A. C. Macris Consultants

UPDATE

Vol I Issue 01-03

Highlights

In this issue, we discuss the striking similarities identified over a wide range of industries we've encountered during the past few years of our consultancy. The industries discussed in this article are categorized as Critical Industries, those that carry with them a high level of risk yet deliver crucial services to the consumer. The three examples we use in this article are nuclear power generation, high-speed passenger rail service, and high-voltage electrical construction. Looking at these three examples of Critical Industries, we identify problems and challenges that are common to all of them, and then look at the Behavioral Patterns that can create these common problems. We discuss five areas within Behavioral Patterns that can breed problems and challenges not only within these industries, but within any Critical Industry—complacency, accountability, commitment, specific business knowledge, and disregard for rules and procedures. By the end of the article, we hope that you can recognize similarities between these Critical Industries and your own, and realize that while many industries share common problems; these problems are not without solution.

UPDATE is published quarterly by A.C. Macris Consultants. UPDATE's charter is to provide interesting articles, on timely topics, authored by people in industry, academia, or business.
Please contact us at the following:
Telephone: 860.572.0043
Toll Free: 888.225.4963
FAX: 860.446.1882
E-mail: ACMPC @ acmacris.com
U.S. Mail: P.O. Box 535, Mystic, CT 06355

So you think your problem is unique – think again
Share information – save lives and money

by
A. C. Macris and Thomas Mazour

What is the driving force behind this article? As independent consultants, perhaps the most valuable service we offer is the application of perspective gained by working for varied clients, a perspective that comes from addressing similar issues and challenges across a variety of venues. This article is based on the fundamental pretense that as consultants, we see similar issues in different types of companies and are able to apply our learning and experience to address these issues and challenges in ways that yield predictable improved performance in shorter time. In addition, we hope to teach our clients the value in lessons learned and to share experience such that they can apply those principles internal to their organizations in the future.

We first set the stage by discussing what we refer to as Critical Industries; we discuss issues that illustrate their common threads, problems and challenges. We then explore the Behavioral Patterns that lead to these common problems. To assume that similar problems require similar solutions for different industries is naïve and incorrect. Consequently, we address the fact that differences definitely exist and we attempt to describe those differences and the existing similarities. With such a set of differences and similarities we are positioned to take both the lessons learned and our experience and design Intervening Actions. All of the above are fine, but where Intervening Actions fall short is in measuring outcomes in terms that are tangible and demonstrate a business advantage. We now have a model that ultimately is communication-based with selected tools that can be used once the sharing of information, lessons learned and experience has taken place.

In order to establish the framework of this article we define critical industries to be industries that are; hazardous, production oriented, and has high consequences for failure. We define Behavioral Patterns to be; complacency, accountability, commitment, specific business knowledge and disregard for rules and procedures.

Critical Industries
We define the characteristics of Critical Industries as follows:

Hazardous means that the work itself carries serious possibility of loss or injury, to the health and safety of the workers and even the surrounding community

Production oriented means that in order for a business or company within that industry to be financially successful, production is keenly important. Some may say that production is important in any business – however, when coupled with a high risk factor we categorize the industry as Critical.

Consequences are high in critical industries, where the consequences of system failures, human error or external forces affecting systems and humans is extremely significant to local communities, financial consequences, and other consequences affecting current and future ways of life, health and safety.

These characteristically critical industries face a variety of challenges, which, we suggest, may be unique to each particular industry but also share a set of commonalities. We will attempt to provide examples illustrating some of these commonalities, and applications of conceptually similar solutions for several critical industries.

Examples of critical industries for the purposes of this paper include, but are not limited to:

- Nuclear power electric generation
- High speed passenger railway
- High voltage electrical construction

We recognize that these industries only represent a few of the critical industries, but believe they represent a well-balanced set of currently important industries. We urge further consideration of other industries, including commercial aviation, offshore oil exploration, chemical plants, and manned space travel; however, they are outside the scope of this article.

