This paper is based on several long term studies in the energy industry designed to determine if there was a relationship between leadership practices, employee commitment and motivated effort. A survey methodology was used to identify and validate the variables that consistently impacted operational excellence and safety performance. These results show that employee engagement is a direct result of leadership practices. Where leadership practices promote and align company values and commitment to safety and operational excellence, the overall performance in both individual and organizational safety and operational excellence is significantly higher.

How Effective Leadership Practices Deliver Safety Performance AND Operational Excellence

A Case Study

Winter, Read, Owen, and Ritchie
Abstract

This paper is based on several long term studies in the energy industry designed to determine if there was a relationship between leadership practices, employee commitment and motivated effort. A survey methodology was used to identify and validate the variables that consistently impacted operational excellence and safety performance. Our research shows that employee engagement is a direct result of leadership practices. Where leadership practices promote and align company values and commitment to safety, the overall performance in both individual and organizational safety is significantly higher. Furthermore, the leadership that creates this increased performance also creates more highly engaged employees that outperform the competition in production, customer satisfaction and overall profitability. The linkages are these. The best leadership practices develop engaged employees. Engaged employees have strong feelings of collective and individual self-efficacy. Engaged employees were observed to have much higher commitment and alignment to the organization’s values and work practices. This high level of commitment and alignment subsequently led to higher performance outcomes. The paper goes on to describe what an organization needs to do to create those effective leadership practices. Our research suggests that behavioral based programs rarely succeed unless fully integrated into a values based safety culture.
Introduction:

Much of the authors’ focus over the years has been on helping organizations radically improve their safety performance. Not just LTI’s, and not just process safety, but the range of safety issues. We have done this work internal to large organizations and as consultants across several industries. After observing significantly different performance levels (business drivers and safety) in several of the companies and business units we worked with, we decided to conduct primary and secondary research to more fully understand why. Our thesis was that culture and leadership were the defining variables, but we were also interesting in finding what specific dimensions of leadership really made the difference. Our research led us to discussions on culture, how it is formed, what the leader’s role is, and what a safety culture is all about. There has been much work done in these areas, but we still believed there was a gap when it came to neatly describing what the most effective leaders did to get sustainable performance and how an organization could grow or transform people to that type of leadership. Some of our findings might be surprising to you. They were to us. Not because they were unexpected, but because the answers are really quite simple. When we summarized our findings to industry acquaintances some said, “But that’s common sense.” They were silent when we asked, “If so, why isn’t it very ‘common’ to see it in practice?” Our studies and results follow.

Discussion:

While safety is an increasingly critical concern of organizational leaders, most organizations still rely on after the fact, or lag, indicators associated with to track their safety performance. There has been insufficient effort, however, to identify and track lead indicators that are associated with and influence levels of safety performance through their effect on practices and behaviors. At issue; whether or not there are such indicators, and whether the levels of these indicators can be influenced so as to achieve more sustainable safety performance. More generally, the issue is whether or not there is a measurable relationship between the organization’s culture and its safety performance.

The concept that there may be a cultural type that influences the level of sustainable safety should be of great interest to organizational leaders (Thompson, R. C., Hilton, T. F., Witt, L. A. 1998; Tomas, J. M., Melia, J. L., Oliver, A. 1999). Indeed, there is a growing body of research to support this concept and the related concept that there is a relationship between how the culture is perceived by internal stakeholders and the level of safety performance. For example, the study by Culbertson, Owen, and Mink (2004) found that highly favorable employee perceptions of their supervisor’s leadership practices, related to operational excellence, safety performance, and caring, were correlated with a significant reduction in lost time incidents and a significant gain in operational performance. Findings of this sort have led us to pursue the identification of the cultural factors related to sustainable safety performance. This paper summarizes a series of studies we conducted for clients over the last decade. Most of these companies have been in the energy industry (from exploration, drilling, production, and marketing companies). These studies sought to determine the variables that influenced level of safety, as well as operational, performance and have resulted in the development of a model of sustainable high performance.

How might culture be related to safety? To answer this question, we need to consider what culture is. Culture is like an organization’s DNA, it is the sum total of its history, values, aspirations and endeavors. In short, culture is like the collective memory of the whole that informs members what to do and when and how to do it (Siedman, 2007). Schein (2004) defines culture as the shared basic beliefs and assumptions that inform behaviour, that have evolved as leaders have struggled with creating an organization that can successfully adapt to the external environment.

