and government regulators. Not only are they looking at where companies violate the law, but also whether companies have the systems in place to prevent financial crime.

In the United Kingdom, a number of insurance brokers have been fined for not having sufficient systems and controls in place. Enforcement agencies are also looking at companies that would traditionally be seen as outside their normal jurisdiction. Richard Alderman, head of the U.K.'s Serious Fraud Office (SFO), has said, "Proceeding against foreign corporations under the Bribery Act for corruption committed in other countries is a high priority for the SFO. The way companies identify and prevent financial crime needs to change and needs to keep pace with the ever-changing world. In the digital age, the implications of fraud and financial crime targeted at financial services organizations and their customers are becoming ever more significant."

The types of financial crime are diversifying at such a rapid pace, from claims fraud to credit card cloning and identity theft that by the time this article is published it is safe to say that a new type of crime will be up and running. Just as banks become more sophisticated in the ways they combat financial crime, phasing out checks, chip and pin card, so do the criminals in looking for other means to turn their illegal proceeds into legitimate money. Insurance companies and multinational organizations are increasingly the targets of such criminal acts. There are three key areas where we need to devote resource and attention: anti-bribery and corruption, financial sanctions and anti-money laundering.

While the new U.K. law on bribery and corruption has, perhaps, focused on what

companies need to do, we must not forget that this is a global problem that plagues developing and mature economies alike. For companies entering new markets and even entering into routine cross-border transactions, dealings can be fraught with regulatory and compliance risk. As such, multinational companies are potentially exposed both to corrupt officials and sales forces eager to expand business into new territories, as well as to greater scrutiny and investigation by enforcement agencies.

> "The way companies identify and prevent financial crime needs to change and needs to keep pace with the ever-changing world."
>
> **Richard Alderman,** HEAD OF THE U.K.'S SERIOUS FRAUD OFFICE

It is important, therefore, to understand the laws and regulations for every country where you conduct business before you start operating in that territory. It is also important to understand that the practice and customs in a country and the way business is generally conducted might be in conflict with local and international laws. A key part of this is understanding the compliance risk associated with third parties, representatives and agents that you do business with around the world, as well as knowing if you are responsible for the actions they take on your behalf. In a recent survey of U.K. and U.S. multinational companies, more than one in two U.S. and two in five U.K. companies did not obtain compliance certifications from agents, distributors, vendors, brokers, joint-venture partners or suppliers, leaving themselves open to potential liability for corrupt actions taken by others.

Financial, economic or trade sanctions are imposed by governments on individuals, companies, organizations or political regimes. Sanctions include a range of financial or trading restrictions, prohibitions on the supply of financial and other assistance, and outright prohibitions on trade. In practice, while it is often permitted to provide insurance cover, there is a duty to ensure that funds are not made available to those sanctioned, for example, via claims payments or returned premium. Sanction regulations also apply for indirect payments that are made through a third party to a sanctioned entity. For insurers, payment processing may take longer with extra steps to undergo to ensure compliance with international sanctions laws.

One of the key things to note about sanctions is that there is no defence for breaching a sanction in error, therefore, forewarned is forearmed. It is critical to have the proper sanctions-checking facilities in place to ensure that payments are not paid to sanctioned individuals and companies, but it is also critical that these systems are used properly with the right information going into the system at the right time; retrospective checking in most cases is not an option or a defense.

The requirements around anti-money laundering are likely to change soon. The U.K.'s Financial Action Task Force (FATF), an intergovernmental body established in 1989, has recently reviewed its original 40 recommendations to combat the misuse of financial systems by persons laundering money. These recommendations are universally recognized in more than 180 countries as the international standard for anti-money laundering, and now, countering the financing of terrorism. How these revised recommendations are adopted or enacted into law by countries, we will have to wait and see.

While these recommendations are primarily targeted at countries, keeping current with and following these recommendations is a prudent way for companies to ensure they get their policies and systems right, mitigating the risk that they are inadvertently involved in money laundering or terrorist financing. Gone are the days of money laundering being a stack of drug dollars being fed into the financial system through a bar or shop. Now launderers use sophisticated systems and shell companies, often with seemingly legitimate owners, to get their money into the electronic financial systems. Proper systems and controls and effective ongoing client identification, therefore, is essential in detecting and preventing these activities.

These issues are substantial threats and, if not managed correctly, can seriously damage a company's reputation and integrity, as well as potentially damage clients' trust in the company, threatening the financial well-being of any organization.

It is incumbent on us all to be aware of our responsibilities and to do everything we can to mitigate known risk, which includes making sure we follow the compliance processes and practices that are in place. If one does this right every time, not only will the company be protected, but just as importantly, staff and clients as well.

Omar Hameed is the legal director, FM Insurance Company Ltd. He co-wrote this article with Jeremy Dampney, company secretary, FM Insurance Company Ltd.

It's All in the Cards

The underwriting advantage, and a look at what sets leading firms apart

Underwriting is like a card game—and the best companies have the ability to improve the hand they're dealt. In today's market, superior underwriting is among the leading performance drivers for insurers.

But, beyond providing necessary capacity, how do the best companies differentiate themselves in a way that not only highlights their strengths, but also benefits their customers? This is a question I've been pondering a lot lately.

From discussions with industry leaders and my own investigation emerge three key characteristics vital to exceptional underwriting: access to the most relevant and accurate information; a strong underwriting-engineering connection that further enhances the quality of available information; and a unique perspective on relevant coverage (along with the willingness to innovate in this area to creatively meet clients' evolving needs). Together, these elements allow for consistent and reliable risk assessment; coverage and capacity stability; and recognition of improving risk quality.

Of course, every insurance company purports to focus on these elements. But only those that fully embrace best practices that interweave engineering and underwriting—and reward innovation—deliver in a way that is truly meaningful to their customers. Take a look at the quality of information, for instance. Access to and analysis of the most relevant and up-to-date information is fundamental to the practice of underwriting. Yet while most underwriters spend a great deal of time seeking out critical data, only those with the perspective to effectively analyze and interpret it are able to transform data into actionable information that can illuminate their decisions.

This means that effective underwriting requires more than simple data gathered from disparate sources. It demands perspective—insight developed over the long term—and location-based information specific to the client in question. So where does

much of the most valuable information come from? For the most capable companies, it is made available courtesy of their strong engineering-underwriting connection.

Engineering-underwriting connection

Insurers—and their customers—hate surprises. Any unexpected loss can ruin the day of both customer and carrier. But the nature of risk is inherently uncertain. To cope, skilled underwriters leverage the insight they've gleaned from careful data analysis of information provided by their engineers. Even more effective are underwriters with access to engineering-generated, location-specific information derived from firsthand exploration and evaluation of client facilities. Generating this information, and evaluating client locations using a common set of standards and requirements, is an FM Global strength, although certainly there are other companies successfully leveraging their own engineering-underwriting connections on behalf of their customers.

Why is this connection so vital? Because the 360-degree view of risk afforded by this engineering-underwriting connection, especially one developed over time, allows us as underwriters to determine precisely what is at risk—we know what we are getting into from the outset—and it helps clients better understand how their businesses operate, what exposures they face, and how great those exposures might be.

Further, it allows underwriters to more effectively select risk and responsibly expose more capital. And, it allows for more effective loss prevention measures, which lead to fewer customer losses, which, in turn, generate a performance differential that can be shared with customers in the form of greater capacity, broader coverage or more competitive terms and conditions. In the case of FM Global, it also means periodic issuance of membership credit—premium discounts—for our clients.

Back to my card game analogy. The engineering-underwriting connection is such an effective way to mitigate surprises that underwriters lacking the clear view of client risk afforded by this connection are playing their hand with all their cards face down. To be fair, perhaps one card is showing. But with so little information, determining whether they have a good hand is nearly impossible.

Even more effective are underwriters with access to engineering-generated, location-specific information derived from firsthand exploration and evaluation of client facilities.

Companies that support an integrated engineering-underwriting approach have a competitive edge. Their players/underwriters get to look at their whole hand before placing their bets, which makes wagering much easier and the probability of success far greater. Think of it this way. Say I have a royal flush. I am going to bet the ranch. But if I only hold 10-high, I'll look for other ways to differentiate that risk to eliminate potential surprises.

In a practical sense, this knowledge allows underwriters to confidently provide stable capacity, consistently and reliably. Here's a real-world example: During a time in the past decade or so when many insurers were retracting capacity, FM Global leveraged the insight gained from its own engineering-underwriting connection to actually expand capacity in the face of myriad disasters, from Katrina to the massive earthquake in Japan to the devastating floods currently washing over Thailand.

We were able to do this because we had a high degree of confidence—we knew the cards we held thanks to the location-by-location data shared between our engineering and underwriting departments. But, what if we didn't like the hand we were dealt? We'd look for ways to change it. Again, we'd look to our strong engineering-underwriting connection. Insurers with this type of integrated approach have the tools and perspective to work with their clients to improve the risk. Once improved, they can play their newly enhanced hand by re-underwriting the risk.

Coverage innovation

There's something else the best underwriting companies do: Look at insurance coverage from a different angle, thinking like their customers and, whenever possible, actively seeking their input when developing new offerings. What do clients need? What do

they want? How can we as underwriters satisfy these desires as their businesses evolve and the global economy changes? How can we keep up with these changes? The best underwriters adroitly walk the tightrope that is providing capacity for clients in a way that meets their needs while keeping the insurance company in a viable position able to grow with them.

> Today, more than 90 percent of our master policies get to clients within 20 days of binding, most on or before the binding date. This feat is unusual in the industry.

While I can't speak directly to what other companies offer, at FM Global we've developed a spectrum of insurance coverage that takes a different approach than the industry norm. Difference in conditions (DIC), machinery and equipment start-up, and accidental interruption of services are a few that come to mind. Many of these covers are unique to FM Global. Even those that are not specific to us, for instance crisis management or ingress/egress, are delivered in a way that is. Other top-performing underwriting companies have their own list of creative offerings. What we have in common is the willingness to innovate on behalf of our clients. We do this by repeatedly asking, "What can we do for our clients today?"

It is clear that creativity counts. Following this approach has allowed us to develop and deliver coverage that satisfies critical customer needs while allowing our company to differentiate itself—a true win-win. Let's look at our Time Element Select™ as an example. We've issued it as a standard cover since 2007. By offering a choice of either a gross profits or gross earnings cover after the loss occurs, our clients have the ability to determine the best option for them once all relevant information is known. This eliminates the guesswork for our clients, and gives us a competitive edge; most companies that offer it do not do so as a standard cover.

Here's another example of how creative thinking benefits our clients while allowing us to stand apart from competitors. We were looking for ways to reward customers for good loss prevention practices. After much discussion and thought, we introduced a cover that modifies a client's deductible for most losses or damage to fire protection equipment or accidental discharge not due to earthquake-related events—our way of saying, "Listen, we're your partner. We encouraged you to install sprinklers and other critical fire prevention equipment, so if certain losses occur specifically to those items, we think you should benefit from a lower deductible."