Let's look at why we selected these three industries. We will discuss each, as well as the factors that impact how each is dealt with differently and similarly.

Nuclear Power

Inherently and characteristically, nuclear power generation is a critical industry. The use of nuclear power emerged through the U.S. Navy's nuclear power program. Considering both the awesome nature and the public perception of nuclear power, the Navy is a good place to start. The Navy's use of nuclear reactors to power submarines resulted in the submarine becoming a true submersible. With nuclear power, the submarine could stay submerged indefinitely and, as early literature on nuclear submarines stated, the people became the limiting element – not the equipment.

Let's consider the commercial use of nuclear power. The use of nuclear reactors to produce electricity for public utilities seemed like a natural transition from a military to a commercial application. Because the Navy's nuclear power program was the largest application of the technology in the early days of nuclear power, public utilities sought former naval operational personnel for their developing nuclear programs. Since the Navy people came already trained and had previous experience operating nuclear power plants, operationally, the assumption that their skills would transfer to the commercial sphere was well-founded.

As we explore the differences between the naval program and the commercial use of nuclear power (this could be the subject of a doctoral dissertation) we will focus on three characteristics: Hazards, Productivity and Consequences.

Hazards – in our Summer/Fall 2000 issue of *Update* we write about Leveraging Risk for Competitive Advantage. One key feature of this issue is the concept of Prudent Risk. In the Summer/Fall 2000 *Update* we defined Prudent Risk as "Decisions made and actions taken, involving a possible loss or injury, after careful consideration of:

(a) circumstances
(b) potential safety or business results; and,
(c) potential personal consequences [(1)]"

Intrinsic to the concept of Prudent Risk is the relationship between the Level of Risk and the Value Added. It is essential to understand this relationship, particularly while attempting to understand risk in different contexts.

In the context of nuclear power, we have several different ways of looking at risk and prudence. Safety was paramount in creating a desire to achieve a zero risk environment and associated culture. When looking at the importance of the mission, the fact that cost 'really' wasn't an issue and that safety was the most important consideration led to a balance that resulted in the successful accomplishment of the mission. Now let's return to the transition to the commercial application.

The initial assumption that a good Navy operator would become a good nuclear utility operator was well-founded. Also, the notion of safety and a zero risk philosophy being necessary conditions for nuclear power were definitely adapted by the commercial industry. The difference however, lies in the financial considerations. Public electric generating utilities are production and profit motivated, while necessarily recognizing that safety is also paramount. The problem is the balance between safety, production and profit. Retaining the zero risk philosophy, the nuclear industry almost went bankrupt. So now the industry needed to look at how to make qualified judgments on risk to ensure their decisions added value while maintaining safety. This new balance of value and safety called for a different paradigm in leadership and human resource utilization.

High speed passenger railway

This industry is not as mysterious to the general public as nuclear power, nor do railroads carry similar perceptions of being a large public health and safety hazard. The interesting thing about this industry is the Consequence characteristic. Consider the European way of life and dependence on their

This UPDATE Newsletter is copyrighted material. All rights are reserved. It is against the law to make copies of this material without getting specific written permission in advance from A.C. Macris.

railway: an accident where human life is lost carries a devastating consequence for the whole society. The other characteristics, Hazard and Productivity, are also important. Think about train productivity in the context of schedules and maintenance outages that affect schedules and train frequency. Logic would dictate that attempting to achieve a zero risk environment is not feasible because the productivity component would be negatively impacted – almost continuously. Safety is keenly important and once again, determining where the balance exists between the hazards, productivity and consequences is the key leadership issue. That sounds relatively straightforward, but depending on the organizational structure and decision-making hierarchy the way the balance is achieved can be quite challenging. Recognize also that the issue of prudence in determining risk is a key societal consideration depending upon the perception of the consequence.