Culture reflects the organization’s basic beliefs and assumptions related to core beliefs about what is real (e.g. what is the nature of people and their dependability and integrity); what is important and worth striving for (e.g. safety), and what is possible (e.g. no incidents/no one gets hurt). These beliefs and assumptions come to be embedded in the organization’s shared collective practices that determine how people are treated and how risks are managed (Hopkins, 2001; 2008). The term practices refers to the ways the leaders of cultures make and execute decisions about, among other things, the safety of employees. These practices have an important effect on how employees perceive, assess, and respond to risks encountered in the workplace.

Cultures have been described as either strong or weak (Broadbent, 2004). A strong culture is one that is widely shared and based on a common and well understood identity while a weak culture is diverse and differs from area to area in the organization. It has become clear, however, that a strong couture is not necessarily a safe culture. Reflect on the culture of BP, long considered strong, and the catastrophic events which took place at Texas City. These such observations have led us to speculate how culture influences safety and has lead us to recognize that cultural type is a fundamental determinant of safety outcomes (International Nuclear Safety Advisory Group, INSAG-15, 2002).

An organization’s culture forms the context in which individual safety values and behaviors develop and persist over time. Safety requires people to think and act in ways that are often difficult and sometimes unnatural (e.g. reporting one's own mistakes, stopping a job in the middle, etc.). Because of this, developing a culture that supports safety is a specific challenge of leadership (Barling, J., Loughlin, C., and Kelloway, E.K., 2002; Rundmo, T. and Hale, A. R., 2008). Safety never sleeps and organizations cannot achieve exceptional safety performance without a deep-rooted set of beliefs, values, practices, and
behaviors that guide people's decisions and action at all times.

The question then becomes one of understanding what characterizes a culture that may be said to be a safety culture. There have been several reviews of studies (Ronald, L., 1998) that sought to identify factors contributing to successful safety programs. A key conclusion of these reviews is that the safety performance of a given organization is determined by its culture and that leaders are the chief architects of culture. The primary act by which leaders create culture is by what they pay attention to (i.e. what they teach, measure, reward, punish, etc.). If safety culture is characterized by an over-riding emphasis on both safety and performance, the research suggests that the following are important aspects of safety cultures (Demskie, D. and Arabie, K., 2008; Neal, A, & Griffin, M., 2002; Thompson, R.C., Hilton, T.F., Witt, L.A., 1998):

- A safety culture is one in which employees know what to observe and are able and willing to report near misses, unsafe conditions, or other safety concerns.
- What is reported in an organization is a function of how that organization deals with blame and punishment. Safety cultures make it okay to report unsafe conditions and do not blame or punish people except for malice and premeditated or reckless acts.
- Reporting implies that change well take place. Safety cultures are those which are capable of taking action and learning as well.
- Decisions must be made by those best equipped to deal with the safety issue. Safety cultures empower people to make these kinds of decisions.

Culture and Safety

What is unique about those organizations capable of achieving high levels of competence, openness, empowerment, and adaptability? In other words, what characteristics of cultures provide the necessary ingredients to cause employees to choose to strive for a level of safety that is beyond minimal efforts and exhibit self-governance around a core set of values? We reasoned that organizations achieve these capabilities because their policies and practices engender high levels of efficacy, self-importance, and belongingness, and together, these states actively influence the level of commitment to and caring for safety. To validate this hypothesis, two questions need to be answered: What conditions create feelings of efficacy, self-importance, and of belonging? Are high levels of these feelings associated with operational and safety excellence?

Factors Influencing Level of Efficacy, Self-Importance and Belonging

People work to meet their needs for equity (self-importance or self-esteem), achievement, and belonging (Sirota, Mischkind, and Meltzer, 2005). The effort an individual will expend in order to meet these needs in a given context depends on the nature of the expectations he forms about the probability his efforts will produce a positive result. The nature of these expectations determines the degree to which employees develop a sense of efficacy (Bandura, 1997; Rotter, J., 1973). Efficacy is the term used to describe the psychological state in which the person has the confident expectation that effort will enable him to meet his needs. There are three dimensions of efficacy:

- Self-efficacy – the expectation that one is competent and has the resources to perform a specific task or set of tasks (I can).
- Response efficacy – the expectation that performing a task will lead to the desired goal (I'll try).
- Outcome expectation – the expectation that one can gain a desired reward as a result of performing a task; an individual's imagined consequences of performing particular behaviors (I want).