And this type of creativity extends beyond the products themselves to their delivery. Take contract certainty, for instance. Like many firms, FM Global is focused on contract certainty as a way to eliminate nasty surprises for our clients. To this end, we make sure our clients have in their hand their full policy—no binders or slips providing temporary evidence of coverage—as soon as it takes effect. If there's a large loss within even the first hour of when the contract goes into effect, all parties know exactly what the terms and conditions are and what the insurer is and isn't going to cover. We have invested a lot in infrastructure and processes to enhance our ability to deliver policies in a timely manner. Today, more than 90 percent of our master policies get to clients within 20 days of binding, most on or before the binding date. This feat is unusual in the industry, although I'm aware other companies are working toward this as well.

So what's the takeaway? In essence, the most effective insurers leverage their engineering-underwriting connection and affinity for coverage innovation like a pair of pocket aces. By playing their cards well, they—and their clients—leave the table as winners.

J. Gary Love is vice president and manager, staff operations underwriting at FM Global.

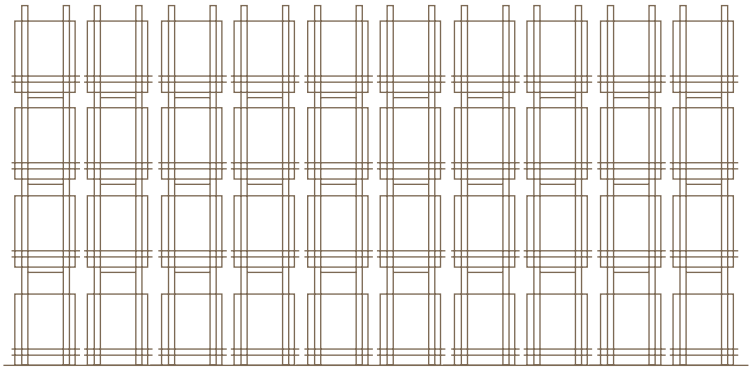
Earthquake Loss Record

Loss statistics signify why restraining equipment and storage racks is essential to reducing shake damage

In 2010 and 2011 alone, FM Global clients reported 41 earthquake-related losses where equipment anchorage and/or storage rack floor anchorage was not provided, was insufficient or failed. Total gross loss amount = **US$170 million**. Of those losses, 25 had gross loss totals of more than US$1 million. Total gross loss amount for those 25 losses = **US$164.9 million**. Average gross loss amount for those 25 losses = **US$6.6 million**.

Note: Many losses below the deductible do not get reported to FM Global. Loss amounts are total gross loss amounts (before deductible or reinsurance). All loss amounts have been indexed to 2011 values.

25



earthquake-related losses over US$1 million gross

WHERE EQUIPMENT ANCHORAGE AND/OR STORAGE RACK FLOOR ANCHORAGE WAS NOT PROVIDED, WAS INSUFFICIENT OR FAILED

= 164.9 **(US$millions)**

TOTAL GROSS LOSS AMOUNT

GUST BUSTER

Reducing wind-uplift loss around the world

Key loss prevention wind-resistance engineering guidelines supported by FM Global standards are continually challenged outside of North America when new steel buildings are designed and constructed in industrial zones. The challenge often lies in various differences between the FM Global guidelines and local load codes for the design of building structures, which can lower costs for building construction but often increase the wind damage potential for buildings.

In China, this deficiency has been demonstrated by local loss experiences over the past two decades since steel buildings became more prominent in that country. One recent loss event that attracted extensive attention was the severe roof damage by strong wind at Beijing's main airport.

Reducing wind-uplift loss experiences for FM Global multinational clients throughout the world can be achieved successfully if the gap between the local standards and FM Global standards can be closed. In China, a presentation was made on wind-uplift pressure design guidelines per FM Global Property Loss Prevention Data Sheet 1-28, *Wind Design*, at a seminar organized by China Building Materials Academy Suzhou Waterproof Research Institute (CWRI) and China Academy of Building Research (CABR). CABR is the leading organization of the standard-writing committee.

Following the seminar, it was determined that two changes would be included in an update to the China national standard, which will close the gap between the local regulations and FM Global guidelines. A "gust coefficient" will be considered in determining wind speed design so that it will be closer to the three-second gust wind speed used in the FM Global standard. And, roofs will now have field, perimeter and corner zones for wind-uplift design.

With these changes, the wind-uplift pressures computed from the new version of the China standard, slated to be finalized by late 2012, will be closer to FM Global's wind-uplift design criteria. China codes and standards developers are always open to ways to enhance their efforts, and this success is one of many examples in which FM Global has been involved, dating back many years.

AN ARDUOUS PROCESS

Earthquake shuts down operations at a document storage and retrieval warehouse

What happened

This document storage and retrieval warehouse experienced an early morning, magnitude 7.1 earthquake. The single-story, leased building is constructed of tilt-up concrete panels and a steel-on-steel frame roof. Storage consists primarily of conventional double-row racks up to a height of approximately 26 feet (8 meters) and covers approximately 75 percent of the floor area.

The building and rack structures were approximately eight years old. The earthquake caused the collapse of essentially all storage racks. Storage boxes fell and their contents scattered over the floor. Also, the walls of the building suffered structural damage with notable shifting of several wall panels.

Positive factors

- The client immediately made efforts to identify and secure an alternative storage location and assemble their earthquake recovery team.
- The electrical supply was quickly isolated, as a precaution.

Negative factors

- There was a lack of proper rack footplate anchoring. For example, the use of only one anchor bolt allowed movement and pivoting of most of the main rack supports.
- Structural building damage made it necessary to cease operations, delaying clean-up activities and salvage, and ultimately requiring relocation to temporary sites.

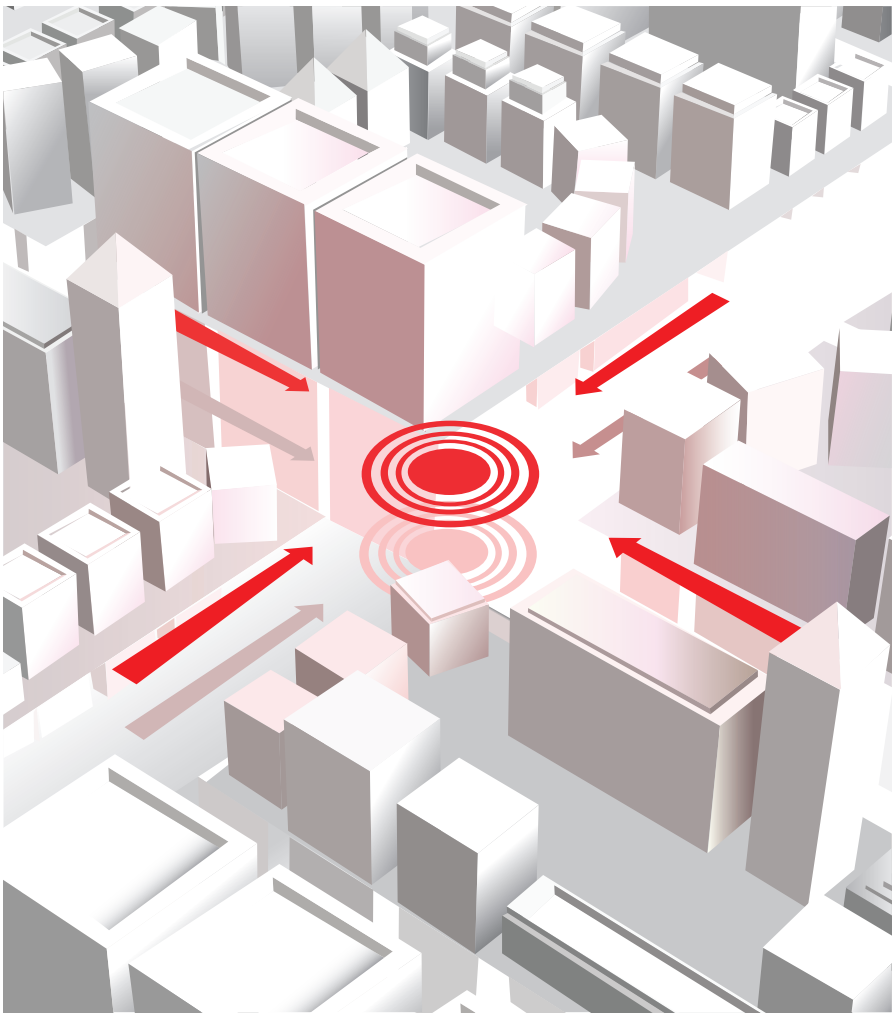
Business impact

Business impact was immediate, and both storage and retrieval operations in this facility were shut down briefly so that damage assessment activities could be made. Complete clean-up of all spilled contents of the storage boxes was an arduous, tedious process, expected to take several months. Other, temporary warehouses and rack-storage capabilities were established within one month.

Property damage was more than US$2 million and business interruption was nearly US$400,000.

What could have minimized the loss?

- Rack systems designed to FM Global standards could have helped withstand the seismic forces experienced during this earthquake.
- In this case, additional anchorage for the existing storage racks could have helped reduce the movement of the racks and the subsequent amount of product damage.



NAIL IT DOWN

Ground shaking can cause damage to inadequately anchored facility contents

Earthquake experts estimate that several million earthquakes occur in the world every year, and of those earthquakes, as many as 150,000 of them can be felt.

Shake damage, typically the largest component of an earthquake-related loss, varies significantly among sites depending on the intensity of the shaking and the particular characteristics of the facility. Total shake loss at a facility usually comprises minor to moderate damage to many items, but also can consist of—or even primarily result from—major damage to just a few items.

According to Christopher Deneff, senior engineering technical specialist at FM Global, the most severe ground shaking occurs in the region nearest to the earthquake epicenter (and at sites with unfavorable local geologic conditions, such as soft soil).

"Visually arresting structural failures in areas that have experienced severe ground shaking are often the subject of intense news coverage following an earthquake," said Deneff. "However, relatively few industrial and commercial buildings actually fail from earthquake ground shaking. Even when located in severe ground-shaking zones, structures with reasonably good earthquake-force-resisting systems rarely collapse as a result of shake damage."

Improving the earthquake resistance of buildings and other structures has received considerable—and well-deserved—attention in recent years. Less effort has been directed at improving the earthquake resistance of a building's contents. Fully mitigating shake damage to existing buildings and every piece of in-place equipment may require significant and expensive modifications. A substantial reduction in the risk of shake damage to a facility's contents, however, can be cost-effectively achieved simply by restraining items that are both vulnerable to earthquake-induced damage and valuable or important to production.

"A commonsense starting point is to reduce the earthquake risk to objects that can topple during an earthquake," Deneff said. "This is an important step, but only the first of many in mitigating earthquake shake damage."

