Behavioural Safety in The Marine Sector

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What is Behavioural Safety?

'Behavioural safety', or 'behaviour-based safety', is the use of behavioural psychology to promote safety at work. It has also been called 'Organisational Safety'. Behavioural safety involves creating a process that clearly defines a set of behaviours that within an organisation;

- Reduces the risk of injury
- Identifies behaviour which causes injury
- Collects data on the frequency and consistency of those behaviours
- Identifies behaviour which reduces and stops injury
- Ensures feedback and reinforcement to ensure support of those positive behaviours.

The primary change, newness and perhaps even selling point, is the participation of all staff. In a behavioural process, employees usually conduct observations and provide feedback on safety practices within their work areas. These observations provide data that is used as the basis for recognition, problem-solving, and continuous improvement.

Today's behavioural safety initiatives also draw heavily on the traditions of Total Quality Management (TQM) and organizational development, involving employees in conducting observations within their work areas and in teams that analyze observation data and develop action plans targeting improvements in safe practices.

Mostly a Team takes responsibility for planning and implementing behavioural safety. This Team is typically made up of a small group of work place employees, with a representative from both supervisory (management) and the department or stream responsible for safety. This Team typically completes five steps in the implementation process:

- Design the observation and coaching process
- Plan how the data will be used
- Plan recognition and reward to support the process
- Plan the training and kick-off process
- Plan for maintaining the process

The Implementation of such a process requires support and involvement from employees, management and Health and Safety Executive (HSE) staff. A large proportion of projects invoking such protocols have thus far been with empowered

workforces and enlightened management. It will be interesting to see how effective it will be in business centres that do not traditionally empower workforces or do not have enlightened management. It would not be fair to use these descriptors with a broad brush in the marine field but we should be honest and admit their relevance. Using a behavioural safety process, management and employees can form observation teams that honestly review and evaluate work habits and practices. Implementing this approach to safety involves several steps such as planning meetings, kick-off meetings, observations, feedback sessions and, finally, incentives. Checklists provide easy-to-use menus for employees to use in observing and discussing the safety of their associates' work practices. Such observation surveys help establish ownership of safety for both employees and management. Also, the surveys provide a source of information on the level of safety in a given area. More importantly, they create an opportunity for feedback. These checklists provide ways to link employees and safety goals by putting a behavioural safety process into your organization's present safety efforts.

In a marine sense applying these issues to ship management has previously been described as Crew Resource Management (CRM), much work was done on this post-Piper Alpha within British academic institutions. The primary sources concluded that the non-technical skills were not only the areas from which errors grew but were also areas that 'shop floor' operatives could manage. These included;

- Leadership
- Team Work
- Workload management
- Communication
- Situation Awareness
- Decision Making
- Personal Limitations
- Stress and fatigue

In simplistic terms: is it necessary for management to involve themselves in the discipline or use of Personal Protective Equipment (PPE)? Or can this behaviour be inbuilt from and by the crew?

CRM training attempts to provide a set of countermeasures against human error. It is based on the premise that human error is ubiquitous and inevitable, but that 'management of process' will reduce it to acceptable levels. There is an obvious relationship here between the ALARP (As Low As Reasonably Practicable) theory within

risk management and CRM, which will make it more recognisable to those shipping operators under the British and 'Red Duster' flags that are obliged through the Code of Safe Working Practices for Merchant Seamen to identify this concept. The methodology is often described as the 'Error Troika' that involves:

- Trap error
- Avoid error
- Mitigate the consequences

Estimates of human error as a percentage of all failures throughout industry show the marine sector to be in a vulnerable position:

- Jet transport 65-85%
- Air traffic control 90%
- Maritime vessels 80-85%
- Chemical industry 80-90%
- Nuclear power plants (US) 70%
- Road transportation 85%

But whilst all of the other industrial sectors are recognised as having achieved some forward movement with regards to their particular safety culture, very little appears to have been done within our sector.

Human performance problems appear to dominate the risks in all hazardous industries. *Maersk* is one operator who has taken this very seriously within the marine sector and they claim the following statistics.