Expectations are self-fulfilling. When work enables employees to meet their needs they develop a generalized excitation that effort pays off and they work hard; when work does not enable people to meet their needs, they develop a generalized expectation that nothing they do matters and they act accordingly.

Efficacious employees are able to meet their needs for achievement. What enables them to meet their needs for equity and self-importance and belonging? Success at meeting these needs is also embedded in employees’ day to day work, most specifically in his relationship with his supervisor and his peers. In an early study at an exploration company (Culbertson, et. al., 2004), we found that feelings of self-importance and belonging were enhanced when employees perceived they were cared for and respected by their supervisor. There were large and significant differences in safety and operational performance between work units in which such caring was perceived to exist and those in which it was lacking or deficient.

Together these data indicate that the more efficacious an employee is, and, the more he feels he is important and belongs, the more committed he is to the organization, its values, and his work (Sirota, Mischkind, and Meltzer, 2005). In other words, high levels of self-efficacy, self-importance, and belonging, do influence an active caring for safety. Caring employees are enthusiastic and willing to work hard; less caring employees show signs of apathy and expend only enough effort to get by
Studies of organizational performance have also shown that high levels of employee commitment and motivated effort translate into stronger business performance (O’Riley, 2000). Jeffrey Pfeffer (1998) in his comprehensive review of the research, concludes that companies with empowered, fully committed employees are 30 to 40 percent more productive, more profitable, and more likely to attract and retain valuable customers.

Figure 1 (adapted from Mink, O. Owen, K. and Mink, B., 1994) below illustrates how these variables are related. Employees are enabled to develop efficacy, self-importance and belonging to the extent they have:

- They have the opportunity to work on tasks that allow them to meet their needs.
- They have the data and information needed to know when they are successful
- They have the ability to earn valued rewards and recognition for their efforts
- They perceive they are cared for by the culture in which they work.

According to the available research, employees who are able to meet their needs at work are intrinsically motivated and self-directed. In other words they exhibit what might be called values based self-governance. This it seems to us is the prerequisite for a safety culture and was a primary guiding factor in the research reported below and in the development of the Sustainable High Performance Model discussed in the last section of the paper.

**Study 1: Leadership Practices and Work Unit Performance**

**The Model**

The broad aim of the first set of studies was to test the hypothesis that there is a linkage between how direct supervision is perceived by employees and the level of commitment, effort, and performance. In other words, we looked at the relationship between supervisory practices, employee behavior and performance, as illustrated in the simple model (Figure 2) below (adapted from Wiley, J. W. and Brooks, S., 2000):
The reasoning presented above suggests that the level of performance achieved by a work group will be a function of their commitment and motivation (Employee Outcomes), and this in turn is determined by the extent to which their direct leader enables them to meet their needs.

**Method**

**Organizational Context and Participants**

This series of studies was conducted in the upstream E&P and downstream Products groups of a large American oil company. The focus of these studies was on the relationship between employees’ perceptions of the leadership practices of their direct supervisor, their level of commitment, and operational and safety performance. Data were collected from 539 work groups. A work unit was a functional group that was accountable for producing a given set of outcomes and whose employees reported to a single manager or direct supervisor. The manager/supervisor was the formal leader of a given group and it was this person who was held accountable for the results achieved by that group.

**Measure of Perception of Leadership Practices**

The Leadership Safety Practices Appraisal (LSPA) was developed to determine if there were specific leadership practices that influenced work unit performance performance (Owen, K, Read, B., Winter, J, and Mundy, R. 2004a). The initial LSPA consisted of a series of 36 statements describing aspects of leaders’ behavior that employees are likely to perceive. The LSPA was administered to employees of 539 work groups. Employees rated their supervisor on each statement using a five point scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Responses from the employees of each work group were aggregated to form work unit scores on the item measures (see below). In other words, the subjects for this study were the work units.