Most earthquake damage results from the sudden release of energy in the form of seismic waves (wave motion) and surface rupture (physical slippage) of the earth's crust. Of the two, seismic waves cause more widespread geographic damage because they radiate outward from the initial point of disturbance in all directions, like the ripples created when a pebble is dropped into a pond. Strength of shaking (intensity) is often expressed in terms of Modified Mercalli Intensity (MMI), on a 12-level scale (I to XII, from least to most severe). The strongest shaking typically is found near the earthquake epicenter, but also can occur

farther from the earthquake source due to local geologic conditions.

The most intense ground shaking affects a relatively small area, while lower intensity shaking affects a larger area. "This is significant because structural collapse usually is concentrated in the smaller area of intense ground shaking, rather than the larger area of more moderate shaking," Deneff explained.

Seismic events generate both vertical and horizontal motion, but the horizontal force usually governs earthquake performance of buildings and their contents. The actual shake damage sustained in an earthquake strongly depends on the specific characteristics of the building, equipment, storage system, piping, etc. "Contents can be displaced if they are not anchored, in some cases moving several feet (meters)," said Deneff. "For low-profile objects that slide, shake damage can be minimal, but loss can increase when equipment must be realigned or interconnections repaired."

Some suspended items may swing without consequence, while others (e.g., piping) may sustain substantial damage from broken connections, impact with other objects or loss of vertical support. Objects with relatively high centers of gravity can topple. Because forces are amplified at higher points in a building, objects at the top of a structure are more likely to overturn than those at ground level.

Shake damage to buildings also strongly depends on construction material, building configuration and the earthquake force-resisting system. Buildings constructed of extremely susceptible material, such as unreinforced masonry (bricks or concrete blocks without reinforcing steel), with structural irregularities (e.g., a weak first story) or fragile architectural features will sustain more shake damage than buildings without those characteristics.

According to Deneff, during a recent 10-year period, roughly 75 percent of the earthquake loss at FM Global client facilities was attributable to shake damage. "Mitigating damage to sprinkler systems by providing bracing, flexibility and clearance is a relatively straightforward and cost-effective process," Deneff said. "Similarly, considerable reduction in fire-following-earthquake risk can be achieved by installing automatic seismic shutoff valves on select flammable-gas and ignitable-liquid lines, and anchoring a few pieces of equipment."

Mitigating all possible shake damage at a facility, however, is a much more complex task, he added. "For some facilities, the cost of anchoring every piece of in-place equipment can be very high. In such cases, it is usually best to prioritize the need for anchoring based on whether movement would result in significant damage," Deneff explained. Objects with a high priority for anchorage are those vulnerable to earthquake damage and also high in value, important to production continuity, or hazardous if damaged.

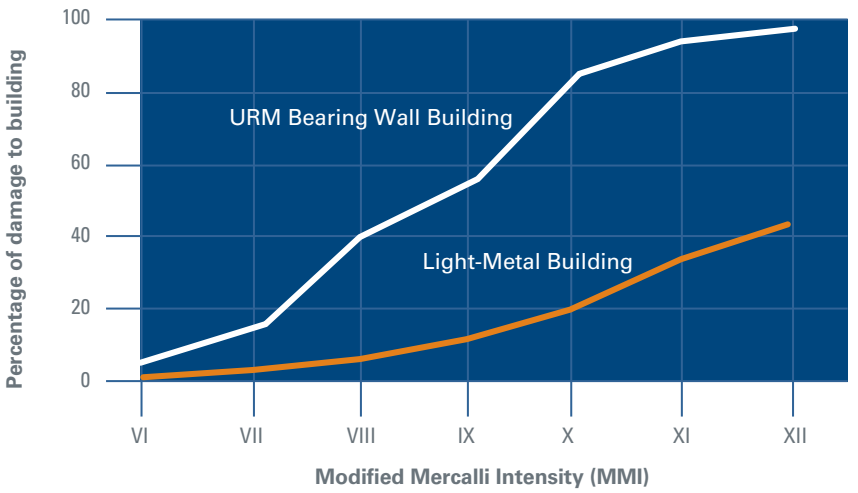
A reasonable starting point for the mitigation of shake damage to a facility's contents is to anchor tall, slender objects, such as electrical and telecommunication cabinets and pallet racks. Experience shows these items, if unanchored, can overturn during strong ground shaking and sustain heavy damage; however, they typically perform well if restrained.

In some cases, simply adding anchorage to objects through existing holes in their bases is adequate to meet building-code provisions and protect the objects from the strongest shaking likely to occur at the site. Sometimes, though, the configuration of already in-place equipment limits the size or number of anchors that can easily be installed. This modification may then protect the equipment only from moderate shaking (still likely to be adequate for most sites during most earthquakes because the vast majority of facilities are not in severe ground-shaking zones during any given earthquake).

"If you must be absolutely certain that you have adequate protection in place, the only way to provide complete earthquake protection to a facility's contents is to have a qualified engineer perform an analysis and recommend custom solutions," Deneff said. "These custom solutions may require modifications beyond anchorage and likely will be more expensive. While it may not prevent all loss, targeting an achievable level of improvement will substantially reduce overall loss, while limiting your investment."

Comparison of Predicted Shake Loss Expectancies (90-Percent Confidence of Non-Exceedence) for Low-Rise Buildings

Source: Applied Technology Council reports ATC-13 and ATC-13-1



IGNITABLE LIQUID, PERIOD

To avoid confusion, a single term will now be used to address the hazard of liquid that burns

To improve communications with clients and other vested stakeholders, FM Global has introduced a standard term for liquid that burns, now known as "ignitable liquid." The new term is used in all FM Global Property Loss Prevention Data Sheets, which required that several Data Sheets be renamed, specifically, DS 7-29, now Ignitable Liquids in Portable Containers; DS 7-32, now Ignitable Liquid Operations; and DS 7-83, now Drainage Systems for Ignitable Liquids.

The terminology used to identify a liquid that can burn (e.g., flammable or combustible) can vary among code/standard organizations and countries. Using different terms to identify the same thing is, at a minimum, confusing and can, sometimes, create misunderstanding about the hazard created by liquid that burns.

Existing classification schemes for liquid that burns are based on closed-cup flash points. Some organizations assign numerical values, while others group liquid by name (e.g., flammable, combustible) according to flash-point ranges. Some classifications have many subdivisions and others only define a couple. None of them, however, reflect the fire hazard created by the liquid, and, in many cases, they create confusion regarding the severity of the hazard. For example, in the United States combustible liquid is commonly considered a lesser fire hazard than flammable liquid.

Classifying liquid based on flash point started when liquid was commonly mixed in open vessels or tanks, and a measure of the potential for ignition was needed. The flash point served this purpose well, but it does not provide any measure of the fire hazard created by a given liquid. The fire hazards of liquid that burns are determined by the inherent physical properties of the liquid and external factors, such as the amount of liquid, container construction, storage arrangement, process temperature and process flow rates.

By moving away from terms used by codes, FM Global hopes to reduce confusion and key in on the liquid fire hazard. This will, in turn, assist our clients with the important first step in providing good protection for a facility using or storing ignitable liquid—namely, identifying all liquid that can burn.

Fire Hazards of Ignitable Liquid

Trying to design fire protection for ignitable liquid has always been a challenge. The mechanics associated with burning liquid cannot be easily addressed by using sprinklers alone. The design of the sprinkler system must consider two key elements. First, how much water will be delivered by the sprinkler to the fire? Second, how many sprinklers can operate at that particular water delivery rate so the water supply can be properly sized?

The rate water is delivered out of the sprinkler has a direct impact on the number of sprinklers that actually operate dur-

ing a fire. Fire is a chemical reaction that takes place in the gas phase. This means that a solid surface does not burn; instead, the surface has to be heated to release the flammable vapor and the vapor burns. The energy needed to vaporize the solid surface is provided by the fire. Sprinkler discharge interrupts this process by cooling and wetting the surface.

In all non-ignitable liquid storage fire tests, the fire is initiated by a point ignition source, such as igniting storage array in a single flue space. The fire grows vertically and horizontally. The vertical component is greater than the horizontal component. As the fire spreads across the exposed combustible surfaces, the heat-release rate grows. As the heat-release rate grows, the temperature at the ceiling increases. Eventually sprinklers begin to operate.

Depending on the severity of the fire and the complexity of the storage array, a portion of the water being discharged from the sprinklers will reach the burning surfaces. If the amount of water reaching the burning surfaces is high enough, the burning will stop or be controlled. The number of sprinklers that operate during this type of fire event will depend on how quickly the fire grows and how quickly the discharged water either controls or extinguishes the fire.

In an ignitable liquid fire, the interaction between sprinklers and the fire is different. Like solid commodities, liquid only burns on exposed surfaces and must vaporize before it can burn. Unlike solid commodities, the surface area of the liquid can change depending on the amount of liquid and where it is released.

A released liquid can form a pool on the floor, it can flow across, over or down buildings or storage arrays and it can be sprayed. Each of these release scenarios will produce a unique fire challenge.

The ignition scenario for liquid is different as well. Liquid with a low flash point requires a very low ignition energy because it will vaporize without the need to take heat from the fire. Liquid with a high flash point requires energy from the fire to vaporize, but the amount of energy needed is less than what is needed for a solid material. However, if a high flash point liquid is splashed or sprayed, the ignition energy drops significantly.

Once a liquid is burning, the sprinkler discharge would need to cool the liquid below its fire point—the temperature at which a liquid produces enough vapor above its surface to support continuous combustion—to extinguish the fire. Because there is no solid to wet, the process of cooling a liquid that is burning with ceiling sprinklers is not a straight-forward process. We know that if the liquid has a flash point greater than 200ºF (93ºC), ceiling sprinkler discharge can extinguish a pool fire involving this liquid. We also know that liquid with a lower flash point cannot be cooled using ceiling sprinklers. Additionally, we know that if a high-flash-point liquid is sprayed or spilled—creating a three-dimensional spill or spray scenario, there is no amount of sprinkler discharge that will extinguish this fire.

So, what is the fire hazard of a liquid that can burn? The fire severity is tied to the available exposed liquid surface. Large surface areas will produce high-heat release rates and high-flame heights. The fire will follow the liquid—wherever the liquid goes, so goes the fire. These are true regardless of liquid flash point. Certainly, there are some protection differences for liquid with high or low flash points, water-miscible liquid, and a handful of other liquid types that have been shown to produce limited fire hazards. However, regardless of these considerations, the fire created by an ignitable liquid will always be more challenging to extinguish than what is created by a solid commodity fire, and fire protection criteria designed for solid commodities will not be adequate for ignitable liquid fire hazards.

By moving away from terms used by codes, it will assist our clients with the important first step in providing good protection for a facility using or storing ignitable liquid—namely, identifying all liquid that can burn.

Why Full-Scale Fire Testing Matters

To actually understand how to protect ignitable liquid, full-scale fire testing is necessary. There is no way to guess how sprinklers will interact with ignitable liquid storage arrangements. Modeling remains unvalidated and incapable of evaluating even simple storage arrangements.

