Beyond Safety Management Systems

A truly safe operation is not defined simply by the presence of a safety management system (SMS). While an SMS is a good start, more is needed, much more.

The International Civil Aviation Organization's (ICAO's) decision to require aviation organizations to adopt SMSs has clearly focused attention on the concept of an SMS. However, a decision was made at Bristow Group to expand the effort and set an ambitious goal.

The letters in the abbreviation "SMS" neatly explain the why, what and how of the concept:

- *Why* have an SMS? To help achieve your Safety vision.

- *What* does an SMS do? Provides a means to Manage the processes needed to achieve your safety vision.

- *How* does it do this? By being an organized, Systematic approach.

It is important to have a safety vision. For some organizations, the vision is an accident rate they deem acceptable. Others set future improvement targets based on their previous performance or industry benchmarks, and some organizations believe that every accident is preventable and their vision should be zero accidents. Each philosophy has its merits, but without a vision, it is impossible for those within an organization to

Leadership and safety culture play essential roles in moving an organization beyond rote subscription to an SMS.

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TARGET ZERO
Zero accidents.
Zero harm to people.
Zero harm to the environment.
The Bristow Group Culture of Safety

have a common understanding of what they are trying to achieve.

The idea that an SMS is systematic is also important. Even if an organization has all the key safety activities in place, unless these activities are integrated systematically, key information can be overlooked, foiling effective decision making. Organizations adopting an SMS need to ensure they are looking at all their risks and at their organization as a single system, rather than having multiple competing safety management "silos."

Managing safety in silos is dangerous because it can hinder proper improvement action prioritization or even hide important issues from management attention. In the case of an oil refinery at Texas City, Texas, U.S., the focus on occupational safety issues came at the expense of attention to process safety in the run up to a fatal explosion in March 2005.[1] In another case, greater attention to flight safety in the Royal Australian Air Force masked a 22-year problem in which workers who maintained F-111 fuel tanks were being exposed to hazardous chemicals that caused memory loss, fatigue and other neurological problems.[2] These resulted in a board of inquiry and an AUD$21

million compensation package. Smaller examples are common when flight operations, engineering, ground handling safety and so forth are considered separately, or when subcontractors are excluded from the overall safety management process.

The antidote to such silo thinking is the proper evaluation of all risks, a key aspect of an effective SMS. Unfortunately, some aviation operations hold on to the misconception that "risk" is a rating applied after incidents occur. Organizations suffering from this misunderstanding are doomed to be constantly surprised by new incidents and even accidents that they do not expect or have adequate controls to prevent. As a result, they become blindly reactive. Proactive organizations embrace the proper use of risk management within their SMS, realizing it is a valuable way to prevent accidents and prioritize investments in safety.

It has been noted that while the compilation of ICAO's 290-page *Safety Management Manual*[3] is a huge achievement, it is not a concise guide.[4] It has also been observed that "SMS courses generally focus on principles, concepts and general advice," and that there is a hazard of "rejection of SMS due to confusion and frustration"

because of the contrasts between such abstract descriptions of SMS and practical implementation.

Too often, the method used to concisely describe an SMS consists of a long "laundry list" of SMS components, almost like the contents page from an organization's SMS manual. Such lists give no clue of how to combine these components into a functioning system. This may explain why some implementations have tended to be piecemeal rather than systemic.[5] This is disappointing; quality management systems have been common for many years and the SMS concept is simply a focused application of such management system principles to safety. Encouragingly, some regulators are now accepting that there are simpler, clearer models, and that there is no single idea model or format for an SMS.[6]

Our safety approach at Bristow is to use a simple, practical but powerful four-element model based on three processes that feed a fourth.

The first process is risk management, a proactive, predictive process. This process is first used during planning that precedes launching a new venture or when implementing changes. The aim is to identify hazards, determine how they need to be controlled and decide if the resultant risks are acceptable. If any risk is not acceptable, the planned activity should not be permitted unless a different control strategy is utilized. Risk controls must also be re-evaluated when the second or third processes highlight possible problems. Risk management still is uncommon in the aviation industry, which previously has relied on regulations to determine what practices are safe. It remains to be seen how regulators deal with the greater self-determination that the SMS concept introduces.