- Pre-CRM (1992)
    - 1 Nautical casualty per 30 ship years
    - 6.5 Lost Time Injuries per million exposure hours per fleet
- Post-CRM (1996)
    - 1 Nautical casualty per 90 ship years
    - 3.7 Lost Time Injuries per million exposure hours per fleet

Maersk satisfy their accountants by showing a reduction of insurance premium by 15% for fleet and offshore installations in 1988 as a direct result of this initiative.

Their CRM training involves ships and rigs and has the following basic components:

- Establish the prevalence and type of human factors errors
- Establish the target group
- Establish appropriate measures to assess the success of the training

A typical 2 day Marine or Offshore CRM course content would include:

- Leadership
- Team Working
- Decision Making
- Situation Awareness
- Communication
- Personal Limitations
- CRM Training Evaluation
- Attitude measure (self-report)
- Participant feedback (course content and delivery)

It is important that the training is followed up with On the Job observation and some form of safety culture assessment.

The process that achieves these results is well documented by experimental studies. The key components are basic:

- Regular observation of safe behaviour on the job
- Feedback based on observation data
- Improvement goals
- Recognition for improvement

These elements appear so obvious that many people underestimate the difficulty involved in creating a behavioural safety system. The elements combine to provide a process for systematically managing safety on the job in a way that minimizes the risk of error due to unsafe acts, ensures a high degree of procedural compliance and maintains that level of consistency over extended periods. The area that will be new to many in the marine sector will be the concept of reward or recognition for improvements made.

Projects in behavioural safety generally follow a step approach. Initially a safety process assessment is performed in order to assess the organization's current safety effort. This assessment has three objectives.

- It ensures that you have an accurate understanding of your organization's current efforts.

- It enables you to develop a preliminary design for the behavioural safety process, which will be the starting point for the team process.

- By presenting the assessment results and preliminary design to management, you have an opportunity to get their support for the key elements necessary for the long-term success of your safety process.

The assessment report will form the document for implementation. Recommendations in the report serve as a starting point for the Team. On studying recommendations, the Team can decide whether to support, change, or discard them. Most often, the Team will revise the recommendations based on their experience and knowledge of the organization. They can then develop the additional procedural details required for implementation. Within a shipping operation communications off the ship, the boundary of experience and other cultural inputs may limit the effectiveness of this operation unless proper training is given.

The second and key element of the behavioural safety process is an observation procedure using a checklist to collect data on employee compliance with safety practices. The checklist can have a variety of formats. The goal is to develop a checklist format that is reliable and easy to use. Many ‘checklists’ in the marine realm have become ‘tick lists’. Great care should be taken to ensure that the checklists used are effective. As a rule of thumb, questions that can be answered ‘yes’ or ‘no’ should be avoided. Ideally the observation process should not require longer than thirty minutes to complete. Some sort of conclusion must be reached, e.g. is the process safe or unsafe? Or a score or recommendation.

Several of the key questions the Team should consider in developing the observation process are:

- Who will conduct the observations?

- How often will they be conducted?
- Should observers provide feedback during observations?

In developing the observation procedure, the first question to address is who will conduct the observations. If your team has decided that observations are at least initially to be a management responsibility, then you will need to decide which levels of management should participate. If you have elected to go with employee observations, you will need to consider how the employees will schedule their observations. You have at least three options:

- Rotate the responsibility among all employees
- Assign the observations to specific positions (e.g. senior operators, lead personnel, or fire watch personnel)
- Rotate them among safety team members.

If employees are to do the observations, team members may initially conduct the observations, then rotate other employees onto the safety team. For shipboard operations the choice is limited. Consideration has to be given to the traditional Officer/Crew separation, visits to the ship of other staff or the use of contractors. The position of the master also needs consideration. A strong argument is that Masters should be outside the process, effectively taking the role of Management ashore to facilitate response, but staying away from the initial ownership process. Whilst it is true that 'empowerment' of crew is an issue this may be comparable to the traditional oligarchy of the Master when considering the effectiveness of this process. One master familiar to this author stated that he had to 'bite his tongue' to get the best out of his crew. Officers will habitually try to take over the Observational process unless training promotes otherwise.

