Developing Safety Leadership behaviours in a Latin American power generation company

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Duke Energy International (DEI), is a subsidiary of Duke Energy, the largest electric utility in the U.S., owns, operates or has substantial interest in approximately 5,000 gross megawatts of electric generation, primarily in Latin America. DEI has embarked on an ambitious journey over the last few years to further improving safety leadership behaviours at all levels of the company, starting with their Executive team. Working in partnership with The Keil Centre, an Edinburgh based firm of Registered Psychologists & Ergonomists, DEI approached this by focusing interventions on one job level at a time. Using their Safety Behaviour Standard (which sets out the expected safety behaviours at all job levels) as a method to measure safety culture they put in place a series of initiatives and tools to improve safety leadership behaviours throughout the business. This paper discusses how they approached this and what they learnt.

Keywords: Safety Leadership, Trust, safety culture, communication, safety behaviours

Why are Safety Leadership behaviours important?

It is widely recognized that management commitment to safety plays a pivotal role in creating a safe culture (Chmiel, 2007) and has a major role in the prevention of accidents (HSL, 2012). Hoffman, Jacobs & Landy (1995) describe a process in which management attitudes, practices and behaviour toward safety (safety culture) permeate down through the organisation and become realised in the attitudes and behaviours of individuals which are discernible in safety culture. Research has shown that when managers demonstrate commitment to safety through positive safety behaviours and develop the trust of the workforce it pays dividends. For instance, higher trust in management is related to an increase in safety compliance and safety pro-activity; while lower trust in management was linked with an increased likelihood that workers will have engaged in behaviours that have caused accidents in the previous year (Mitchell, 2007).

Trust in management has been found to enhance co-operation (e.g. reporting near misses), organizational commitment and the acceptance of organizational goals and decisions (Dirks & Ferrin, 2001). The influence trust has on these processes suggests that it is an essential aspect for the permeation of safety culture and has been succinctly described as 'a lubricant for all aspects of organizational functioning' (Bijlsma & Koopman, 2003).

What Safety Leader behaviours are important?

Yule (2003; cited by Flin & Yule, 2004) reports that in the UK energy sector, leaders seen as transformational led business units with a significantly lower rate of injury. Yule identified a number of critical behaviours such as communicating an attainable picture of safety performance, engaging key staff in decision making and being clear and transparent when dealing with safety issues. It is argued that communication methods associated with transformational leadership styles offer an appropriate model for enhancing occupational safety (Zacharatos., et al., 2005). Transformational leaders intellectually stimulate, inspire, and are individually considerate to employees. They motivate employees to set aside personal gain and arrive at a mutual understanding and shared goals (Bass & Avolio, 1994), which logically supports the adoption of safety culture. It is proposed that this style of management influences safety through trust (Bass, 1990; Jung & Avolio, 2000), so that trust is repaid through increasing commitment to goals. The communication methods associated with transformational leadership are, amongst others, listening (consideration), encouragement, motivating and challenging (Barling, Loughlin & Kelloway, 2002). This would suggest that transformational leaders would challenge employees to improve safety, listen to their ideas, consider their circumstances and motivate them to improve safety.

Research has also highlighted that behaviours associated with a transactional leadership (contingent reward) style are also linked with positive perception of safety climate, positive safety behaviours and reduced accident rates. This style requires managers to clarify performance expectations and set high safety performance standards as well as recognise and reward positive safety behaviours and practices. Transformational and transactional styles are not mutually exclusive and their effective use is dependent on the relationship between workers and the situation.