**Results**

The factorial structure of the Leadership Safety Practices Appraisal was assessed by using work unit scores. The factor analysis identified a two factor solution that accounted for 73% of the variance in leadership practices scores. The two retained factors, and a sample of each factors’ components are shown in Table 1.
Table 1: Factors Measured by the Leadership Practices Appraisal

<table>
<thead>
<tr>
<th>Factor</th>
<th>Sample Item</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement Orientation</td>
<td>I know the results expected of me.</td>
<td>0.942</td>
</tr>
<tr>
<td></td>
<td>My supervisor helps me perform my job more effectively</td>
<td></td>
</tr>
<tr>
<td>Relationship Focus</td>
<td>My supervisor treats me with respect.</td>
<td>0.897</td>
</tr>
<tr>
<td></td>
<td>My supervisor listens to my opinions.</td>
<td></td>
</tr>
</tbody>
</table>

To test the relationship between supervisors’ leadership practices and work unit performance, retained factors were used as predictors and work unit performance measures were used as outcomes measures (e.g., productivity, customer satisfaction, cost effectiveness, safety, and level of engagement). These individual metrics were transformed to standardized scores which were then combined to provide an overall performance index (PI). Figure 3 shows the results of this analysis. Achievement orientation was entered at step 1 and accounted for over 44% of the variance in the outcome measures. Relationship focus was entered at step 2 and accounted for another 10% of the variance.

Figure 3: Perceptions of Leadership Practices and Work Unit Performance

Discussion

The research showed that two dimensions of leadership practice were positively and significantly correlated with work unit results. The first dimension was labeled Achievement Orientation because the items all pertained to the extent to which employees know what is expected, are empowered to meet their needs, and are recognized in accordance with their contribution (receive feedback). In other words, these items related to what the supervisor does to enable employees to meet their employees’ need for achievement. The items in the second factor, labeled Relationship Focus all pertained to how the supervisor enabled employees to meet their needs for belonging and respect. A key is that how a worker perceives their leader’s practices has an affect on that worker’s commitment and performance. Figure 4 shows the relationship of workers’ perceptions of leadership practices to the workers’ level of commitment. The distribution of the Leadership Practices scores was divided into four equal groups and the commitment index score was plotted as a function of group membership. It can be seen that as the perception of the quality of leadership practices increased, so did the level of commitment.
Figure 5 shows the relationship between the perception of leaders’ practices and the performance of the leaders’ work unit. Leaders whose practices were rated as superior (one standard deviation above the mean) as compared to those whose scores were at the mean on the leadership practices score outperformed by a large, and statistically significant margin, those who were judged to be just average.

Study 2: Culture and Safety Performance

The Model

Study 1 was rather limited in that it focused on the day to day work experiences shared by employees and their direct supervisor. The model illustrated in Figure 1, however, suggests that sustainable safety performance is influenced not only by this specific relationship but also by larger contextual or cultural factors. What factors influence employees’ ability to meet their needs for equity and fairness, achievement, and relationship when viewed from the larger perspective of the organization? The answer to this question involves a consideration of the culture and the things that feed into the development and maturation of this culture.

It is clear that senior leaders play a central role in the development of culture. It is this group who articulate the core values of the organization and who translate these values into the policies and procedures that govern interactions, decision making, and
problem solving. In other words, senior leaders are central in the evolution of an influence process which determines how
achievement, belonging, and safety issues are resolved. Figure 6 illustrates this influence model, which we call the
Sustainable High Performance Model. This model encompasses all the key variables that determine safety performance and
the way these variables relate to each other. The research suggests that the relationship between committed effort and safety
performance is reciprocal - each is both a cause and an effect of the other. In other words, level of commitment and safety
performance are part of a system of interlocking, mutually reinforcing factors — a virtuous circle or a vicious circle (if the
direction is negative). There are two key points to this model: (1) Employee commitment and motivated effort is a function of
the way an organization is led, and, (2) The leadership practices that matter most are those that enhance an employee’s sense
of fairness, efficacy, and belonging.

What are the key variables that enable organizations to create and maintain a virtuous cycle? The model shows that four
groups of factors influence level of commitment and motivated effort:

- Cultural norms as determined by executive decisions related to employee involvement, development, recognition and
  rewards, and due process (equity).
- Experiences as determined by the relationship with the direct supervisor especially with respect to achievement
  orientation and relationship focus.
- Experiences with the work itself as influenced by job design and the nature of the work itself (work practices).
- Experiences with peers (climate) including level of collaboration, degree of alignment around shared goals.