But let's consider the British railway system. Under nationalization, British Rail was the one railway system, the one organizational structure that was responsible for the safe, reliable and efficient operation and maintenance of the railway. About ten years ago the railway system was privatized. This privatization led to the system being partitioned into functional organizations. There are Train Operating Companies, Infrastructure Maintenance Companies, Freight Operating Companies, leasing companies that purchase hardware (trains) and a very large infrastructure owner referred to as Railtrack or more recently Network Rail. The issue here is the same as for the nuclear industry: maintaining a balance between hazards, productivity and safety. What is perhaps the most difficult aspect of this situation is the decision-making that affects the balance. Decision-making is often an arduous process: if one entity believes there is a safety issue and another doesn't, the dilemma is how to verify the validity of the concern and then identify the ownership, followed by the corrective action, and finally how the cost will be allocated. Since so much of the functioning of the railway system is based on contractual mechanisms, any emergent concern becomes a contractual issue affecting cost structures with financial impacts. Organizationally, an issue that is significant enough to affect all entities requires an integrated and team approach. Yet with any team, there must be a leader and herein lies perhaps the biggest barrier and ownership issue. In the railway context, particularly in the United Kingdom where trains are such a predominant mode of transportation as well as an historical entitlement, the quagmire of a privatized system has a major impact on society.

High voltage electrical construction

High voltage electrical construction is another critical industry in that it poses significant threat to individuals. Unlike nuclear power, which can seriously affect the non-suspecting citizenry, or the railway that, if perceived as non-reliable and hazardous, affects a way of life, the hazards of electrical construction are more individual. The effect of an electrical outage on a community or neighbor hood is an inconvenience, while the cause of the outage related to a mishap on a line has significant personal consequences to the person involved. Furthermore, the company employing the worker or workers involved faces longer-term legal and financial consequences. The parallel here with the other critical industries lies in the level of risk, the production orientation and consequences of failure. For the electrical contracting industry, failure is more a function of individual, work group and local management than a function of the system.
The electrical construction industry has historically been fraught with individual fatalities. The industry culture accepts a higher level of risk, possibly because the daily threat—electric current—remains largely unseen. Perhaps this acceptance of risk prevails because electricity is so important and intrinsic to our daily lives. When storms bring down power lines, these workers are the "heroes" who put their lives on the line so the power can flow. It is difficult to convey the culture – to do so one needs to know the utility industry. The culture stems from a "can do" attitude in the face of hardships and obstacles, dating back to the early days of power generation. This attitude seems like a social commitment on the part of those who produce and distribute electricity. It is an embarrassment to lose power, and if an act of God that caused the loss, "by God we will get it back." The commitment to providing electricity would seem to be an exemplary virtue, but oftentimes the pressure to restore power fosters a "cowboy" attitude. The sense of rugged individualism on the power lines creates this "cowboy" attitude, which further cultivates behaviors that expose workers to hazards because of their zeal and occasional carelessness.

As we mentioned before, these highlighted industries are only three of the many industries that can be considered "critical industries" and viewed as such. The issue here is the set of commonalities among these industries that can cause critical events such as failures, accidents and even fatalities. These commonalities are not casual observations; rather, they are based on formalized assessments and investigations of mishaps and fatalities. Furthermore, the commonalities are not focused on any one segment or level within an industry – we are not saying it is just the workers or just management, etc. What we found was that the failures and mishaps were a function of behavioral patterns at all levels of the organizational structure. Therefore, we have been able to characterize these behavioral patterns and divide them into five categories.

Behavioral patterns leading to common problems

The behavioral patterns delineated below result from years of both human factors and safety work. The discipline of Human Factors is a marriage of the principles utilized in engineering and psychology that acknowledge the premise that 'things do not exist in a vacuum' they are invented by, used by, and oftentimes *surrounded* by people. With that definition in mind, there are rules, laws, standards that govern a human's safe interaction in the world. Using this

definition as our basis, we determined the following to be the five categories of behavioral patterns observed.

