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Catastrophic Risk: New Perspectives for Leadership, Responsibility and Action

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In the aftermath of the Macondo platform fire, explosion and massive crude oil leak into the Gulf of Mexico, thousands—perhaps hundreds of thousands—of broadcast hours over every television network on the globe dominated the attention of billions of viewers for many months. The consequences of this massively visible event in April 2010 are still playing out today in the form of civil and criminal lawsuits, replaced (or indicted) corporate officers, a titanic loss of market capital, and an uncertain future for one of the most successful oil companies in recent history. It was perhaps the worst manifestation of industrial catastrophic risk ever.

In the wake of this disaster, the media, government agencies and the public at large asked the obvious questions: How did it happen? Who was responsible? What role did senior management play in these decisions? Where was the Board? Questions filled corporate boardrooms as well, primarily: "How do we make sure we don't have the same factors at work in our business?" and "How do we make sure it never happens here?"

These are the right questions.

The truth is that, in large, complex, operationally intense industries such as chemicals, energy and power generation, the same seeds for catastrophic risk incidents can—and probably do—exist. Although the incidents may not be as spectacular as Deepwater Horizon, many process-safety catastrophic accidents have been logged over the ensuing 2½ years in these industries. Many of these incidents have destroyed industrial capacity, diminished economic wealth and even ended lives.

It's not that the incidents happen because of a general lack of standards, investments in safety equipment and training, or uncaring attitudes. Chemical and energy facilities, for the most part, are among the best designed and operated units in the world. Yet even the most diligent organizations still experience accidents—many of them serious. So what's missing?

In the consideration of catastrophic potentials, it's often easy to jump directly to technical solutions and sophisticated controls systems. These aspects are critically important, to be sure, but they are only one dimension of a more complex problem. Exhaustive post-incident benchmarking has shown that other factors are equally critical in reducing the possibility of a "black swan"—a large unforeseen negative event—and preventing a serious catastrophic incident.

CATASTROPHIC RISK: THREE CRITICAL FACTORS

A majority of leaders in chemical and energy businesses are engineers and technical professionals by education and developmental experience. By their very nature, most see the problems of operational risk in terms of technical standards, critical control systems and precise operational procedures—and to be sure, these factors all play major roles. However, post-incident investigations show that even the best technical processes often fail because of the "softer" factors of operational governance, culture and complexity. The most effective operating standards are essentially weakened if the managerial governance system fails to *implement* and *maintain* those standards.

These failures can span a broad number of issues, including inadequate training, poor chain of custody for responsibility delegation, inadequate management of change processes, and the failure of senior business leaders to review and enforce standards. Likewise, a perfectly adequate governance system can often be overtaxed—and ultimately fail—if the culture of a business leads to organizational acceptance of higher levels of operational risk, or when a trend of increasing complexity pushes a governance or procedural process to the breaking point.

Because of these critical factors, the essential catastrophic risk question actually can be posed most effectively as three questions:

1. Does our business possess and execute the necessary technical standards and control systems to manage the risk of our operations as compared to our standards and the standards of leadership peers in our industry?

2. Does our business possess the necessary governance processes to ensure that the systems and standards for operational risk, emergency response and business continuity planning are properly implemented and executed?

3. Does our business culture drive the necessary level of ownership in safe operations—and is it overtaxed or defeated by growing complexity in business systems and processes?

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Senior leaders and Boards who ask the full spectrum of critical questions are the most likely to begin to get a firm grip on the assessment—and then the mitigation—of the catastrophic risk potentials of their businesses.

ENGAGING THE CATASTROPHIC FACTORS

How, then, should a business leadership team or a concerned Board begin to engage the factors of catastrophic risk? The best approach, and the path taken by successful leaders in the chemical and energy sectors, is rigorous assessment and action related to these three key factors.

Technical Standards and Critical Control Systems: Leadership companies employ both internal and external review of their technical standards and resources arrayed against operational risk. These programs consist of periodic critical risk identification, assessments and mitigation of key risk elements. This is known as the assessment phase. Once the key risk elements are identified, the second phase, risk prioritization, is performed principally in a risk matrix mapping process similar to Integrated Risk Management, which seeks to identify those risks whose impacts and probability place them in the primary position. Mitigation plans are then implemented using improved standards, control systems or capital investment. These processes will optimize risk reduction activities to provide prevention or avoidance of catastrophic incidents. The final phase is one of response planning aimed at minimizing the impact of a serious incident that occurs despite standards and controls. This phase takes the form of periodically reviewed and updated emergency response plans and the business continuity plans that are used to minimize serious business interruptions in the wake of an incident.

Governance of Risk Management: As important as the possession of technical standards and controls may be, the internal governance of risk management is also critical if those technical standards are to be effective in preventing risk incidents. Historically, operational aspects of a major chemical or energy business have typically been delegated almost entirely to the senior management team. But, as this Grey Paper mentions earlier, the public has increasingly questioned Board ownership in the wake of a catastrophic incident. In leadership companies today, Boards ensure that the senior leadership team has a solid program to address catastrophic risk and then periodically reports on progress against those program goals. This is a somewhat more intrusive position for Boards but, in the public's eyes, a necessary change. The governance processes must ensure a clear delegation for standards and systems implementation from the very top of the organization down to the operational floor. The continuity of this chain of custody should be ensured by management goals, action plan performance and periodic auditing, including third-party "cold-eyes" reviews.

Culture, Complexity and Competency: The third factor of catastrophic risk management is related to governance but addresses the development of cultural values in risk management, the assurance of operational competencies within all members of the organization, and the control of complexity within an organization's systems and processes. A number of models have emerged that are aimed at first understanding the risk culture of an organization and then taking steps to change that culture. Models that build strong risk cultures follow these steps: 1) increase ownership of the total organization to question risk factors; 2) provide positive reinforcement of safe behaviors; 3) achieve full organizational engagement in risk reduction; 4) increase risk knowledge and awareness; and 5) set very high levels of discipline in adherence to standard procedures. In the achievement of these five key cultural factors, complexity analysis is essential to ensure that the increase in standards and systems needed by an organization doesn't increase the complexity of operational controls to the point that they become confused or misunderstood by individuals making critical decisions that could create risk. These cultural factors are characteristic of high-reliability organizations like the U.S. Nuclear Carrier Fleet Operations but are fully applicable to other complex systems such as chemical and energy facilities.

THE CASE FOR A FULL-SPECTRUM SOLUTION

In summary, there are few issues more worrying to senior leadership teams and Boards of Directors than the potential of a catastrophic incident. Such incidents carry the risk of destruction of assets, serious business interruption, regulatory and legal liabilities, and tragic impacts to people. Responsible business leaders should not make the mistake of assessing only technical standards and systems in ensuring proper catastrophic risk mitigation. Rather, they should consider all three of the major factors that can build the potential for catastrophic outcomes.

Many of our clients have realized that the proper assessment and implementation of catastrophic risk controls cannot rely on technical systems and standards alone. Many have therefore elected to engage a "cold-eyes" review of all three critical factors: technical systems and standards; governance of risk systems to achieve them; and, finally, the assessment and improvement of cultural risk elements combined with the elimination of needless complexity.

These are effective first steps toward lowering the probability that your CEO will someday get that dreaded phone call late on a weekend evening…

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