This is why FM Global has spent the last 10 years conducting full-scale fire tests aimed at understanding hazards and defining protection options for ignitable liquid storage and use occupancies. Much of this testing has revealed protection options that did not previously exist. Some of the testing has identified concerns with old protection criteria that were developed from limited-scale tests.

The majority of the testing that was done before has never been done anywhere in the world. Our understanding of how a liquid burns, the effects of different container types, and the interaction between an ignitable liquid fire and automatic sprinklers has allowed us to update our three core standards that address ignitable liquid.

The terminology used to identify liquid that burns has changed; however, our understanding of the hazard created by ignitable liquid continues to be enhanced through research and testing.

John LeBlanc is manager, special hazards, engineering and research, at FM Global.

ARE YOU READING ME?

An important explanation regarding the changes made to the three ignitable liquid data sheets based on the change of terminology

FM Global Property Loss Prevention Data Sheet 7-83, *Drainage Systems for Ignitable Liquids*, has been significantly changed. It is now only a design standard. FM Global's occupancy and hazard specific standards will define when emergency drainage and containment is needed; DS 7-83 will define how to design it. The second change had to do with estimating the flow capacity of different drainage systems. The methods used to determine the flow capacity were completely revised based on the results of testing intended to validate the previous flow estimates and a full analysis of those results. Because we were not able to validate the old estimates, we were forced to develop new correlations to determine the flow from various drain designs. We have also reduced the way we calculate how much liquid needs to be drained by eliminating exterior hose streams. None of these changes are retroactive.

In FM Global Property Loss Prevention Data Sheet 7-29, *Ignitable Liquids in Portable Containers*, protection tables have been revised to use number-of-sprinklers-at-a-pressure design criteria instead of using density-area criteria. This change had a minimal effect on the existing protection criteria and mainly consisted of a straight conversion from density to pressure.

The biggest changes involved the addition of 11 new protection options for everything from small plastic to large plastic containers. Many of these new options represent protection criteria for liquid-container combinations that did not have any protection options in the past.

Some protection criteria that have been in the standard for some time were modified or removed. For example, standard-response sprinkler protection criteria for palletized, small-metal containers was eliminated. Our full-scale testing of this storage arrangement clearly demonstrated that, regardless of the type of ignitable liquid, standard-response ceiling sprinklers cannot adequately cool containers at the bottom of the storage array and they will create a severe fire.

A second change is the addition of significant limits to the palletized storage of glass bottles containing diluted alcohol-water mixtures (e.g., distilled spirits). Our full-scale fire tests have shown that glass bottles have no real resistance to failure when exposed to fire, and the arrays are very unstable. When the array collapses, unlike solid commodities that collapse and reduce the fire, a large percentage of the glass bottles will break and create a large area pool fire that can easily spread throughout a warehouse.

Finally, the protection criteria for high-flash-point liquid [i.e., FP > 200ºF (93ºC)] in metal containers has been modified to reflect our new knowledge about the sprinkler densities really needed to extinguish pool fire with ignitable liquid. FM Global does not lightly change an existing protection option to something higher; however, it is important to provide a clear understanding of the hazards present at our client facilities.

FM Global Property Loss Prevention Data Sheet 7-32, *Ignitable Liquid Operations*, includes several changes. The criteria for defining the existence of a room-explosion hazard have been revised. The new criteria only define the existence of a potential room-explosion hazard when ignitable liquid is used and/or handled at or above its atmospheric boiling point. It is important to remember that this does not mean a room-explosion hazard cannot be created with liquid below its boiling point; it only means that the likelihood of an explosion hazard is considered low enough that redesigning the room construction is not deemed necessary.

The next significant change has to do with the fire protection needed for high-flash-point liquid [FP > 200ºF (93ºC)]. In the past, high-flash-point liquid was considered easily controlled or extinguished with very low sprinkler densities (i.e., 0.2 gpm/ft^2 or 8 mm/min.). The reality is, a significantly higher sprinkler density is needed to extinguish a pool fire and to control the number of sprinklers that can open at the ceiling, and that density will increase as the roof height increases. Based on the results of more than 30 large-scale pool fire tests, FM Global has developed sprinkler protection criteria for fire scenarios involving large-pool fires of high-flash-point-liquid at roof heights from 15 ft. (4.6 m) to 60 ft. (18 m).

While not a change, the issue of using automatic interlocks to shut down ignitable liquid pumping systems has been emphasized. There have been many instances where manual shutdown of ignitable liquid systems has been considered acceptable, but the reality of what happens in a severe fire scenario seldom permits the safe reliable shutdown of a liquid-pumping system. Looking at past loss reports has shown that plant employees will make significant efforts to fight a fire with fire extinguishers, but never think to shut down the flow of hydraulic oil or lubricating oil. In most cases, shutting off the flow of fluid ends the fire. FM Global has also seen that the size of the ignitable liquid pumping system does not define the potential size of a fire loss. Even small oil systems within expensive equipment can result in the loss of that piece of equipment because it cannot tolerate the damage caused by a small spray fire.

We major in chemistry

Introducing the "Working Together" video series

Reason's new video series highlights the many ways in which FM Global develops partnerships with its clients. Our new installment, "Working Together with the Moore Company," focuses on how one of FM Global's venerable manufacturing clients was back up and running only a few months after experiencing a devastating flood.

Check it out at fmglobal.com/reason

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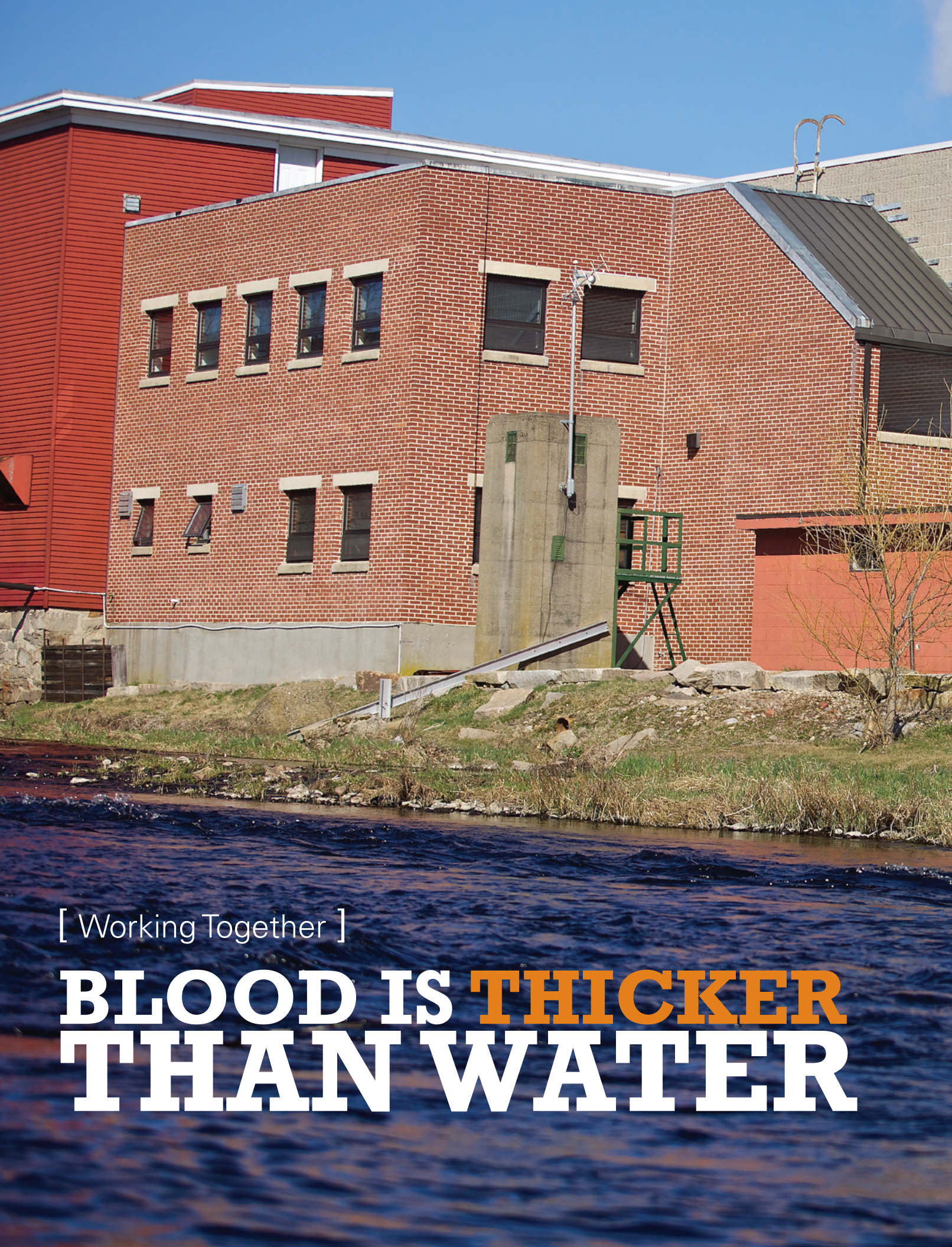


[Working Together]

BLOOD IS THICKER THAN WATER

A surprise flood devastates The Moore Company, and threatens to bring one of their major facilities—as well as the work of generations of local families—to an unexpected close.

The Moore Company,

a privately held, fourth-generation, family-run company headquartered in Rhode Island, USA, has been in operation for more than a century. It is a reputable manufacturing business with five diverse branches. One of its core products is Darlington Fabrics, makers of elastic spandex fabric.

In March 2010, a massive flood pounded the Darlington facility, infiltrating it with 4 feet (1.2 meters) of water. For a brief moment, it looked like four generations of manufacturing would come to an end. That is, until FM Global and Moore partnered to launch a full-scale, all-hands-on-deck cleanup effort that would return the plant to full capacity at a dizzying pace.

Here's the story of that event in the words of the people who witnessed it firsthand.

Jon Senior
Plant Manager
Darlington Fabrics

The Moore Company family has been a part of my family for a long time. My story is the same as most of the folks who work here. People put their children through college working at Moore. It's always been a community-oriented company. They have played a big role in this community and have for a long time.

At this particular facility, the Darlington Fabrics facility, we bring in gray goods—big, knitted rolls of fabric—to prepare and dye them. Then we send the rolls back up to our facility across town for finishing and shipping. The Darlington facility is right on the Pawcatuck River. Normally, it's a place full of wildlife, striped bass, and all sorts of boating; all literally feet from the factory.

Leading up to the flood, it seemed to rain continuously. A week prior to the flood, we saw the river rising. But this time, it didn't subside. It got to the top of the banks and we thought, "Gee, that river looks awful high." It rained for a few more days, and it seemed dangerously high. Then, at that point, we had a big rainstorm. We heard the water coming over the banks. Then it came into the mill's parking lot. The cars were getting submerged. Then, the power station got hit, and all the power went down. We evacuated the plant. It happened so fast. At 7 a.m. everyone was working as usual, and by 10 a.m. everyone was gone. The place was empty.