The second process is monitoring. Also proactive, this involves examining operations to identify opportunities for improvement and latent weaknesses in controls before they result in adverse consequences. This process can include flight data monitoring, crew resource management, scheduled maintenance inspections, surveys, routine supervision and many other techniques. One of the most powerful monitoring tools is good independent auditing, an effective way to avoid complacency and highlight slowly deteriorating conditions. Bad audits simply seek to confirm the existence of controls required by regulations; good audits look at how effective the controls are in practice and whether the control strategy is appropriate.

The third process, safety reporting and investigation, is purely reactive after things have gone wrong, often only after an accident or an incident reveals that safety margins have been eroded.

These three processes each provide a unique point of view:

- Risk management is predictive and provides foresight;

- Monitoring is proactive and provides oversight; and,

- Safety reporting and investigation are reactive and provide hindsight.

Risk management offers the greatest efficiency and cost benefit, needing fewer resources than monitoring. However, monitoring is still essential to detect weaknesses and is very effective.

The most inefficient of the processes are safety reporting and investigation because, at best, safety margins have degraded and risk has increased to a level sufficient to cause alarm. At worst, a major loss has occurred.

The aim should always be to prevent weaknesses in the system before the third process is required. The ultimate justification for this diligence is to support the company's health. It has not gone unnoticed that all three airlines involved in fatal accidents in Australia since 1990 have gone out of business.[7]

One management challenge is to ensure sufficient attention is paid to the results of risk assessments and audits and not to assume that a lack of accidents yesterday means all is well today. These three processes combine to provide integrated, comprehensive insight into operations.

How Insight Is Created

Insight is achieved through management review of operations. Once gained, insight ensures that management makes full use of all predictive, proactive and reactive activities to deliver effective improvements.

Although the first three processes all create immediate improvement actions based on lessons learned, the main purpose of management review is to create strategic improvements. There should be regular communication and reviews of the results of risk assessments, monitoring — in particular independent audits — and safety investigations to ensure that action is being taken, supplemented by regular senior management meetings on safety matters.

While this management review usually is facilitated by the organization's safety staff, it is vital that the organization's senior managers accept that they are accountable for the safety performance of their organization and therefore must have control of safety decision making, using all available information and making the right resources available. Sadly, it is this critical management governance activity that usually is neglected by organizations that take a piecemeal approach to implementing their SMS. This neglect undermines the whole SMS.

Bristow Group and Target Zero

Bristow Group is the world's leading provider of helicopter services to the oil and gas industry. Bristow is also an experienced provider of search and rescue (SAR) services and, through the Bristow Academy, flight training. The company operates around 400 aircraft in more than 20 countries on the U.S., Trinidadian, U.K., Nigerian, Turkmen, Russian and Australian registers. This fleet flies around 300,000 hours each year in a range of demanding environments. FB Heliservices (a Bristow joint venture with the Cobham Group) provides a range of aircraft and services to the U.K. military. Additionally, Bristow has its own design and production capability to develop safety and role-specific modifications. This unique multinational operational portfolio means that the company is exposed to the latest safety thinking in the aviation industry, the energy sector and the military.

Bristow is already an industry leader in safety performance. Over the past five years Bristow's air accident rate has been less than 40 percent of the average for all operators providing the very demanding support for the oil and gas industry worldwide.

In September 2005, at the first International Helicopter Safety Symposium, an industry commitment to making an 80 percent reduction in helicopter accident rates over 10 years led to the creation of the International Helicopter Safety Team (IHST; *ASW*, 1/08, p. 28). Although Bristow is a committed member of the IHST, when Bristow considered its own safety vision the company settled on the more demanding vision of operating without accidents and without harm to people or the environment. That vision was summed up in two words, "Target Zero."

That vision was accompanied by its own logo, with a tagline associating that vision with a "culture of safety." To build a global Target Zero culture of safety it was decided to market Target Zero in a high-quality campaign, making "Target Zero" our shorthand for safety. Similarly, the simple but distinctive logo was designed to be a graphical representation of the safety vision.

Some might think that zero is an idealistic but impossible target in a high-hazard industry. However, Bristow believes that accidents do not just happen but are "caused." Target Zero sends the signal that accidents can and should be prevented and that there is a duty to strive not only to reduce risks as low as practical but also to establish new ways to reduce risk. To back up this vision, a more specific set of safety beliefs, commitments and expectations was developed, along with a leadership charter, to help guide managers and employees.