Behaviours associated with the development of trust in the workforce are also particularly important for safety culture. Mayer et al., (1995) reviewed the literature and proposed that three characteristics of a trustee are responsible for trust: ability, benevolence and integrity. **Ability** refers to the skills, competencies and characteristics that enable the trustee to have a positive influence on a specific domain (e.g. showing competence; promoting good practice; being aware of own gaps in knowledge). **Benevolence** is the degree to which the trustee is acting in a non-egocentric way for the good of the trustor (e.g. demonstrating concern for the workforce; addressing issues that are important for workers; being transparent in communication). Finally, **integrity** refers to the degree to which the trustee is seen to adhere to a set of principles that the trustor finds acceptable (e.g. giving timely feedback; providing adequate resources; listening to concerns; behaving consistently). Mayer et al., (1995) argues that integrity will play a key role at the beginning of the relationship and benevolence will grow in importance as parties develop a relationship and learn more about each other's intentions.
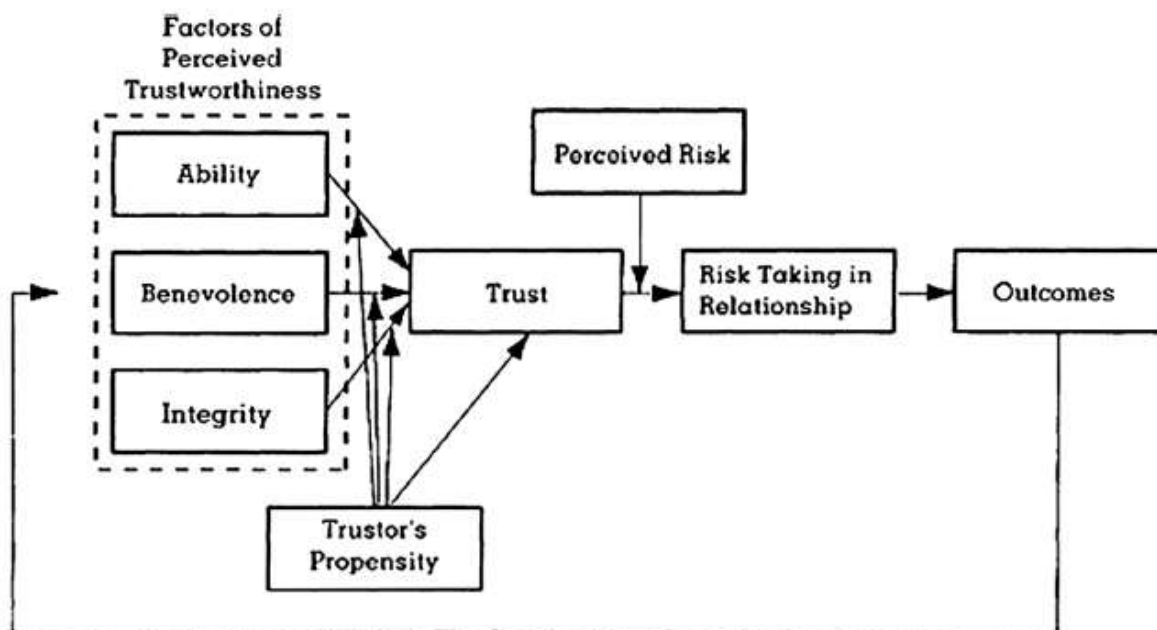
Figure 1. A proposed model of trust (Mayer et al., 1995, p.715)

In a review, funded by the HSE and prepared by the HSL, of the literature on effective leadership behaviours for safety (research report RR952) three implications for practice were identified. One of these implications related to the documented safety benefits of managers adopting transformational and transactional leadership styles, the second identified the need for managers to develop open and trusting safety communications with the workforce. The third implication of the research was that Managers need to actively and visibly demonstrate their commitment to safety. The impact of leaders positive safety behaviours is somewhat lost if they take place and stay behind closed doors. This allows for positives actions to be unseen and motives to be the subject of guesswork rather than fully understood and appreciated. Changing employee's perception of leadership safety behaviours is one of the key challenges for any organization undergoing safety culture change.

Developing a DEI Safety Behaviour Standard (SBS)

In 2008 DEI developed a Safety Behaviour Standard (SBS) that describes the behaviours that differentiate

those at DEI who are more effective at managing health and safety, from those who are less effective. The development of the model incorporated various external sources such as analysis of lessons learned from incidents (e.g. step-change in safety, 2004); academic research (e.g. behaviours associated with trust, transformational/transactional leadership and high reliability organisations); previous work kindly shared by Wood Group Engineering North Sea Ltd and also internal research conducted by DEI into the behaviours that support safety culture in their organization. This process has been documented in more detail in a previous Hazards paper by Hunter & Lardner (2008) *Unlocking safety culture excellence: our behaviour is the key.* Figure 2 illustrates that the DEI SBS has four themes (safety performance, Communication, Risk Management & Engagement) for each level of the organization (All Employees, Supervisor, Manager, Executive). Under each of these 16 boxes are a set of positive and negative safety behaviour indicators (Figure 3).