In terms of the model, level of operational excellence and safety performance is an outcome of a long chain of interconnected
elements which determine the level of committed, motivated effort on behalf of the organization. The influence process starts
with core policy decisions made by senior leaders regarding the organization’s vision, mission, values, management
philosophy, and strategies. These decisions are deployed via the policies and procedures of the organization and these are
primarily concerned with who gets into the organization, how they are developed and rewarded, how much power they are
given, and how their health, safety, and basic rights are to be protected. This deployment process is prescriptive and gets
translated into the behavioral norms and routines of the organization. Leaders’ actions reinforce these policies and procedures
in the virtuous cycle and tend to act outside the stated values in the vicious cycle. For example, stating that our peoples’ safety
is the key consideration and then acting to demonstrate that production or profit is all they really care about. These norms tell
leaders how to lead, they reinforce the core priorities of the organization, and they reinforce the fundamental management
philosophy of the organization. In short, these norms and routines are translated into the leadership practices of the
organization. These practices, in turn, influence core employee outcomes, including how committed employees are to the
organization and how much effort they will expend on behalf of the organization. Finally, employee outcomes determine or
influence core organizational outcomes such as level of customer loyalty, level of employee loyalty, growth in the market
served by the organization, and the level of sustainability of the organization’s performance.

In terms of the model, when the norms and routines of the organization are such that they enable employees, individually and collectively, to meet their needs, the observed outcomes will be as described in the terms displayed in the model. On the other hand, if the norms and routines that evolve in response to executive policy decisions do not enable employees to meet their needs, then the outcome is employee apathy and a lack of sustainable success.

**Cultural Factors Related to Operational Excellence and Safety Performance**

The Sustainable High Performance Model formed the basis for the development of the HSE Cultural Opinion Survey (Owen, K., Winter, J. Read, B. and Mundy, R. 2004b) which proposed that 11 aspects of culture influence the level of HSE performance. These factors are listed in Table 2. The studies summarized below sought to determine if these factors could be reliably measured and if there was a relationship between levels on these factors and measures of operational excellence and safety performance.

**Table 2: Factors that Influence Operational Excellence and Safety Performance**

<table>
<thead>
<tr>
<th>Day to Day Work Factors</th>
<th>Cultural Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship with supervisor</td>
<td>Confidence in senior management</td>
</tr>
<tr>
<td>Work characteristics</td>
<td>Valuing employees</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Openness</td>
</tr>
<tr>
<td>Performance Management</td>
<td>Fairness and Equity</td>
</tr>
<tr>
<td>Rewards and Recognition</td>
<td>Opportunities for learning and growth</td>
</tr>
<tr>
<td>Commitment</td>
<td></td>
</tr>
</tbody>
</table>

**Method**

**Organizational Context and Measures**

The context for these studies was 10 organizations from the energy industry. Each of these organizations was part of a large oil company and each was semi-autonomously managed by a president and his or her leadership team. The HSE Culture Opinion Survey was administered through the Internet to over 30,000 employees from these companies.

**Results**

A random sample of respondents was selected for primary factor analysis to confirm what the survey was measuring. The factor analysis identified a 10-factor solution that incorporated 70 questionnaire items and accounted for 77% of the variance in survey scores. This was deemed to be an acceptable foundation to test for linkages between factors and performance using this data set. The 10 predictor factors reflect the underlying dimensions of safety culture as measured by the HSE Culture Opinion Survey. The retained factors are presented in Table 3, along with example questions and reliability coefficient for each factor.

**Table 3: Factor Structure of HSE Cultural Opinion Survey**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Sample Item</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence in Senior Management</td>
<td>I have confidence senior managers can successfully lead this organization.</td>
<td>0.870</td>
</tr>
<tr>
<td>Valuing Employees</td>
<td>You can tell by their actions that this organization really cares for me as a person.</td>
<td>0.894</td>
</tr>
<tr>
<td>Relationship with Supervisor</td>
<td>My supervisor treats me with respect. My supervisor listens to my opinions.</td>
<td>0.957</td>
</tr>
<tr>
<td>Work Characteristics</td>
<td>I have the resources I need to perform my job to the best of my ability.</td>
<td>0.898</td>
</tr>
</tbody>
</table>
There is an open flow of useful information throughout this organization.

I get frequent informal feedback that helps me perform my job better.

Rewards are given to those who perform best.

I am given many opportunities to develop new knowledge and skills.

People in my group work together to get the job done.

If I reported a personal injury, I would be disciplined.

I am proud to be part of this organization.