The final step before starting to communicate the Target Zero message was to conduct a global survey in 2006 across all operations to get a baseline assessment of our employees' safety perceptions.

In early 2007, the Target Zero vision was launched. A group of more than 500 managers, supervisors and others in positions of influence took part in a series of 24 safety leadership workshops. Twenty were held in just seven weeks in nine locations in the U.S., Trinidad, U.K., Nigeria and Australia to generate a high level of momentum, with four more added to satisfy subsequent demand.

The aim in these workshops was to enhance leadership skills so the participants could:

- Confidently convey the Target Zero message face-to-face to their own teams;

- Seek some tangible safety improvements to demonstrate commitment; and,

- Take the lead on safety by example and hold their own teams accountable for their safety behavior.

As well as explaining the Target Zero concept, each two-day workshop covered coaching and leadership skills, featured a safety decision-making exercise, an accident case study, a description of our key SMS principles and a physical team exercise to practice safety leadership. To show that these workshops were designed to be just the first stage of an ongoing process, participants had to develop their own Target Zero implementation plans that would make a difference in the workplace. They were supported with a range of briefing and campaign materials.

During these workshops, the idea was developed for an award winning poster campaign, which emphasizes the expectation that people "see the dangers, say something, listen and take action."

At the end of 2007, Bristow ran its second safety survey. The experience with the first survey enabled major improvements to be made in-house for the second survey, which helped to increase participation dramatically. This survey gave good feedback on both the successes and further opportunities for improvement.

During 2008, a major new element will be the development of a network of Target Zero Champions to facilitate specific safety improvement campaigns. Their first project will be to roll out an enhanced version of Bristow's behavioral-based safety scheme. They will train all employees to make safety observations and interventions to reinforce safe behaviors and eliminate risky behavior. This is an important way to encourage safety leadership at all levels. Linked with this, Bristow will be introducing a means to reward and recognize proactive safety efforts to further reinforce positive safety behavior.

At the end of 2008, we will repeat the safety survey and measure the change, as we cannot hope to control what we don't measure.

— AE and JP

While an effective SMS helps create a pro-safety environment, we don't believe it can be the primary means to influence culture.

Insight is also important as the source of safety promotion and awareness information for all employees and subcontractors. Insight may be communicated through training, safety meetings and briefings, notices, newsletters, and company intranet sites. Learning needs to be embedded in the organization's procedures.

Another way to see how the processes fit is by examining a plan-do-check-act (PDCA) cycle (Figure 1), a common feature of most management systems.

The Processes Combine in PDCA Cycle

One observer has written:

> The systematic application of safety management principles, culminating in the formal assurance that the goals can and are being achieved, can significantly help to achieve high levels of safety. … A safety management system … is never enough if practiced mechanically; an SMS requires an effective safety culture to flourish.[8]

Organizations that introduce an SMS prior to any regulatory requirement have the advantage that while they continuously improve their SMS they can now look beyond SMS to developing their safety culture. Indeed, it is a paradox of the SMS concept that if you only want one because it is a regulatory requirement you probably have a weak safety culture and will be unable to take full advantage of SMS benefits.

Safety Culture

The term "culture" began to be used in relation to organizations in the early 1980s. "Safety culture" started to become widely used after an International Atomic Energy Agency report discussed the concept in 1988, following the Chernobyl reactor accident.[9] There have been many academic debates over what constitutes a corporate culture in general and a safety culture specifically.[10] There has also been sound research on the observable signs that allow cultures to be classified,[11] and critical components of a safety culture have been identified such as reporting, just, flexible and learning elements.

One definition of "culture" that is sometimes used is that it's "the way that we do things around here." Such a simplistic description can lead to confusion, as it implies that culture is a combination of what an organization's procedures state — when the procedures are followed — and what violations occur — when the procedures are not followed. Those who use this interpretation often conclude that an SMS is the primary means of obtaining the desired safety culture. They misguidedly believe that the necessary commitment to a safety vision — in some cases even distorted into a commitment to the SMS itself — can be expressed simply by the CEO signing a one-page preface to their SMS manual.