One of the key features of the SBS that distinguishes it from other "behavioural safety" approaches is that it emphasises that a high level of HSE performance can only be achieved when all levels of the organization are doing their bit. For instance, the executives need to be performing the safety behaviours that are specific to them in order to provide the conditions for employees at the front-line to perform the 'All Employees' behaviours and vice-versa. The Manager and Supervisor behaviours are key to permeating the culture set throughout the organization. The 'All Employees' behaviours refer to the behaviours of 'everyone' in the organization. For instance, the expectation is that when Managers and Executives visit the worksite they would set the example and display the 'deliver safety excellence' behaviours, not just the 'set the vision' behaviours.

Figure 2 Overview of "Safety Behaviour Standard"

DEI is unusual in that other companies that have adopted this model have not included an 'Executive' level in order to keep the model simple and because often the manager behaviours are also appropriate for the Executives. The inclusion of separate 'Executive behaviours' in this model is an indication of how important DEI believe this group are to the success of the safety culture programme.

Figure 3 illustrates the positive and negative behaviour indicators under the Executive Communication behaviour group 'Provide Clarity'. This illustrates the specific behaviours that should be demonstrated in order to provide clarity on safety. This groups of behaviours are essentially a mixture of transformational (XP2.5), transactional (XP2.1; XP2.2; XP2.3) and trust (XP2.4; XP2.5) related behaviours. The combination of these behaviours will change depending on the job level behaviours you are looking at. For instance, you would expect more transformational behaviours from supervisors and managers as they will have more opportunity to engage face-to-face in a 2-way dialogue at the workplace.

Figure 3 Provide Clarity, Communication: Executive Behaviours
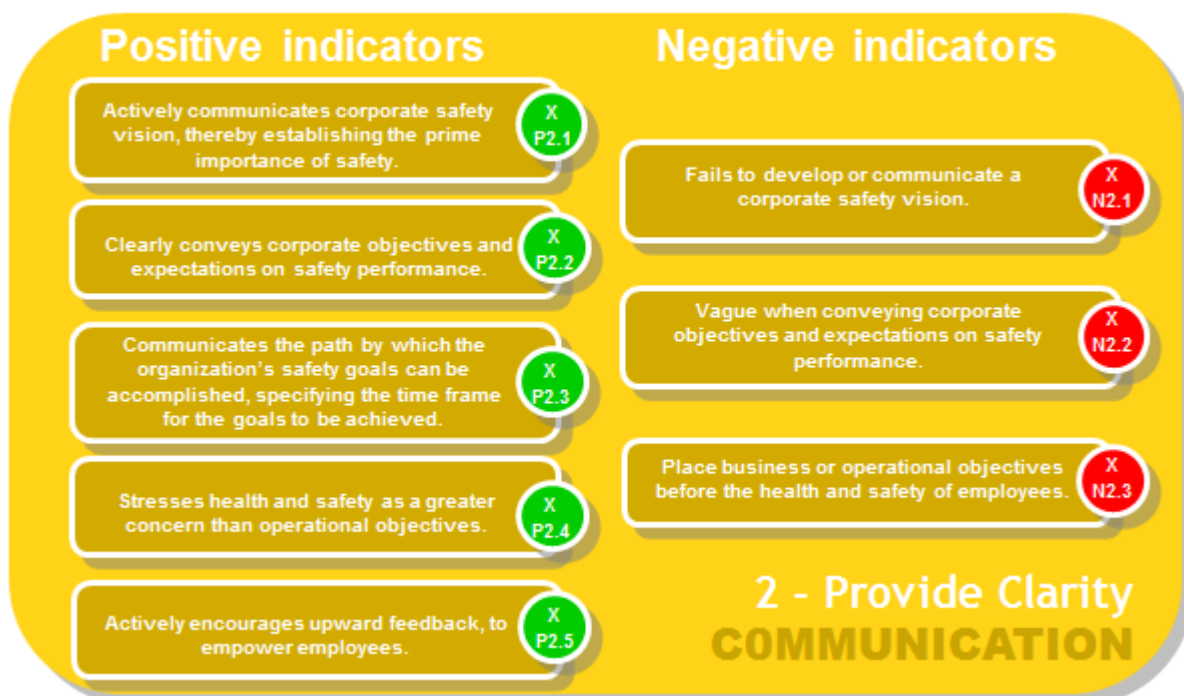
Measuring Safety Culture Improvement