Retained factors were used as predictor variables in regression analysis and level of commitment and work unit performance metrics were used as the outcome variables. Regression analysis showed yielded an R² for the best fit model of 0.708, meaning 71% of the variance in the outcome measures was accounted for by the predictors in the model. Table 4 shows the standardized beta coefficients for the 10 predictors. This number expresses in quantitative terms the contribution of each predictor to the value of the outcome measure.

**Table 4: Standardized Coefficients for Regression Analysis**

<table>
<thead>
<tr>
<th>Factors In the Model</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
</tr>
<tr>
<td>Valuing Employees</td>
<td>.272</td>
</tr>
<tr>
<td>Openness</td>
<td>.154</td>
</tr>
<tr>
<td>Confidence in Senior Leadership</td>
<td>.239</td>
</tr>
<tr>
<td>Work Characteristics</td>
<td>.071</td>
</tr>
<tr>
<td>Relationship with Supervisor</td>
<td>.253</td>
</tr>
<tr>
<td>Team Work</td>
<td>.070</td>
</tr>
<tr>
<td>Performance Management</td>
<td>.112</td>
</tr>
<tr>
<td>Fairness and Equity</td>
<td>.136</td>
</tr>
<tr>
<td>Rewards and Recognition</td>
<td>.239</td>
</tr>
<tr>
<td>Opportunities for learning and growth</td>
<td>.098</td>
</tr>
</tbody>
</table>

**Relationship between Cultural Factors and Business Performance**

To assess the relationship between cultural factors and performance, an efficacy level score was created using the regression equation derived from the regression analysis. The distribution of these scores was split into four quartile groups. The scores on the engagement variable and the performance metrics for each of these groups were then compared (see Table 5). This data shows that variation in the level of efficacy is associated with significant variation in the level of engagement and the operational and safety performance of the organization. Operational excellence and safety performance are enhanced by those cultural conditions that enhance feelings of efficacy and self-determination.
Table 5: Performance as a Function of Level of Engagement

<table>
<thead>
<tr>
<th>Performance Index Scores</th>
<th>Top Quartile Mean</th>
<th>2nd Quartile Mean</th>
<th>3rd Quartile Mean</th>
<th>Bottom Quartile Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement Index (Level of Commitment and Motivated Effort)</td>
<td>83</td>
<td>72</td>
<td>65</td>
<td>57</td>
</tr>
<tr>
<td>TRIR</td>
<td>1.1</td>
<td>1.8</td>
<td>3.2</td>
<td>3.9</td>
</tr>
<tr>
<td>Sales Measures</td>
<td>60</td>
<td>50</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Expense Control Measures</td>
<td>47</td>
<td>52</td>
<td>57</td>
<td>64</td>
</tr>
<tr>
<td>Productivity Measures</td>
<td>67</td>
<td>56</td>
<td>49</td>
<td>34</td>
</tr>
<tr>
<td>Long Term Value Added Projects</td>
<td>63</td>
<td>58</td>
<td>53</td>
<td>37</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>65</td>
<td>57</td>
<td>47</td>
<td>35</td>
</tr>
</tbody>
</table>

Discussion

The studies summarized above show that 10 dimensions of employees’ experiences with the organization influence the level of operational excellence and safety performance. More specifically, these studies showed that across a wide array of organizational types (upstream E&P, construction, manufacturing, production and distribution, etc.), there is a measurable relationship between the extent to which employees perceived these practices in a favorable light and that organization’s operational and safety performance. In these organizations, performance and safety goals were not seen as being in conflict, but were seen as important components of the totality of the organization’s aspirations and intentions. In other words, operational excellence and safety were weighted equally. This reality created a chain of events that resulted in high levels of individual and collective efficacy, commitment, and motivated effort to achieve both operational and safety excellence.

A favourable perception of the measured factors describes an organization in which employees are able to meet their needs for achievement, belonging, and equity. A high level of these influencers lead to the development of high levels of self-efficacy, such feelings developing when people, through their own self-determined actions, are successful at meeting their needs. The emphasis here is on self-determined for the literature is clear on this point – feelings of efficacy do not emerge when there is no correlation between intention, effort, and outcome. Lacking this correlation, the causes of outcome are attributed to outside forces like compliance with rules, or fear of punishment. When this correlation is present, the causes for outcomes are attributed to self-determined effort.