The frequency of observations is important. The risk associated with your business should determine the frequency. Probably daily, weekly or monthly or for specialist operations 'when undertaken'.

It is important to consider whether observers should provide feedback to employees they observe working safely or unsafely. If supervisors, they should generally provide corrective feedback to employees they observe being unsafe. If employees are conducting the observations, you might ask them to provide corrective feedback if they are comfortable doing so. Obviously, an observer would be expected to stop any employee who is performing any activity that places someone at risk. If your observers are to provide corrective feedback, you should consider what the observer would say or otherwise ensure that they are trained in providing effective feedback. The team also needs to consider whether observers should respond with positive feedback when an employee is acting safely or when everyone in an area is 100% safe. Again consideration needs to be given here to empowerment and communication skills,

especially from within some of the emerging manpower supply markets. We have all probably suffered from the ubiquitous ‘No Problem’ Problem.

As you consider implementation of the observation and feedback processes, you should consider the existing skills and training needs of those you want to participate. For the behavioural safety process to be successful, employees may need training in a number of areas:

- Observation skills
- Use of the checklists
- The observation procedure
- Feedback skills
- Leading meetings to review safety data
- Job-related skills identified on the safety checklist

Participants also benefit from understanding the basic theory underlying the behavioural safety process, including the observation and feedback procedures. They will often provide better support when they understand the reasons for the behavioural approach. In addition to identifying the training needed to make implementation successful, your team should decide on the most effective way to deliver training. You will want to plan a training process that balances effectiveness with minimal cost and disruption to the workplace. The options for training include:

- Individual coaching (tell, show, observe and provide feedback)
- Mentors
- Seminars or workshops
- Videos or slides

You should consider individual coaching and mentors for training new observers as a less disruptive process than providing workshops or seminars. On the other hand, providing an understanding of the rationale for the behavioural safety process might be done most effectively in larger groups. Often allowing employees to make videos or slides of near-miss accidents, or past accident situations, provides and effective training tool that creates a high level of involvement.

Teams should arrange to post data in work areas and locations where employees are likely to see them. A good practice is to establish a bulletin board for safety in each area. You can then readily display observation forms, safety graphs and other safety-related information.

Graphs should be simple and easy to understand. Your team should consider the value of establishing two graphs for each area, one showing “percent safe” observation data and the other showing the percent of observations completed each week. Each safety team should have a separate graph for observation data from their area, meaning you may have several graphs on the same scoreboard depending on how you have designed the observation process. For example, you may want each shift to have a separate graph of weekly safety observations that occurred strictly on that watch versus the other two.

Initially, depending on the sophistication of your work force, asking observers to update the graphs manually is preferable to generating them by a computer. Requiring the observers to record the data on charts ensures that they understand the data being presented on the graph. The feedback will also be available without the delay that often results from a computerized process. However, entering the observation data into a database or spreadsheet does have some advantages, however. It allows you to easily generate summary reports for distribution, which is particularly important for tracking the percent of observations conducted in a large organization. Computers can also easily generate monthly or weekly reports on the percent of observations completed in each area for review in management meetings.

To get the maximum benefit from the observation process, you must ensure that the organization makes use of the data. In other words, the data must be reviewed and employees must respond to it. The best way to ensure that people look at the observation data is to build it into existing meetings. Ideally, the graphs and observation sheets should both be reviewed as one of the first agenda items in weekly safety meetings. Data on the percent of observations completed should be reviewed in management meetings. Management should focus on managing the safety process, not the results of the process. If management attempts to manage the results of the observation process, they will ruin the integrity of the system. Such pressure from management will eventually bias the observation process and destroy the value of the data. These reviews must be woven into the existing ISM and other Safety management initiatives onboard.

Employees should establish improvement targets for their areas. These improvement targets should be realistic based on the existing level of safety performance as indicated by the observations. The goal is best set for a fairly short period of time so that the team can make frequent corrections to the process and have regular opportunities to celebrate success.