The Safety Behaviour Standard has found to be a reliable and valid measure of safety culture (Lardner, McCormick & Novatsis, 2008) and therefore an effective way to measure safety culture improvement. In order to use the SBS as a method of assessment a gap analysis workshop process was developed whereby delegates (up to 12 per session) were asked to rate the frequency with which each behaviour in the SBS (for all job levels) was displayed on a 4-point scale from Always to Never. Delegates then discussed their responses in more detail and highlighted actions for improvement. In-country HSE professionals were trained and subsequently facilitated these workshops in each of the South American countries in which DEI operates. A cross-section of the workforce were involved in the assessments and DEI always achieved a good response rate (see figure 4). These assessments have now been completed in 2008, 2010 and 2012.

Figure 4 Response rate for SBS survey over 3 time-points

Job title	2008	2010	2012
Executive	27	9	14
Manager	86	73	77
Supervisor	124	146	142
None of the above	935	657	789
TOTAL	1172	885	1022

Figure 5 displays the overall ratings (as rated by all job levels and all countries) of the SBS behaviours over 3 time-points (2008; 2010 & 2012). The ratings show that, so far, there hasn't been much movement of the 'everyone' and 'supervisor' ratings. The executive ratings dipped in 2010 but then there was a significant improvement in the perception of the executive and management behaviours between 2010 and 2012. The next sections discuss how this shift in perceptions was achieved.

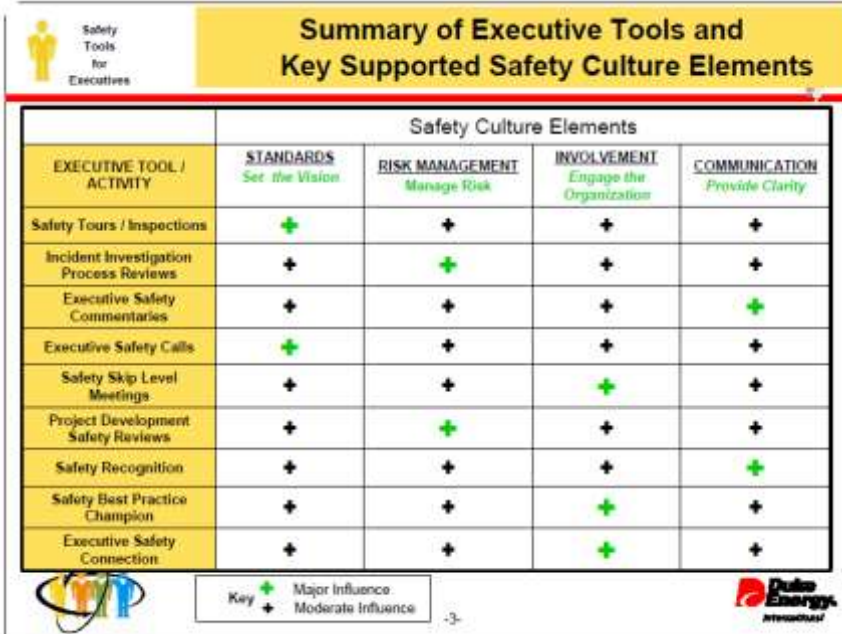**Figure 5** Ratings of Safety Behaviours over 3 time-points (2008; 2010 & 2012)
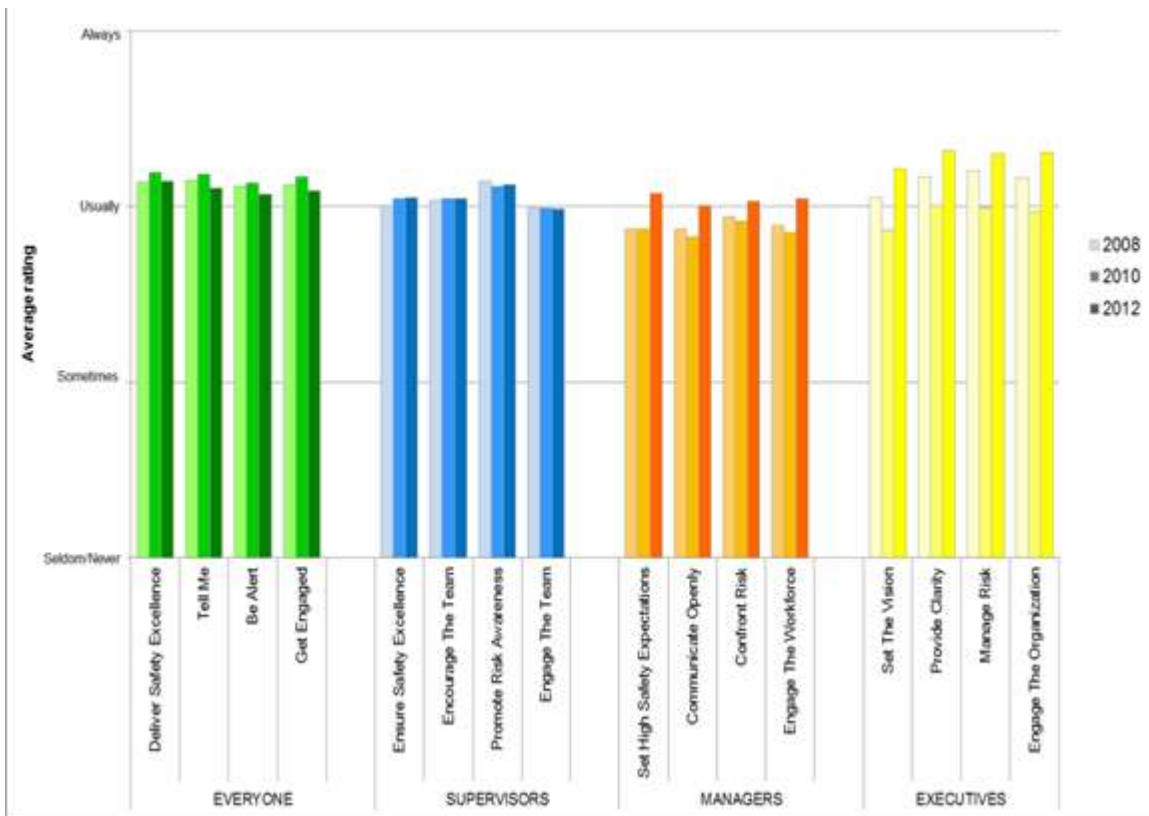
Developing Executive behaviours