In some organizations, these practices are normative and high levels of efficacy, both individual and collective, develop; in other organizations, such practices are not normative, and low levels of individual and collective efficacy develop. Employees at the former organizations are motivated to improve safety achievement, have the ability and resources to do so, want to make a difference, and know their actions will produce an observable effect on the level of safety achievement. Further, they feel as if they are part of an organization that cares for them and is capable of succeeding. In other words, these organizations have created a context in which employees can meet their needs for achievement, belonging, and equity. Employees at the latter organizations experience a gap in one or more of these areas.

The data described above are consistent with the concept of an efficacy value chain which is illustrated in Figure 7. The figure indicates that three sets of factors interact to promote and reinforce feelings of individual and collective efficacy: (1) leadership factors, (2) achievement factors, and (3) relationship factors. These three sets of factors combine to form the cultural context in which employees attend, perceive, decide, and act. Cultural context defines the set of circumstances in which an event occurs and the attributions employees make about these circumstances (i.e. those that influence the employee’s choices and actions when a risk is encountered).

This cultural context includes the extent to which the employee knows that safety is a core belief and that he is cared for by the organization. The context also includes employee perceptions and understandings of day to day expectations about his role (role clarity), what is expected of him (expectation clarity), and how well his performance is aligned with expectations (information clarity). The cultural context includes the level of optimism in the culture or more generally its feeling, tone or climate. Finally, the cultural context includes the extent to which employees perceive there is a shared collective fate, one in which all members of the team, and indeed the organization, are working towards shared values and shared goals. In such a context, employees develop a sense of belonging and camaraderie; they feel as if they are part of a unit working to realize a shared purpose, and they come to know they are important and will be treated with respect and fairness. It is in this cultural content that employees develop a sense of efficacy and self-determination and engage in values based self-governance.
Conclusions: A Theory of Safety Culture

The issue we addressed in this paper is what we need to do more of and less of to maximize the operational excellence and safety performance in our organizations. Most organizations implement some form of behavioral based safety program to achieve their safety goals. While the research shows these programs are often effective in the short run, eventually their effectiveness wanes and safety performance returns to pre-program levels. There are many reasons for this failure to achieve sustained safety performance, not the least of which is the tendency of humans to be rule breakers rather than rule followers. However, the results presented above suggest there is a more fundamental reason why behaviorally based safety programs achieve short term improvement, at best. They are based on the principle of external control. Our results suggest that sustainable safety is the outcome of creating an organization in which employees exercise values based self-governance. One model (Neal, A, & Griffin, M., 2002) about how to create a safety culture draws on traditional understandings around work performance in general and proposes two key aspects of safety performance: safety compliance (core activities required to maintain a safe work place) and safety participation (behaviors that help develop an environment that supports safety). Safety compliance is a behavioral issue; safety participation is an issue of values.

Our results suggest you can’t have the former in any sustainable sense without the latter. This is because each reflects a unique part of the ‘workscape’ and each of these parts is governed by different rules of engagement. On the one hand, safety compliance is a function of safety systems and processes, education, observation, and enforcement. Safety compliance pertains to things one does and that can be managed.

On the other hand, safety participation is about aspirations and values. Participation pertains to ways of being and these things can’t be managed, they must be led. Safety compliance is rules based and objective, safety participation is values based and subjective. The only way to get sustained high performance in operations and safety is to integrate the world of rules and the world of values. What we are after in the realm of safety is values based self-governance – people acting safely as a matter of internal belief and self-determined choice (i.e. choosing to follow the rules) as well as from a base of competent know how.

Within the spectrum of culture, there appear to be five basic types (Siedman, 2007):

1. **Anarchy and lawlessness**: a state where everyone acts in their own self-interest with little regard for the group dynamic or organizational ethos.
2. **Blind obedience**: a culture where no one questions authority and everyone does what they are told or faces the consequences.
3. **Control, order and prescribe (COP)**: a culture in which there is a strict chain of command and in which behavior is...
prescribed within narrow limits.

4. **Informed acquiescence**: a rules-based culture, where those wishing to participate in the culture learn the rules and agree to abide by them. The rules are clearly spelled out and workers either embrace them or spend time trying to make things work under the rules. Informed acquiescence cultures tend to be management-oriented, with an established managing class and well-entrenched bureaucracy.

5. **Values-based self-governance**: a culture where employees believe in a set of values and uphold them through their actions rather than simply complying with rules. A values-based culture is governed by should. Employees believe in a value; they act on that belief; and they self-govern in the name of it.