We had a flood back in the 1980s, where just a little water made it into the plant, so this was something different. As I was looking at this flood, you could see the water was much higher. I just envisioned all of our machinery underwater. It was crazy. The water was coming in over the window-sills. Cars in our parking lot were almost completely submerged. I honestly didn't think the plant would ever run again. How could it possibly open?

At one point I thought it was shot, we were gone. But when I saw the crew, the machines and all the technical help, I'm happy to say I was wrong. We were going to make a go of this thing after all.

For a few days, the river had the whole town in its clutches. Slowly it receded, and there was talk about getting the plant going again. My main concern was that we didn't have our machines. We couldn't do business and fill our orders. But things started rolling once FM Global came into the picture. There was a lot of activity once we could get back into the plant. Lots of people came with machines, big lights, a filtration system. They were cleaning up around the clock. It was pretty impressive.

We had daily communication meetings with FM Global and the cleaning crew. There was a whole team of engineers and electronics people working on the machines in concert. At that point, I could see the effort the company was putting into this thing. Like I said, at one point I thought it was shot, we were gone. But when I saw the crew, the machines and all the technical help, I'm happy to say I was wrong. We were going to make a go of this thing after all. ✳

Dana Barlow
President and CEO
The Moore Company

Every family in this town has had a family member work here. There's a lot of history and culture here that we try to preserve. At one facility here, we knit raw materials into fabric. Then we truck fabric across town where we dye and finish the fabric. The fabric comes back to the first facility where it's packaged and shipped to our customers.

In late March 2010, the conditions were ripe for flood. We had had a lot of snow and that snow was melting. The March rain came and we had a lot of it. At our Darlington facility, we have a flood prevention group that watches the river very closely. What they saw was disturbing. The river rose very quickly and we started to sandbag. It became apparent that we weren't going to get ahead of it, so we had to start evacuating. It happened very quickly. We moved some product out of the building, but it became an evacuation instead.

The whole thing was a surreal experience. The police had the area cordoned off. I walked down to the river and looked across it at our plant. To see 4 feet (1.2 meters) of water running through the river side of the building was just unbelievable. If I hadn't seen it with my own eyes, I never would have believed it.

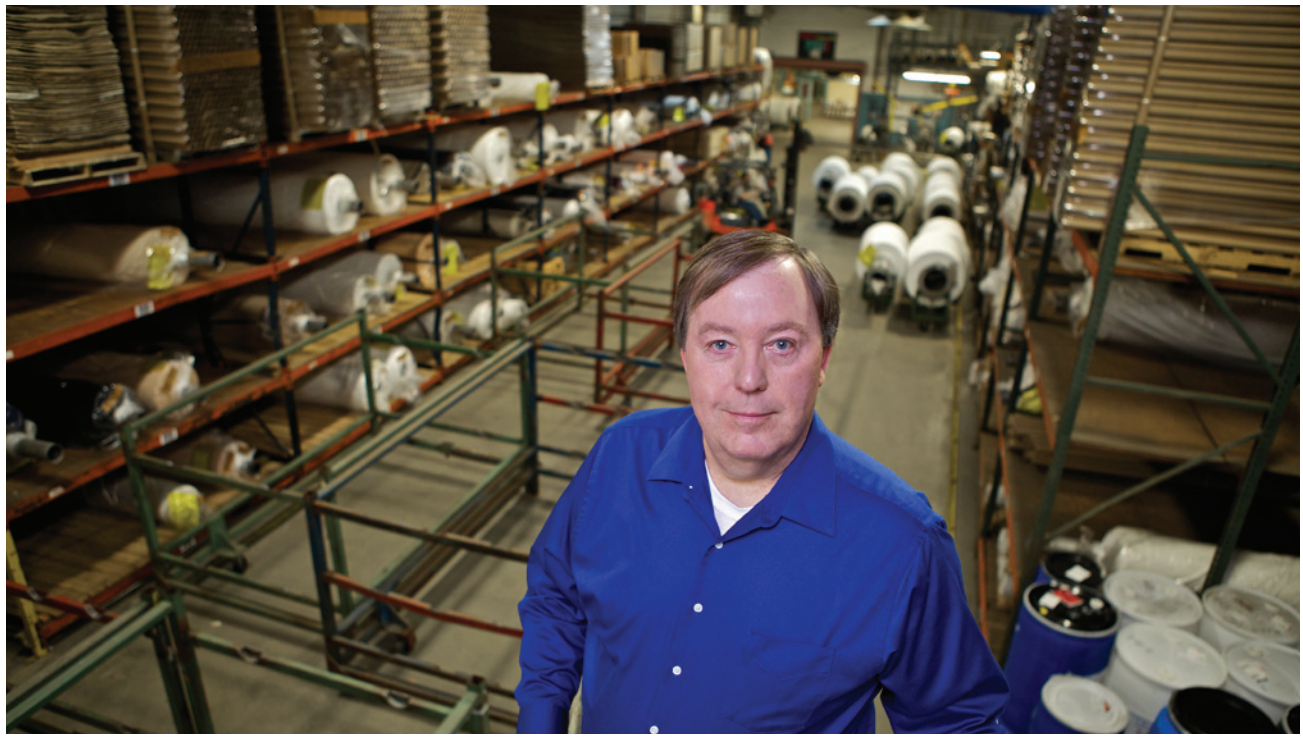
In a time of need, FM Global really stepped up and showed us what an insurance carrier should do. I was amazed.

It took a week for the water to subside. One of our first calls was to FM Global, our insurance carrier. They dispatched their response team to view what was going on. Within a day or two, they arranged for emergency response teams and restoration companies to come here from the Midwest, and we developed a cleanup plan. One company was an industrial cleaning company that helped us remove the damaged product, and the second team was a specialized equipment company that worked on drying, rewiring and replacing the motors on our equipment so we could get back up and running.

FM Global assigned Greg Twomey, branch claims manager, to the case, and he was here every day working with our people. We had a group meeting every afternoon to discuss where we were and what our game plan was. They reassured us all that this was what they did. They're trained to deal with these situations. They had the right resources for us, too.

In a terrible situation, they made us feel more comfortable. The folks they brought in knew exactly what they were doing; the cleanup effort was unbelievable. In a few weeks' time we could see that we were going to get the plant back up and running. While the cleanup was going on, we worked with Greg on the finances. We kept good records, and so we started working with FM Global to identify where the losses were and we tallied the extent of the damages.

That's the way a good insurance policy is supposed to work, and I'm happy to report that it really did work that way. In a time of need, FM Global really stepped up and showed us what an insurance carrier should do. I was amazed. The objective all along was getting us back in business, and that was exactly what happened. *



Jim Rowe
Assistant Treasurer
The Moore Company

I procure a policy every year to make sure we have the proper coverage and I work to ensure that all our divisions are in compliance in terms of safety. Our relationship with FM Global has been going on for a quarter century or more, and we will continue to use them, because they provide excellent service. They really do act as partners. We rely heavily on their engineering expertise, which is what they do better than anyone.

Moore and FM Global are certainly in alignment in terms of loss prevention. Safety is a priority for both of us. Each one of The Moore Company facilities operates at the highest standards, and we take great pride in our safety record.

The flood loss in March 2010 was our first, and we were anxious about handling it properly. We wondered how long we would be shut down and how it would impact future sales. We needed outside help to get us back up and running.

Our relationship has been in excess of a quarter century or more, and we will continue to use them, because they provide excellent service.

FM Global came in with their resources and got the right people on the job quickly. The timeliness and swift action they took impressed us all here. Incredibly, we were fully up and running three months after the event. There were many companies in the same situation around here, affected by the same flood, that were out of business for nine months or more.

Both The Moore Company employees and the FM Global employees worked very well together. The cleanup operation was a huge deal; to get the contractors paid in a timely manner, we needed those progress payments. They really pitched in and made the funds available immediately.

We also worried that we might not get the right replacement parts for some of the specialized equipment we had. We have a lot of equipment that seemed irreplaceable. But FM Global stepped in and put us in contact with the right contractors to get the machinery fixed. At the end of the day, even though we went through a terrible experience, we couldn't have asked for a better partner to have our backs. ✳

Greg Twomey
Branch Claims Manager
FM Global

I got a call from Moore the day after the loss, and I made arrangements to visit the next morning to speak with their assistant treasurer, Jim Rowe. I wanted an assessment of the loss. The facility was nearly 4 feet (1.2 meters) under water and he was looking for some direction. The visit gave us a sense of what the loss was. The objective was to assess the damage and get a jump on the repair project. At that point, we laid out a specific plan. This was days before the water retreated, but it gave everyone a jump on the plan.

Many of the employees wondered about whether the plant would be rebuilt and if they would have their jobs. But we calmed their fears. They restarted the business in two weeks and were fully up and running in three months.

It was a little tricky walking through the facility after the flood. There were no lights, and the slippery footing made it slow going. The catastrophe was localized, so the contractors locally were busy. We ended up getting contractors from Chicago and St. Louis to partner with us and got them repairing equipment and cleaning up.

Their goal was the same as ours: to get The Moore Company back in business as soon as possible. A partnership was made, and we moved forward with the plan as soon as the water receded. There was never any doubt in my mind that they'd get back up to speed. The only question was, how long would it take?

They were committed to get things done safely and correctly, and that's exactly what we wanted, too. That forestalled a lot of problems. They are committed to their employees, and they're honest and upfront. That made the claim process very smooth. They do what they say they'll do. They listen and take advice. They were committed to a safe claim resolution.

It was an emotional time for the company. Many of the employees wondered about whether the plant would be rebuilt and if they would have their jobs. But we calmed their fears. They restarted the business in two weeks and were fully up and running in three months. ✳

➤ *To view the Working Together video, please visit fmglobal.com/reason.* [R]

"IF YOU DON'T LOOK AT RISK AND PREPARE FOR IT, THE RAMIFICATIONS CAN BE GREAT. IT CAN GREATLY IMPACT YOUR BUSINESS TO THE POINT WHERE YOU MAY NOT HAVE A BUSINESS."

ED CORLEW, MANAGER, SAFETY, HEALTH AND SECURITY,
MOHAWK FINE PAPERS, INC.

Prepare. Protect. Restore.

After record flooding caused severe damage and business interruption at their Waterford, N.Y., USA, paper mill in 1996, Mohawk Fine Papers worked with FM Global to establish a flood plan. When Hurricane Irene made its way up the U.S. East Coast in August 2011, that plan was put into action. The result: minimal property damage and not a single missed delivery.