In 2010 DEI set about improving the DEI Executives engagement in Safety. The aim was to enable the executives to be more closely connected to daily operations and gain insight into what is needed to complete the job safely. In addition, the plan was to provide them with the opportunity to strengthen communications and demonstrate a strong commitment to safety from the very top.

In order to do this a suite of Executive Safety Tools was created (figure 6). Executives were then given responsibility for creating their own safety plans which incorporated a minimum commitment to at least two of the executive safety tools.

Figure 6 DEI Executive Safety Tools

The executive safety tools varied from fairly routine safety activities (e.g. safety tours) to more unusual activities (e.g. safety skip level meetings; Executive Safety Connection). Each of the nine tools was supported by a booklet which outlined the following:

- General description
- Key advantages
- Linkages to other key activities
- How to's
- Traps and tips
- Suggested Metrics
- Other indications of success

As an example, the **executive safety connection** involved executives working alongside front-line employees on a daily activity. The objective of this activity was not for executives to scrutinize what was going on but to observe, learn, keep an open mind and help identify how they could support the removal of any obstacles to safe working. Executives were given a full briefing, wore full PPE, took part in the activity and then gave a debrief of their experience afterwards.

Figure 7 Description of Executive Safety Connection

The executive safety tools provided the opportunity for executives to have the face-to-face contact time with front-line employees that is so badly needed to develop the trust of the workforce. For instance, the **safety skip level meetings** involved the executives holding engaging safety meetings with front-line teams (skipping local management) which gave them an opportunity to convey their genuine interest in safety. As discussed earlier in this paper, the visibility of positive leadership safety behaviours is also important for changing employee perceptions. DEI communicated the commitment made by their executive team in various communication methods, such as safety reports and briefings. This meant that even if employees had not had a direct interaction with executives they were aware of the commitment that was being made.