Complacency

We define Complacency as the degrading awareness of the hazards associated with the type of work. Complacency is a very insidious problem. In many hazardous environments and occupations, as the people who confront job related hazards daily as part of their work become familiar with the hazard, they begin to believe that the hazard is more benign than it truly is and become particularly vulnerable to accidents. This complacency manifests itself through workers' taking shortcuts and accepting risks they would not have ordinarily accepted if they had not had the repetitive exposure to the hazard while remaining uninjured. Research reveals that the perception of the danger affects safety behavior. This research reinforces the problem with complacency since the hazards are not perceived to be as significant as they really are.

Accountability

Accountability is perhaps one of the most important behaviors within any organization. If accountability is taken seriously on all levels of the organizational structure, major improvements are achievable. Expectations should be that employees as well as managers and leaders will be accountable for their actions and behaviors. Accountability becomes the driving force behind positive organizational change and behavior. "Whence springs loyalty? To whose back does the monkey of accountability cling most tightly?" (Tom Peters, In Pursuit of WOW).

Commitment

Ken Blanchard so aptly stated, "There is a difference between interest and commitment. When you're interested in doing something, you do it only when it's convenient. When you're committed to something, you accept no excuses, only results." A commitment to safety and improvement is essential within any critical industry. If the people in an organization are interested, they will only do what is needed when it is convenient for them. If they make the commitment to safety and improvement and understand what that commitment means they will continually strive to achieve the outcomes established for the organization.

Specific business knowledge

Specific business knowledge is integral to the above. If workers neither have the requisite knowledge nor understand the consequences of ignorance, a burden is spread across the entire organization which detracts from the business of running the business. Some of the attributes of business knowledge include:

- Continuous initiative to learn
- Fulfilling roles as Change agents – Flexible adaptive
- Open mindedness
- Inquisitiveness
- Acting as a mentor/coach
- Having broad experience within industry
- Demonstration expertise (trade, journal, publications, technical conferences)

Disregard for rules and procedures

Disregard for rules, policy, and procedure is a serious behavioral concern. We find that workers who believe they "know better" and have a high risk appetite are prime candidates for serious injuries or incidents that affect them individually and often their co-workers as well. A part of this behavioral pattern that is equally alarming is when those co-workers do not take any action to stop the blatant disregard for known policies and procedures.

Recognizing the differences and similarities

As we said in the beginning of the article, our fundamental pretense is similar issues in different types of companies can be addressed by applying our learning and experience to these issues and challenges in ways that yield predictable results in shorter time. Through focusing on the behavioral similarities observed across different critical industries, we have attempted to highlight certain common behavioral patterns. The important consideration at this point is recognizing the similarities and then determining courses of action to take based on those similarities while also recognizing organizational differences and choosing the most effective specific courses of action. More importantly, consistent with our business philosophy of partnering with our clients, we believe that our clients must be able to carry forward without us. We must give them the tools or model to continue once we complete our engagement. In that context, we are providing two models with which we can move forward.

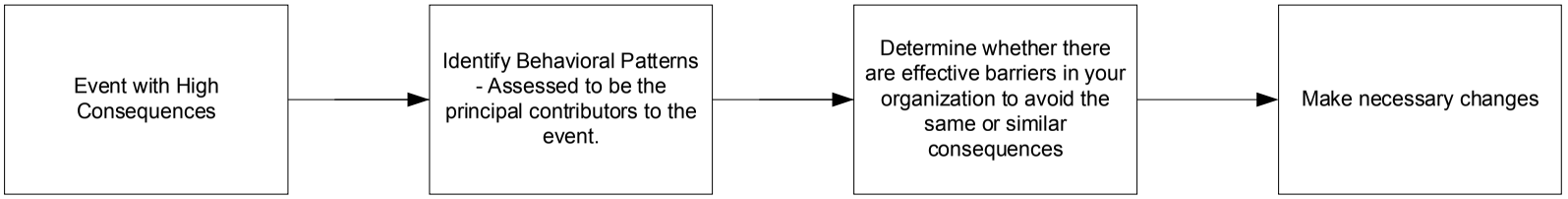
Models for the future

We believe there to be two fundamental conditions for the application of the model:

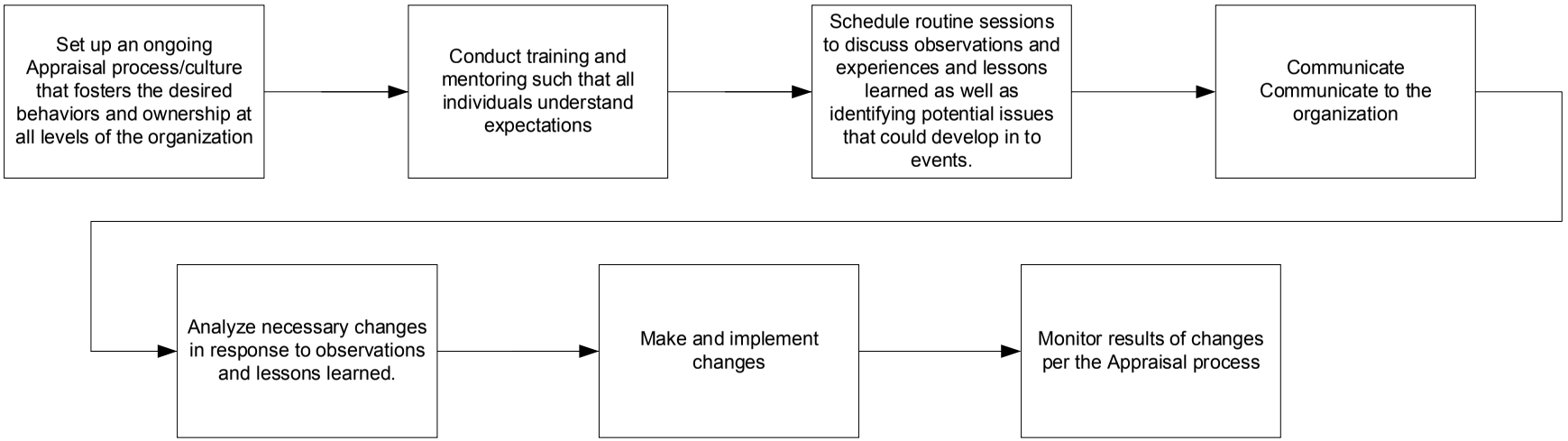
- An event has occurred and the organization must respond to the event, and
- In an ongoing context the organization needs the ability to recognize the behavioral signals before an event

The diagram below illustrates both models. While the respective models do not appear to be profound in their diagrammatic form, their uniqueness becomes manifest in the techniques used to achieve the actions identified. Because our focus is on behaviors, the tools and techniques are essential to distinguish real issues from perceived issues. In addition to these tools and techniques, we also must consider experiential factors. Both the level of experience and

Response Model



Ongoing Appraisal Model



the ability to apply that experience to the current situation is what we have been discussing throughout this article. So what is the payback in applying these models to critical industries? It is very simple – little things done correctly result in big things being done successfully which, in turn, results in a safer workplace where employees look out for ach other. The organizations experience positive behavioral and cultural change, which not only influence the employees' perception of their organization but public perception as well. Finally, all of these factors add up to positive business outcomes resulting in financial benefits to the organization.

I want to thank Tom for working with me on this article. Tom and I have been colleagues, neighbors and friends for a long time. Our careers have followed parallel paths starting in the US Navy's Nuclear Submarine force, working for consulting companies and then starting our respective consulting practices. Our work following the Navy has focused on human performance, organizational development and support to senior managers of various companies and organizations. In the context of this article, Tom brings domestic and international experience with government ministries, industrial companies, universities, trade groups, and international organizations. As part of our ongoing dialogue we realized several similarities with our projects and the issues our clients have called upon us to consult with them. We further realized several common behavioral patterns that contributed to the issues. We agreed that we had a professional obligation to share these thoughts and ideas.

P.O. Box 535 Mystic, CT 06355
www.acmacris.com