Watch it on video at:
fmglobal.com/reason

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AFTER

POST-QUAKE COSTS ¥16 TRILLION /US$200 BILLION

- ***100,000 buildings were destroyed*** *and* ***600,000 damaged.***
- ***11 nuclear reactors*** *were automatically shut down following the earthquake.*
- ***754 cultural properties*** *were damaged, including five national treasures.*
- ***Sendai Airport flooded*** *one hour after the initial quake, causing severe damage.*
- ***300 hospitals with 20 beds or more in Tohoku were damaged*** *by the disaster, with* ***11 being completely destroyed.***
- ***An oil refinery was set on fire*** *by the quake at Ichihara, Chiba Prefecture, to the east of Tokyo.*
- ***The Fujinuma irrigation dam in Sukagawa ruptured,*** *causing flooding and washing away homes.*
- ***4.4 million households were left without electricity*** *in northeastern Japan.*

14:46 JST / 05:46 UTC **MARCH 11, 2011**

- ***Magnitude 9.0 (M_w) undersea megathrust earthquake*** *off the coast of Japan with the epicenter approximately 43 miles (70 kilometers) east of the Oshika Peninsula of Tohoku and the hypocenter at an underwater depth of approximately 20 miles (32 kilometers).*
- *It was the most powerful known earthquake ever to have hit Japan, and* ***one of the five most powerful earthquakes in the world*** *since modern record-keeping began in 1900.*
- ***The earthquake triggered a powerful tsunami that reached heights of up to 133 feet (40.5 meters)*** *in Miyako in Tohoku's Iwate Prefecture, and which, in the Sendai area, traveled up to 6 miles (10 kilometers) inland.*
- *The earthquake* ***moved Japan's largest island, Honshu, 8 feet (2.4 meters) east, and shifted the Earth on its axis*** *by estimates of between 4 inches (10 centimeters) and 10 inches (25 centimeters).*

VOICES

STEVE ABBOTT
vice president, division manager, claims

GERRY ALONSO
senior vice president and manager, claims

DENNIS BESSANT
vice president, manager, Asia operations

GARY CROSS
consultant engineer, catastrophe coordinator, Japan/Korea

JEFF ELIZEUS
assistant vice president, senior general adjuster, catastrophe coordinator, claims

BILL ENGLUND
assistant vice president, senior general adjuster, claims

JOHN KANDLER
corporate safety manager

KIMI (KIMIKAZU) NAKAYA, client service executive, Asia operations

KARENMARIE RAZEE
corporate travel manager

JANINE PITOCCO
environmental health and safety manager

LEE SONG (HOOI SEONG LEE), group manager, field engineer, Japan/Korea

SHOCKED

As Japan rebuilds after suffering great devastation, FM Global first responders recall the challenges of delivering on the promise an insurer makes to its clients.

On March 11, 2011, a 9.0 magnitude earthquake occurred in the ocean 43 miles (70 kilometers) east of Sendai, Honshu, Japan, at a depth of 20 miles (32 kilometers) below the seabed. The earthquake was immediately followed by a tsunami 133 feet (40.5 meters) high that destroyed everything in its path for a distance of as much as 6 miles (10 kilometers) from the shoreline. Initial recovery efforts focused on locating and rescuing survivors of this disaster, an effort that was complicated by the damage to several nuclear reactors located in the region.

What follows is FM Global's response to the earthquake and tsunami; how, in the face of an unprecedented catastrophe and vast uncertainty, the company managed to keep track of its own people and provide quality service to its imperiled clients. Assembled from the catastrophe response reports and accounts of the staffers with firsthand experience of the event, both on the ground and at various offices around the world, this story highlights the importance of global teamwork, corporate synergy and the immense value of FM Global's emphasis on being prepared for virtually anything.


(AP Photo/Kyodo News, File)


(AP Photo/Kyodo News)

THE DAY THE EARTH MOVED
FRIDAY, MARCH 11, 2011

Jeff Elizeus We were just shutting down the cat team in New Zealand for the Christchurch earthquake, and others were busy with the aftermath of floods in Australia, when we got the news from Japan. We immediately ran a list of insured locations and saw that many of them were in the area of the tsunami. We stayed glued to the TV to try to glean as much information as possible; we paid attention to reports indicating which cities had experienced shaking, so we could start to gauge where the damage was likely to be most severe, and we began the process of scheduling inspections.

Gary Cross I had relocated to Japan from Australia. I was a loss prevention engineer and a loss adjuster in Australia. With my large claims experience and my engineering experience, FM Global asked me to come here as the catastrophe coordinator. It sounded like a good thing and a real challenge. One of the first things I did when I took the job was review the Catastrophe Addendum for Japan. That day, I finished my review at 11 a.m. The quake hit at 2:46 p.m.

Lee Song I was having a discussion with Gary Cross when the earthquake hit. Ironically, we had scheduled a review of our Japan earthquake response plan for 4 p.m. that day. The building shook slightly, then with more intensity. When I took over the office, I lived in Japan with my family from 2007 to 2010. Over the three years we learned to deal with the sensations of the earth trembling and understood that buildings will shake once in a while. Japan, situated in a seismically active region, is hit by earthquakes more than a hundred times a year, and perhaps 15 to 20 of them are of high intensity. My two young children used to tell me that in Japan we are supposed to hide under a desk when an earthquake happens. I never thought of seeing adults do so, then I saw a few colleagues actually go under tables; I started to realize that this one was different. I then saw my office wall crack and split apart as the building swayed. Ceiling tiles were popping out, and filing cabinets were rolling left and right. I found out later that the first earthquake went for a record long of about two minutes, but at the time it felt like forever.

As manager of the office, I am concerned first with the safety of our employees on the ground. Just when I was typing a memo informing the management team about the well being of our employees, a strong aftershock hit. This time, instead of swaying left and right, I felt the floor tremble up and down. Fearing that the building structure may be damaged, I thought I should get out of the building but was being advised to stay indoors. It was explained that our Yokohama office is a modern high-rise with some level of quake resistance. It was safer to stay inside a modern building than risk being hit by falling objects. In fact, there were very few building collapses due to shaking, but the devastation occurred due to waves from the tsunami hitting the north-eastern part of Japan.

A UNIFIED EFFORT

Gary Cross We called an employee meeting and, thankfully, everyone was accounted for. Then they all looked at me as if to say, "OK, you're the CAT coordinator. What do we do now?" So, I got the white board out, tested the pen in the corner, and took a few moments to collect myself. We established

Our facility was near the epicenter of the quake and devastated by the tsunami. FM Global was quickly on-site, which was very reassuring. The quicker they were on-site, the quicker we could evaluate the damage, hire contractors and start rebuilding. We were back in business in five months. **Xavier Carnoy, Finance Director, Imerys**

communications with Singapore and sent an email out to all Asia operations telling them we were all OK. An important part of my job was to set up a timeline to keep everyone outside of Japan informed about what was happening, and give us time to do the work.

Jeff Elizeus Simultaneously, we were in the process of determining how many adjusters would be needed. There were no claims adjusters in Yokohama, so we knew we would need to bring them in from Hong Kong, Singapore and elsewhere. If we needed more, we could also mobilize adjustors in the United States. With those additional resources, though, there was a requirement to provide language support, which meant locating additional bilingual personnel. All of those many people were placed on "standby" with their bags packed, ready to fly to Japan on short notice.

Steve Abbott Even with those measures, the news reports seemed to show that the nuclear situation could quickly turn negative, so we wanted a backup plan. KarenMarie Razee, FM Global's corporate travel manager, engaged a company called Global Rescue. They had many assets on the ground in Japan, including many former U.S. Special Forces people who knew the area and were well-equipped to reach out to our people and get them to safety. On a daily basis they maintained a plan for extracting our people from wherever they were located at the time.

Dennis Bessant When we finally went into the field, we went in together. It was a true international effort, engaging operations from around the company. Radiation consultants came in and all staff were prepped and given guidelines. Each field team member had his or her own radiation detectors, and by that time everyone knew where the danger zones were.

THAT'S NOT THE WIND

Gary Cross

I was talking to Group Manager Lee Song when it hit. He thought it was the wind, but I told him, "I don't think that's the wind; I think it's an earthquake." I've been in Japan during earthquakes before and usually the building rocks for five or 10 seconds and it's over. This time it started to shake and it just kept shaking. The Japanese are accustomed to earthquakes. They don't usually bat an eyelid, but I could see they were getting scared, so I knew it was serious. After it hit, everyone was walking around when an aftershock hit. Lee's eyes went as big as saucers and he said, "Gary, get under your desk!" So I hid under my desk. We then turned on the TV and saw the footage of the tsunami washing planes off the runway at the airport. It was a pretty sobering moment.

KEEPING PRIORITIES STRAIGHT

Dennis Bessant When you're living it in real time, you have some real tough decisions to make. That is the purpose of all the planning, to prepare for something like this. You have to act fairly quickly during a cataclysmic event, and in the end we got it right. Over the years I've been engaged in dealing with various crises (riots, terrorist attacks and bombs). In Asia, the biggest concerns have not been from a business continuity standpoint, but from an employee welfare standpoint. What we found is that our company business continuity plans needed to be all-encompassing, not just in keeping the business running, but, first and foremost, keeping our employees safe. It is so important to have plans in place for each geographic region. Dry runs are done to test each of the plans. We go off-site and organize a scenario that unfolds over a few hours, and the risk manager basically throws curve balls at the business continuity team to see how they handle them. These help you prepare. But the true stress tests have been real events.

KarenMarie Razee We needed to put another level of safety on the ground in Japan before we could send our claims people over there. Our employees wanted to get over there and do their job, but we needed to ensure their safety. Every day our employees who went over there had to call in to the Global Rescue representative who would provide whatever they would need, such as weather updates, reactor updates, etc. This gave our employees comfort and peace of mind so they could do their job. They knew that FM Global had their back.

Dennis Bessant Our view was that we had employees who were personally caught up in the situation and we didn't expect them to work. It was best for them to go back home and take care of their families. We told all staff in Japan that they could take temporary leave; don't worry about work. They had to deal with their own situations in light of such an unprecedented event. For me, without question, that was a defining moment. I think it reinforced all of those great things about our commitment to both our clients and our employees.

Lee Song Once we confirmed the well-being of all our employees and their families, we collected ourselves and sat in our conference room to brainstorm the next course of action. Our Yokohama office is familiar with loss-canvassing activities from frequent typhoons and earthquakes. But those were usually localized events with only a handful of clients to contact. This time almost all of Japan was being shaken and we did not know how many clients were affected by the tsunami in the northeast.

We have about 350 client locations with significant values across Japan. Our goal was to contact all of them. With a good client location database with GPS coordinates and the use of mapping services, we were able to quickly generate several location maps. I was then able to visualize and prioritize a client calling list based on distance from the epicenter. Another group of our engineers was evaluating transportation and logistic options so we could move quickly when engineers and adjusters were ready to roll in the field. In the meantime, employees working from home had already given us updates of several large locations. It was a team effort.

It was almost 2 a.m. when I left for my hotel nearby. Everyone was exhausted but could not leave the office as the majority of

At one point, a colleague of mine and I took a taxi through the tsunami area. My colleague had done a lot of work in disaster areas like this, but for the first 30 minutes in the taxi we couldn't even speak. He said he'd been doing the job for three decades and had never seen devastation like we saw that day.