Table 6 depicts the different types of cultures observed in organizations. Column 1 shows the continuum on which cultures can be located. These types exist on a continuum from pathological to generative. Column 2 shows that the level of personal and corporate accountability for safety ranges from very low to very high across these five types of culture. Column 3 shows that the level of efficacy also varies in terms of the type of culture from very low to superior. Importantly, the focus of governance (Column 4) ranges from a form of cultural anarchy to values based self-governance, motivation ranges from nihilism to commitment to self-determined values and HSE performance from very poor to superior. Cultures that achieve exemplary safety performance are those that exhibit values based self-governance. We refer to this type of culture as the true safety culture. Safety cultures are tightly aligned around shared values and practices, including the value of safety. A safety culture is one in which HOW you accomplish a goal is just as important as WHAT is required to do so.

**Table 6: Performance as a Function of Level of Engagement**

<table>
<thead>
<tr>
<th>Cultural Type</th>
<th>Level of Trust/Accountability</th>
<th>Level of Efficacy</th>
<th>Focus of Governance</th>
<th>Motivation for Behavior</th>
<th>OE and HSE Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generative</td>
<td>Very High</td>
<td>Superior</td>
<td>Values based self-governance</td>
<td>Commitment to self-determined values</td>
<td>Excellent</td>
</tr>
<tr>
<td>Proactive</td>
<td>High</td>
<td>Above Average</td>
<td>Informed acquiescence</td>
<td>Compliance with rules</td>
<td>Good</td>
</tr>
<tr>
<td>Calculative</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Control, order, and prescribe</td>
<td>Conformity to rules</td>
<td>Fair</td>
</tr>
<tr>
<td>Reactive</td>
<td>Low</td>
<td>Low</td>
<td>Blind acquiescence</td>
<td>Fear of punishment</td>
<td>Poor</td>
</tr>
<tr>
<td>Pathological</td>
<td>Very Low</td>
<td>Very Low</td>
<td>Anarchy</td>
<td>Nihilistic</td>
<td>Very Poor</td>
</tr>
</tbody>
</table>

This table summarizes much of what is known about the culture and safety performance. Cultures (and sub-cultures within multinational organizations) with high trust/high accountability have a zero tolerance for LTI’s and are truly generative. They are learning cultures and are consistently mindful of designing safety into operations and practice through innovation and risk-taking. Cultures moderately high on trust and accountability can be thought of as proactive. They work on the problems they still find and for these problems they practice zero tolerance; however, they don’t necessarily invest in eliminating problems not yet evident. Calculative cultures are moderate on trust and accountability. These cultures have systems in place to manage risk but spend little time ensuring leadership is aligned around and committed to zero tolerance. These are the organizations that are likely to invest heavily in behaviorally based safety but not in leadership development.

Reactive cultures do a lot every time they have an LTI but not in-between. This is why they are reactive – they spring to life when a potential hazard has become a reality. Employees perceive this type of organization with trepidation and fear. They report moderately low levels of trust and accountability. Finally, pathological cultures will do little to eliminate risk until they get caught. These organizations are viewed by employees with very low levels of trust and very low levels of accountability. Employees do not have confidence in their senior leaders and do not feel valued by the organization. As a result, they manifest high levels of apathy and disengagement, which increases the likelihood that a hazardous condition becomes a damaging one through the unwanted and/or unplanned release of energy into the work place.

**Cultural Transformation**

To conclude, it is important to ask about how to change a culture, how do you get from where you are to where you need to be
in terms of operational excellence and safety performance? Our studies have shown there are three requirements for “cultural transformation.”

First, an organization must identify its current safety profile. This can be done via a survey like the HSE Cultural Opinion Survey. However executed, the first step is to develop a valid data-based profile of where your organization stands on the cultural and operational dimensions that form the backbone of safety culture.

Second, your organization must align leadership practices at all levels of the organization around the core value of safety. This usually involves transitioning from a management style that is not working, to one that acknowledges the value of each person, creates a workscape that reinforces these values, and empowers each person to be a participant in creating it. This transition requires a total commitment from every leader starting with the senior leaders of the organization. It also involves reflection on current practices and identification and acceptance of what one must do more of and less of to effect the transition.

Finally, this transformation does not just happen – it is a process that must be supported by the systems of the organizations, particularly those that support employee empowerment and the development of feelings of efficacy, for it is only when employees are able to meet their needs for achievement, belonging, and equity that active caring for safety is made possible.
References