To ensure that the goals get set, the team should ensure that responsibility for setting the improvement target is clearly assigned and communicated. Generally, the person responsible for leading the safety meetings should take responsibility for ensuring that each team sets a safety goal. In some cases, the shore-side safety team should set the safety goal. This procedure would be appropriate for a fleet of vessels or for a ship manager. Consideration will have to be given to the make up of the fleet and the

relative risk. Observations on a cruise ship will have different results to those on a straight bulker for the same process.

Across industry it is accepted that employee participation is consistent with current quality philosophy, current data does not show a significant advantage for employee participation in goal setting versus goals assigned by management, though employees do like to participate in setting goals. This however may not be the case in emergent manpower supply states or in some traditionally managed companies.

Establishing this improvement goal is important for several reasons. Progress towards an explicit goal provides a positive source of motivation and helps build pride in the area's safety efforts. In addition, goal setting helps reduce competition by providing a non-competitive standard of comparison. An effective goal or performance target gives the team a standard for evaluating their performance. Members can compare their performance with their own goal rather than where they are relative to other groups. Downplaying competition is particularly important because different areas may have such different risks and safety requirements. Leading a team towards a common goal is a much better team process.

Team interpretation in the marine realm may relate to watches, individual ships, ship groups or ship types etc.

Once the observation process is up and running, you will need to expand employee involvement. If you have initially established the observation process as a management or team responsibility, you should begin to allow employees to participate eventually. Their participation may begin through joint observations conducted alongside supervision or as additional or stand-in observations. Just make sure that you provide an adequate training and orientation process for new observers.

Incentives will normally need to be set. You have several options in designing safety incentives:

- Create a safety award process.
- Support the safety process through the existing compensation process.
- Provide incentive compensation based on the safety process.

Traditional safety award programs often pay off people who take chances, or they may encourage employees to not report accidents accurately. Too many people simply role the dice. The chance on injury is usually so low that they will not get hurt, even though they take chances. In an award program based on going a fixed time period without an accident, they will usually get the same award as other employees that always comply with safety procedures. In addition, if the award is significant, particularly if the award is significant to a group of employees, such programs may discourage honest reporting of minor accidents. To avoid these shortcomings, safety awards and

incentive should be based primarily on maintaining the safety process. In addition, small awards can be provided for maintaining a safe workplace as measured by observation data, perhaps in combination with no lost-time accidents. The safety award process provides a way of celebrating your successes and saying thanks to those employees who work safely and those that make special contributions. There are two ‘golden rules’ to incentives:

- Provide safety awards for safe behaviour on the job and for behaviours related to maintaining the safety process (observations, conducting safety meetings, setting safety goals, etc.).

- Keep safety awards and incentives small. Your awards should be significant enough to support compliance, but not significant enough to generate false recording.

Regardless of the kind of award system you design, you will have to create an internal marketing campaign to promote your safety effort with employees. You will want to consider posters, announcements in safety meetings, articles in newsletters, and other methods of promoting and communicating the award process.

Management need a very clearly defined role to ensure the survival of a behavioural safety process. Managers have several key responsibilities to ensure the success of the safety improvement effort.

- They must ensure that observations occur within required periods when employees in their area are scheduled to be observers.

- They must conduct their own scheduled observations.

- They must participate in meetings and provide input at milestone reviews.

- They must participate in kick-off meetings when the safety team introduces observation process to employees.

Finally, management must take actions to ensure that all observations occur on schedule. The most important doctrine for management to understand, and a major potential problem for traditional marine management style is that **Management should not respond to the observation data.**

This observation data is a tool for employees to use in safety meetings. Too much pressure on the observation data will bias reporting and destroy the integrity of the observation process. If management attempts to use corrective action or to punish employees for low observation scores, the observers will ensure that their areas look good. The observation process then becomes a numbers game, which defeats its purpose.

Behavioural Safety is pertinent and relevant to marine operations because it has already been used effectively. Its use will be limited by the pre-conceived idea within the shipping community that un-empowered crews from emergent nations will be unable to participate regardless of training. Experience from the offshore industry would argue otherwise.

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