Gary Cross

transportation systems were severely affected. More than 60,000 people were stranded in Yokohama alone. All of our male employees spent a sleepless night in the office; sleepless not only because there were no beds, but also because there were frequent aftershocks throughout the night.

On March 13, we announced the temporary closure of the Yokohama office. Everyone was silent, but I could sense sighs of relief. Since the March 11 quake, employees were impacted by power rationing, fuel and water shortages, aftershocks, and saddened by the loss of so many lives. Most of our worrying surrounded the ill-fated Fukushima No. 1 power plant that was badly damaged by giant tsunami waves. Local news reported the incident rather calmly, but the international news seemed to over-sensationalize it. There was a lot of confusion. I don't think the government knew how it would turn out either. But as a virtue of Japan society, nearly everyone reacted calmly and was still very considerate of each other. There was no panic, grabbing food or other essentials, despite short supplies. Everyone waited patiently. They knew they would get through it.

Kimi Nakaya My daughter goes to nursery school, which was evacuated to a nearby elementary school. But with no communication, we had no clue where she was. So for a little while we did not know if my daughter was safe. We finally got a text message saying she was OK. It was very scary for us.

Dennis Bessant We phoned everybody in Japan every day. Even if they were at home, we reached out to make sure everyone was OK and to understand what was going on. We had engineers who wanted to go out in the field and get to work. But we had no idea about the radiation leaks. We know now what happened, but in real time there was a lot of uncertainty, so we had to hold them back.

The promise to pay is our contract with the client. What hoops we have to jump through, the hairs we have to pull out, the sleepless nights we endure—none of that should be a concern for our clients. If you're service-oriented, all you should be concerned about is delivering on that promise.

Gerry Alonso

A CHILD IS BORN

Kimi Nakaya

My second daughter, Amy, was born three days after the earthquake. I took my wife into the hospital on Sunday and she had the baby on Monday. The area where the hospital is located was in blackout, but the hospital had a full backup generator, so everything there was fine. Of course, I didn't go into the office. But I am the only insurance person there, so my general role is to issue the policies to our partner company. When the earthquake happened and after the tsunami, my main duty was to advise our partner company on how to deal with all the questions and claims handling. The typical question from the client was, "Is this covered by our policy?" I am not the person who can answer that type of policy question, but I was the chief connection between FM Global and the client. With Monday being the first workday after the earthquake, the phone didn't stop ringing. I remember that I couldn't talk in the hospital, so I had to keep going outside to take calls on my mobile phone, which was working by then. It was a crazy day.

LOOKING AFTER CLIENTS

TUESDAY, MARCH 15

Already, FM Global catastrophe response was well under way. Engineers working out of FM Global's Yokohama office were contacting insureds by telephone when possible to assess damage and to issue area-wide impairment notices and manage impairments. When there is an area-wide event such as an earthquake, hurricane or flood, FM Global is concerned that the damage from the event may have impaired client protection systems, such as automatic sprinklers, fire pumps and associated water supplies. Notices are issued to let people know within FM Global that, due to the nature of the event, such impairments may exist.

Plans were made to visit accessible loss locations close to Yokohama and Tokyo until the adjustment team could arrive. Engineers were prepped to function as adjusters per the catastrophe guide, while everyone kept an eye on the imperiled nuclear reactors, some of which had already experienced explosions and fires.

Because of the loss of nuclear power generation, blackouts rolled across most of Japan, further complicating operations. FM Global's local engineers were also advising that fuel and food shortages were imminent, even in locations far removed from the most significantly stricken areas.

Jeff Elizeus Phone canvassing involved asking insureds about the extent of damage, whether their sprinkler systems were serviceable, whether they had access to electricity or functioning backup generators, and so on.

Lee Song News reported that many multinationals shut down their offices in Japan and some started to relocate to other countries. But we needed to keep communicating with our clients in Japan; this would be the time they needed our insurance and engineering advice most. Shutting down the office entirely would be seen as abandonment. I contacted a selected team of Japanese employees, asking if they were willing to help

set up a call center in our Hong Kong office, because a majority of our Japanese clients did not speak English. With their help, our external communications were handled seamlessly for the next 12 days.

Over this period, the team remained in Japan, continuing to work relentlessly on canvassing, updating loss information and attending to client inquiries. Emails were flowing through late nights and weekends despite the office being closed. Everyone was so dedicated and wanted to do their part. We spoke frequently over the phone, made good use of instant messaging to keep in touch, and also implemented a roll-call system to check on everyone's well-being. Installation of IP (Internet Protocol) phones onto our laptops was a practical move; landlines were unstable, but Internet traffic was nearly uninterrupted.

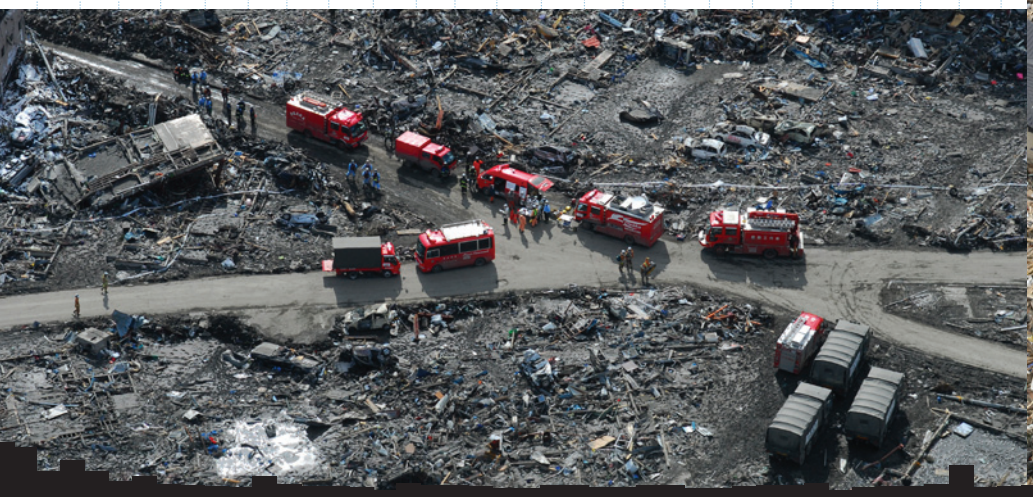
While in Hong Kong, I was also able to work with our claims CAT coordinators Benjamin Lin and Jeff Elizeus. In most natural catastrophe losses, CAT coordinators are able to meet rather quickly at ground zero to discuss and plan for the next course of action. But with the uncertainty of the nuclear situation, it was a very difficult decision to send our employees into the affected area.

Kimi Nakaya The first thing we did when I got to the office was sort the insured locations and see who might have been hit by the earthquake. We collected all the contact information and sat down in a meeting room to distribute the accounts. We each took 10 to 15 clients and started canvassing. It was difficult with communications down. First of all, there were no mobile phones, and the landlines were doing funny things. Email was working, but we weren't sure if the messages were getting through. It was only later we learned that they were getting through, but there was no one on the other end to read them. I may have dialed clients more than 70 times and if I did get through, there usually wasn't anyone at the client location to pick up the phone. On Saturday, maybe one in 10 clients picked up the phone. It was a few days later before I reached all 15 on my list. Eventually we were able to complete the listing of damaged properties from our initial list and pass it on to the claims division.

Dennis Bessant In the first 72 hours, a lot of big companies began moving people out of Japan. That created a very negative attitude in Japan. For business continuity purposes, we temporarily moved to Hong Kong. We transferred the switchboard in Yokohama over to Hong Kong. We had two Japanese-speaking associates move to Hong Kong to field calls. The switch was seamless. If someone called the Japan office, they were patched through to Hong Kong and didn't even notice. We did temporarily close the office in Yokohama, but we were still available for business. A lot of companies did quite the opposite.

THE NUCLEAR REACTION
WEDNESDAY, MARCH 16

The situation involving the damaged nuclear reactors appeared to be worsening. A 12-mile (20-kilometer) evacuation zone was being enforced around the Fukushima No. 1 plant, and people living in the belt 19 miles (30 kilometers) from the Fukushima No. 1 plant were ordered to stay indoors. Rolling blackouts continued for large areas of Japan, including Tokyo, and there were indications of wider outages. Local FM Global engineers were also advising that fuel and food shortages were occurring, even in



AP Photo/Kyodo News

We pride ourselves on having comprehensive insurance—not only on the business interruption side, but also on the property damage side. We were able to reassure our stakeholders in the company—as well as our CEO and CFO—that we had proper insurance and we were in very good hands.

Xavier Carnoy, Imerys

locations far removed from the most significantly damaged areas.

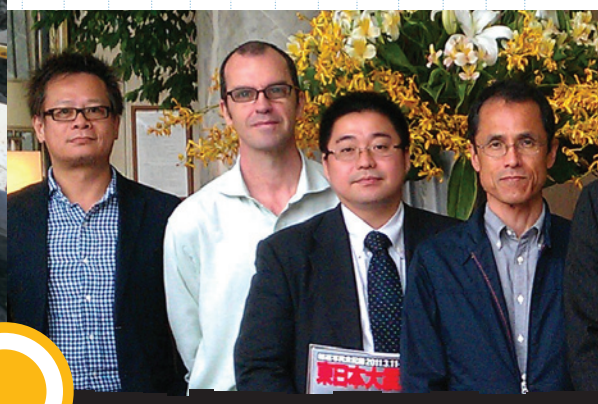
Due to the need for local staff to address personal issues arising out of this catastrophe, the Yokohama office temporarily closed. Engineers would continue to work from home if possible while other catastrophe response activities were seamlessly transitioned to the Hong Kong office.

Soon, Japan raised the alert level at Fukushima No. 1 nuclear power plant from four to five on a seven-point international scale for atomic incidents. Military fire trucks sprayed water on the reactors for a second day.

Lee Song Our Yokohama office reopened on March 29, but there was still this lingering uncertainty of the nuclear situation at Fukushima No. 1 power station. A team of adjusters flew into Japan, and a team of nuclear radiation specialists from BHI Energy came along. Many of us have an engineering background, but by no means are we familiar enough to deal with nuclear radiation. BHI Energy gave us classroom training on basic knowledge of radiation. Everyone was given a dosimeter and we were told to leave the area when it started beeping. The radiation specialists also accompanied a team of adjusters and engineers visiting each region, moving from south to north.

Nobuhiko Naito, senior consultant engineer, voluntarily took one of the BHI Energy specialists into Fukushima City, about 100 miles (60 kilometers) northwest of the nuclear power station. We have a few major clients in the area. On their way back to Tokyo, an aftershock stopped the bullet train and they had to seek refuge at a nearby hotel. Still, it was a fruitful trip for BHI Energy as they collected some useful readings. Not long after that, they were able to confirm that it was safe for our people to travel farther north. Nobuhiko's trip sped things up for everyone to complete our loss visits.