Figure 8 Mr. Hugo Ferrer, DEI Central America Regional President, leading a Safety Skip Meeting during the construction of our coal-fired power plant Las Palmas II in Guatemala

Developing Manager behaviours

In DEI the manager behaviours refer to the Operations managers and Plant managers. In 2011 these managers, who are critical to plant safety, underwent a 360 degree assessment using the behaviours from the SBS. They received confidential evaluations from their line managers, peers and direct reports; and also conducted self-assessments. The managers were then given confidential feedback (translated) during a webinar with an Occupational Psychologist. This facilitated feedback was provided in order to help them understand, discuss and digest the key aspects of the feedback and enabled them to make focused goals based on their development needs which were added into their personal action plan for 2012. The 360 degree assessment provided a well-rounded

perspective of their safety successes and challenges, and insight into the changes that could help reduce the risk of injuries and become more successful safety leaders. Most importantly, the 360 assessment identified major opportunities to improve communication channels for reporting safety hazards. In addition, self-assessments afforded each Operations Director and Plant Manager the ability to gauge the progress being made towards their personal goals.

Figure 9 Example feedback from a 360 degree assessment on safety behaviours

SCORE:
6　Always demonstrates this behaviour effectively, sets an example of excellence
5　Consistently demonstrates this behaviour effectively, shows a high level of competence
4　Frequently demonstrates this behaviour effectively, shows competence in this area
3　Sometimes demonstrates this behaviour effectively but could focus on it more to increase effectiveness
2　Occasionally demonstrates this behaviour effectively, would benefit from developing in this area
1　Never demonstrates this behaviour effectively, strong development need
0　Does not apply

Developing Supervisor behaviours

As figure 5 show the frequency of the safety behaviours for the 'all employees' ('everyone') group and the 'supervisor' groups had remained consistent (not improved) over the four years. In 2013 there was a focus on the leadership behaviours of the supervisors with a program called 'My shift, My responsibility'.

This was a follow up to training that had been rolled out to supervisors and employees in 2012 that had been focused on the communication behaviours - specifically 'speaking up' and holding 'positive safety conversations'. Following this program and the 2012 SBS gap analysis, the feedback from employees suggested that there were 4 key areas that should be the focus of future safety programs and that the next program should include practical tools (rather than just training) that the supervisors could use on a daily basis.

Therefore in the 2013 program 'My Shift, My Responsibility' the 4 target activities were:

- Setting & recognising Safety Responsibilities
- Planning & Risk identification
- Positive Safety Conversations
- Near misses tracked

The program involves supervisors completing activities related to the above topics on every shift and reflecting on these activities in their 'My Shift, My Responsibility' workbook. As an example the supervisors are required to set a safety goal with each of their team which is tracked and coaching feedback given on progress. The tasks were supplemented by some brief training that was given by in-country HSE managers. Progress on the program was monitored and audited by the HSE managers and asset managers. It is too early to measure the impact of this program as it was implemented toward the end of 2013.

Conclusions

The main aims of the DEI program over the last 4 years has been to improve its safety culture through the utilization of safety behaviours, starting with the Executive group. Key to achieving this was to accurately describe what safety behaviours people at every level of the company should display. In accordance with the research it was important that this incorporated behaviours that would build trust and co-operation through approaches such as transformational/transactional leadership styles. Once these behaviours were established they were effectively used to help focus development activity and measure progress.

The program to develop executive behaviours was particularly effective in changing perceptions of the executive team's commitment to safety. The activities were pro-active and gave the opportunity for the executives to engage in safety in a way that suited them. They were not forced to use one particular method but choose the tools that they were comfortable with and could commit to in a genuine way. The other key aspect of this program was the effectiveness of the communications. An image of senior executives engaging with employees at the front-line sends a powerful message regarding the intentions of the executives and their willingness to engage.

The program which was the least successful has been the training on 'speaking up' and having 'positive safety conversations'. This behaviour is difficult to achieve across the board due to differences in culture and personality; and the impact of training alone was not enough. It is too early to say for definite, but the practical nature of the 'My shift, My responsibility' program should hopefully provide a better platform to improve these behaviours and engender a stronger sense of ownership on these behaviours.

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