We believe that culture is an attribute of an organization and its collective values, beliefs, expectations and commitments that affect individual behavior at all levels. While an effective SMS helps create a pro-safety environment, we don't believe it can be the primary means to influence culture.

The greatest cultural concern for management of any safety-conscious organization should be how that group influences the organization's culture to be a positive influence, a "culture of safety." How to do this is rarely explained by research into safety culture. We believe that to influence culture you need more than an SMS.

We are convinced that the main way to develop a proactive and mindful "culture of safety," a culture that will be able to take full advantage of the SMS concept, is through leadership.

Management and Leadership

Management and leadership are fundamentally different activities. It has been said that management is about coping with complexity whereas leadership is about coping with change.[12] While

Plan-Do-Check-Act Cycle

Risk management
Plan
Our mission
Do
Insight
Act
All safety processes result in action to improve
Check
Monitoring
Safety reporting and investigation

Source: Bristow Group

Figure 1

managers are appointed, leadership is not linked to one's position in the organization but to influence. Leadership needs to be visible, focusing more on people, building trust and ultimately influencing their behavior, but management focuses more on data, analysis, control and scheduling of resources.

It is important to understand that although different, these complementary activities are both vital to the safe and successful functioning of any organization. A vision for the future of an organization cannot be achieved without a combination of management and leadership.

In the model of the relationship between leadership and management (Figure 2), there are links between strategy and culture, goals and teamwork, and tasks and people. These links emphasize that management and leadership activities must be aligned. In particular, leaders need to carefully consider the insight provided by their SMS, so that they lead their organization in the right direction, promoting the continuous improvement of processes and the development of their people.

When prospective leaders do not understand the culture in which they are embedded, it is the cultures which can control them.[13] While improving a culture is a long-term project, destabilizing a culture can be an unintended consequence of just a few misguided words or actions. As one researcher wrote:

When leaders walk into the workplace they see the behavior of their people, but they also see reflected in them their own behavior.[14]

The development of safety leadership skills is regarded as essential in forward-thinking organizations. However, we believe that everyone can be a safety leader. This means that the development of safety leadership skills cannot be limited to senior managers. Appropriate training and development needs to be applied across an organization.

Conclusions

It is a concern that even by late 2007, as few as 10 percent of airlines had a "reasonably implemented SMS," according to ICAO's Capt. Daniel Maurino.

Organizations need to ensure that their SMS is a truly embedded, systematic, integrated and holistic system. They need to be able to clearly demonstrate how their SMS functions as a system rather than describing individual components.

By clearly identifying safety culture as something that must be handled in a way different from an SMS, and adding the "secret ingredient" of leadership to build a strong culture of safety, leading organizations can both make their SMS even more effective and continuously improve to achieve demanding safety visions. ●

Leadership–Management Relationship

Vision

Culture — Strategy

Teamwork — Goals

People — Tasks

Leadership   **Management**

Source: Bristow Group

Figure 2

Andy Evans is Bristow's global quality and safety standards manager. John Parker is quality and safety manager for Bristow's eastern hemisphere operations.

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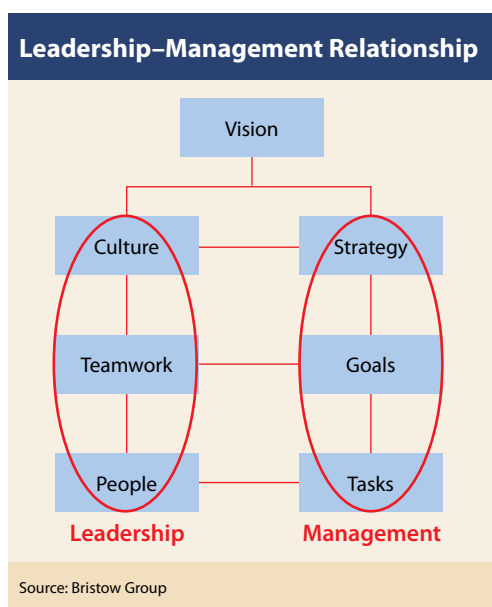14. Staley, Bruce. *Enhanced Techniques for Improving Safety in Mines.* Ph.D. Thesis, Imperial College, London 1995.