Steve Abbott The biggest issue for much of our work wasn't the earthquake or the tsunami; it was the nuclear event. The information coming from Japan sources, especially the power company, seemed unreliable. The first thing we did was to try to identify any authoritative sources of information so we could be comfortable having our people in the area. We also wanted to make sure we had a more active way of monitoring



them other than just exposure badges. John Kandler, our corporate safety manager, ordered necessary equipment. But before the order could be filled, the U.S. Government interceded and took all the available supplies. So, it took time for the manufacturer to catch up. We were also trying to find out where people could travel relative to the exclusion zones. We ended up using BHI Energy to help with monitoring. They were able to put two people on the ground quickly to help us with monitoring and also did safety training.

Bill Englund This nuclear event was a first for FM Global. It seemed most of the losses were directly due to the flood or tsunami, but it sometimes took a major effort just to get in touch with the insured locations. Sometimes we had to work through the insured's locations in the United States for information.

John Kandler We had a major problem with radiation release. There were only a handful of these events in the last 30 or 40 years. Chernobyl was one, but very little data from that was available. We would need to manage and monitor. How close could our employees get? Was it safe? No answers were readily available. Within a day, we realized we needed personal dosimeters. Dosimeters tell you how much radiation you are exposed to at that moment and how much cumulative exposure since the device was set. We immediately scrambled to purchase these from the supplier. We were told that we were behind military and other first responders. We had to explain our purpose of helping to rebuild our clients' businesses. We needed 40 of them. They recognized what we were doing and we were lucky to get our hands on them.

We also had to deal with changing weather patterns. First the radiation headed out to sea, then it turned inland. There was a lot of confusion about the fallout. Radioactive iodine has a short half-life. Within a month, you can assume it's gone. A substance that has a longer fallout has a longer half-life—maybe 30 years—so we need to continue monitoring for a much longer time.

A GOOD STORY TO TELL

Gary Cross

Fortunately, relatively few of our client locations were damaged. The locations that installed recommended bracing on their sprinklers had little or no damage. Those that didn't had major damage and longer production downtime. So we have a very good story to tell in making that recommendation. Japan had some major earthquakes in the early 1980s, and the Japanese government made major revisions to the building codes in 1981. Basically, anything built to the post-1981 code didn't fall down, and there were very few building collapses. Most of the devastation was from the tsunami. We passed on a lot of engineering information from what we saw, in hopes of learning from the loss. Our standards are pretty robust. We recommend seismic activity shut-off valves for gas lines. They all worked properly and we didn't have any fires. We recommend electronic equipment be bolted down and that worked very well. The earthquake really validated our standards.

Left to Right: Benjamin Lin, senior general adjuster; Gary Cross; Shinobu Ito, FM Approvals engineer; Ryosuke Toyoda, senior engineering specialist

Gerry Alonso For every client facility we visited, we brought along a nuclear engineer.

Every time we checked, the reactor situation was getting worse. There were more and more aftershocks. So we got concerned. Once everyone landed in Japan, how would we get them out if something bad happened? That's when KarenMarie Razee and Steve Abbott found Global Rescue, an organization that often hires ex-U.S. Navy Seals. They assured us that if something happened, they would get us out. They wouldn't tell us how they'd do it, but they guaranteed they'd get us out!

We had even procured fuel reserves; that is, propane-fueled taxicabs we could charter if necessary, because we heard there'd be problems with obtaining gasoline.

Three weeks after the event, I visited Japan to get a view from the ground. If I'm going to ask you to dig a ditch, I'm going to be there alongside you with a shovel of my own. We started from the farthest radius and worked our way in, and began adjusting losses. At each visit, there was an engineer, an adjuster and a nuclear engineer. Occasionally our World*Reach* partners in Japan—Sampo and Hyundai—accompanied us.

Bill Englund I was the claims catastrophe coordinator, but I also had a previous background as a nuclear inspector at FM Global. Knowing that we might have issues with radiation exposure for our people on the ground, I contacted some people I knew who had worked on this kind of issue before and had provided us training. On March 22, we made arrangements to fly them to Japan so they could work with our people there. FM Global always was very conservative regarding exposure risks, and we followed the guidelines issued by the U.S. Nuclear Regulatory Commission.

Dennis Bessant I remember we were all sitting around a table at a client meeting, two months after the nuclear event. At this point, the risk was pretty low, and we were all well-protected, but my dosimeter went, "Beep!" It was just one little "beep," but everyone just stared at me. No one else's dosimeter sounded, just mine. A second or two later, one of the engineers said it must have been just a hiccup, a glitch. But it was now months after the earthquake and it was still very much on our minds.

IN THE END

Janine Pitocco Working at FM Global as a safety professional presents diverse and challenging opportunities, and that makes it interesting. As we were dealing with the radiation exposure issues, we couldn't help but wonder what the next crisis may involve. And we all felt this experience helped us be that much more prepared for either a natural or man-made radiation-related emergency.

Gerry Alonso I was very confident approaching this disaster. We've been adjusting catastrophe losses for a long time. We are recognized as the best in the business at doing this. We have a catastrophe procedures manual. All we had to do was consider a new wrinkle—radiation.

We were the first foreign insurer to visit the disaster site. I even heard from a claims manager working for one of our competitors. He wanted to know what we were seeing over there because they hadn't figured out yet what they were going to do. That just about tells the story. [R]

5 LESSONS BUSINESSES CAN LEARN FROM THE JAPAN EVENT

The catastrophe in Japan destroyed infrastructure and factories supplying anything from high-tech components to steel and even led big businesses such as Sony and Toyota to suspend production. Greenwich Associates conducted a survey of 75 companies in North America with more than US$1 billion in sales and found one-quarter suffered significant interruption to their supply chains, and 30 percent lacked supply chain interruption coverage.

The extent of the disruption emphasizes how crucial Asia has become to multinational businesses due to both the increasing demand from this region as well as the constant search for low-cost suppliers. The impact was felt most strongly across four key industries: automotive, computers, semi-conductors and transportation.

Martin Fessey, vice president and manager, market and business development, EMEA, at FM Global said, "While the levels of awareness of supply chain risk among businesses have increased following the disasters in Japan, there is still a lack of understanding of the complexities of supply chains, and many companies are still underprepared should the worst happen. The companies that learn their lessons from the disaster will have a competitive advantage should another disaster strike."

1. NATURAL CATASTROPHES DAMAGE MARKET SHARE AND REPUTATION, AND CAUSE LOSS OF REVENUE

Risk management challenges are growing and becoming more of a boardroom issue because the consequences can be dire. Those consequences may also go beyond the loss of revenue due to supply chain interruption; a company's market share and reputation may be at risk. Resilience is viewed as a competitive advantage because, when faced with a catastrophe, those businesses prepared to deal with natural catastrophes are quickest to return to normal operations.

2. PREVENTIVE MEASURES ARE CRUCIAL WHEN DEALING WITH NATURAL CATASTROPHES

Even in the most extreme cases, while there may still be some damage, preventive action can limit this damage and, therefore, restrict the extent to which businesses face interruption. FM Global recently announced the launch of the FM Global NatHaz Toolkit (fmglobal.com/nathaz), a one-stop online resource for natural hazard planning to help businesses prepare for and protect against the growing risks of catastrophe. The toolkit is a free resource for businesses and includes four sections dedicated to understanding the hazards associated with earthquake, flood, freeze and windstorm. It is important that businesses take preventive measures to make sure that they are protected from natural catastrophes.

3. BUSINESSES MUST PLAN FOR THE WORST-CASE SCENARIOS

The main lesson learned from the events in Japan is that complacency can kill a company. Companies need to consider the worst-case scenario when planning for supply chain risk, because if they don't they will face severe business disruptions. Part of the problem when the earthquake struck was that no one had considered the impact of a disaster of that size, and so neither the insurance industry nor the business community had the right procedures in place to deal with the fallout from widespread plant closures and production outages, nor for the port closures that followed the tsunami.

4. CHANGE THE WAY YOU VIEW YOUR SUPPLY CHAIN

Multinationals are now beginning to look at changing the ways that supply chains are designed. The problems in Japan were exacerbated by the continuing issue of clustering similar industries in one area. When there is a high concentration of manufacturers of a specific product in one area, companies may find that, if a natural disaster strikes, they have no real supply chain alternative. It is not enough to simply be prepared for natural catastrophes affecting direct suppliers, but also the potential impact on the supplier's supply chain. If a supplier's source of supply is cut off, then contingent business interruption may result, and multinational companies need to make sure that they are insured against this possibility.

5. BE PREPARED FOR WHAT MAY HAPPEN WHEN "PLAN B" GOES WRONG

While many companies have realized the importance of having an alternative source of supply in place in the event of a natural catastrophe, the Thailand floods following shortly after the Japan disaster meant that a lot of businesses were caught out twice, having moved their source of supply. One solution is to increase and diversify the number of suppliers. If you rely on a number of suppliers across different areas rather than just one area, you will reduce the levels of business interruption if a disaster happens. [R]

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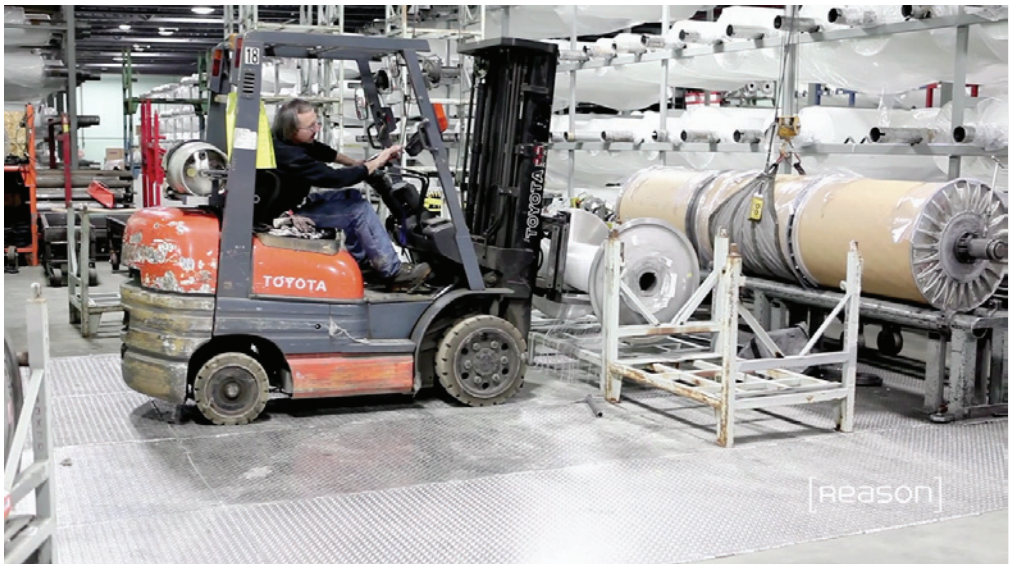

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